Part 2 Amendment Report

Solar Photovoltaic Energy Facility for Mogalakwena Mine Solar Power (Pty) Ltd, Limpopo

PGE-EDFR
Date: 2022/11/17

Document number: LEDET REF NO: 12/1/9/2-W89
Revision: Rev 2

Document control record

Document prepared by:

Zutari (Pty) Ltd
Reg No 1977/003711/07
Riverwalk Office Park
41 Matroosberg Road
Ashlea Gardens
Extension 6
Pretoria
South Africa
PO Box 74381
Lynnwood Ridge
0040

T +27 12 427 2000
F +27 86 556 0521
E tshwane@zutari.com

Document Control						
Project name		Part 2 Amendment Application Report for the 120 Megawatt (MW) Mogalakwena Mine (Pty) Ltd Photovoltaic Solar Energy Facility, Limpopo				
Ref number		LEDET REF NO: 12/1/9/2-W89	**Project number**		1002100	
Client		Mogalakwena Mine Solar Power (Pty) Ltd				
Client contact		Eric Khumalo	**Client reference**			
Rev	**Date**	**Revision details/status**	**Author**	**Reviewer**	**Verifier** (if required)	**Approver**
0	2022/06/14	Draft Amendment Report for client review	C Durr	R Heydenrych		Natanya Whitehorn
1	2022/06/22	Final Application Report for PPP	C Durr	R Heydenrych		Natanya Whitehorn
2	2022/11/15	Revised Report for PPP	C Durr, S Mzolo	R Heydenrych		Natanya Whitehorn
Current revision		**Rev 2**				

Approval			
Author signature		Approver signature	Natanya Whitehorn 17/11/2022 09:28:09 (UTC+02:00) Signed by: Natanya Whitehorn, Natanya.Whitehorn@zutari.com
Name	Candice Durr	Name	Natanya Whitehorn
Title	Environmental Consultant	Title	Manager and Registered EAP

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List of Acronyms and Abbreviations

Term	Definition
BAS	Best Attainable State
CA	Competent Authority
CBA	Critical Biodiversity Area
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ESA	Ecological Support Area
EIA	Environmental Impact Assessment
EDL	Ephemeral Drainage Lines
EDF RE	Electricite de France Renewables
EMPr	Environmental Management Programme
GA	General Authorisation
ha	Hectare
IBA	Important Bird Area
IPP	Independent Power Producer
km	Kilometer
kV	kilovolts
LEDET	Limpopo Department of Economic Development, Environment and Tourism
MAP	Mean annual precipitation
MAPE	Mean annual potential evaporation
MAT	Mean annual temperature
MASMS	Mean annual soil moisture stress
MFD	Mean Frost Days
MW	Megawatt (one million watts)
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act 2004 (Act No. 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act 2003 (Act No. 57 of 2003)
NPAES	National Protected Areas Expansion Strategy
NWA	National Water Act 1998 (Act No. 36 of 1998)
OHL	Overhead transmission line/s
PGE	Pele Green Energy (Pty) Ltd
PGE-EDF RE	Pele Green Energy - Electricite de France Renewables
PV	Photovoltaic
REC	Recommended Ecological Category
RMO	Recommended Management Objective
SANBI	South African National Biodiversity Institute
SAPAD	South African Protected Areas Database
SEF	Solar Energy Facility
STS	Scientific Terrestrial Services CC
this / the Project	Solar Photovoltaic Energy Facility for Mogalakwena Mine Solar Power (Pty) Ltd, Limpopo

1. INTRODUCTION AND BACKGROUND TO THE REQUEST FOR AMENDMENT

The Mogalakwena Mine solar photovoltaic (PV) project, initiated by Mogalakwena Mine Solar Power (Pty) Ltd. to supply electricity to Mogalakwena Mine, underwent an Environmental Impact Assessment (EIA) process and on 09 December 2021 (ref. no. 12/1/9/2/-W89) was granted an environmental authorisation (EA) to construct a PV solar energy facility (SEF). The EA authorised a project footprint of 273 ha.

The project is located on the Remainder of Portion 3 of the Farm Armoede 823 in the Limpopo Province. The proposed site is located east of the N11 main road, 27 km outside of the town Mokopane in the Limpopo Province, as illustrated in Figure 1.

The Environmental Impact Assessment (EIA) process conducted for this project identified a critical biodiversity area (CBA) 1 near the proposed project footprint. While the layout designs at the time endeavoured to remain outside of this sensitive area, the applicable listed activities to develop within this area were applied for and, subsequently, approved as part of the EA.

Mogalakwena Mine Solar Power (Pty) Ltd appointed Pele Green Energy (PGE) and EDF Renewables, a consortium known as PGE-EDFR as the Independent Power Producer (IPP) to develop the proposed project. In order to meet the energy demand of the mine, PGE-EDFR has provided a design that changes the authorised project footprint for the development. The reasons for this are:

- The local community's expanding settlement footprint encroaches into the authorised area. This occurred after the initial EIA process was undertaken;
- The initial proposed footprint was split into three sections (north, central and south) to avoid drainage lines and other sensitivities. PGE-EDFR proposes to develop all project infrastructure only on the central section; and
- The remaining available footprint is not sufficient to accommodate a 120MW design.

The only technically suitable area available for expansion is in the CBA east of the authorised layout. The proposed area of expansion outside the authorised footprint is approximately 24.9 ha, including 18 ha of the CBA 1. The remaining extent is categorised as an Ecological Support Area (ESA) 1.

Condition 4 of the EA excludes the CBA from the development footprint, as this area did not form part of the original footprint that was applied for. Since the revised footprint proposes to develop a portion of a CBA, this amendment application seeks to remove condition 4 from the EA to accommodate the proposed revised footprint.

The amended layout will have a total footprint of approximately 215 ha.

Since this change in footprint is expected to result in an increase in ecological biodiversity impact, it needs to be authorised through a substantive amendment process under Part 2 (Regulation 31) of Chapter 5 of the EIA Regulations.

This report intends to fulfil the requirements of a Part 2 amendment process and should be read in conjunction with the amendment application form which was submitted to the Limpopo Department of Economic Development, Environment and Tourism (LEDET), who is the Competent Authority (CA), on 14 November 2022.

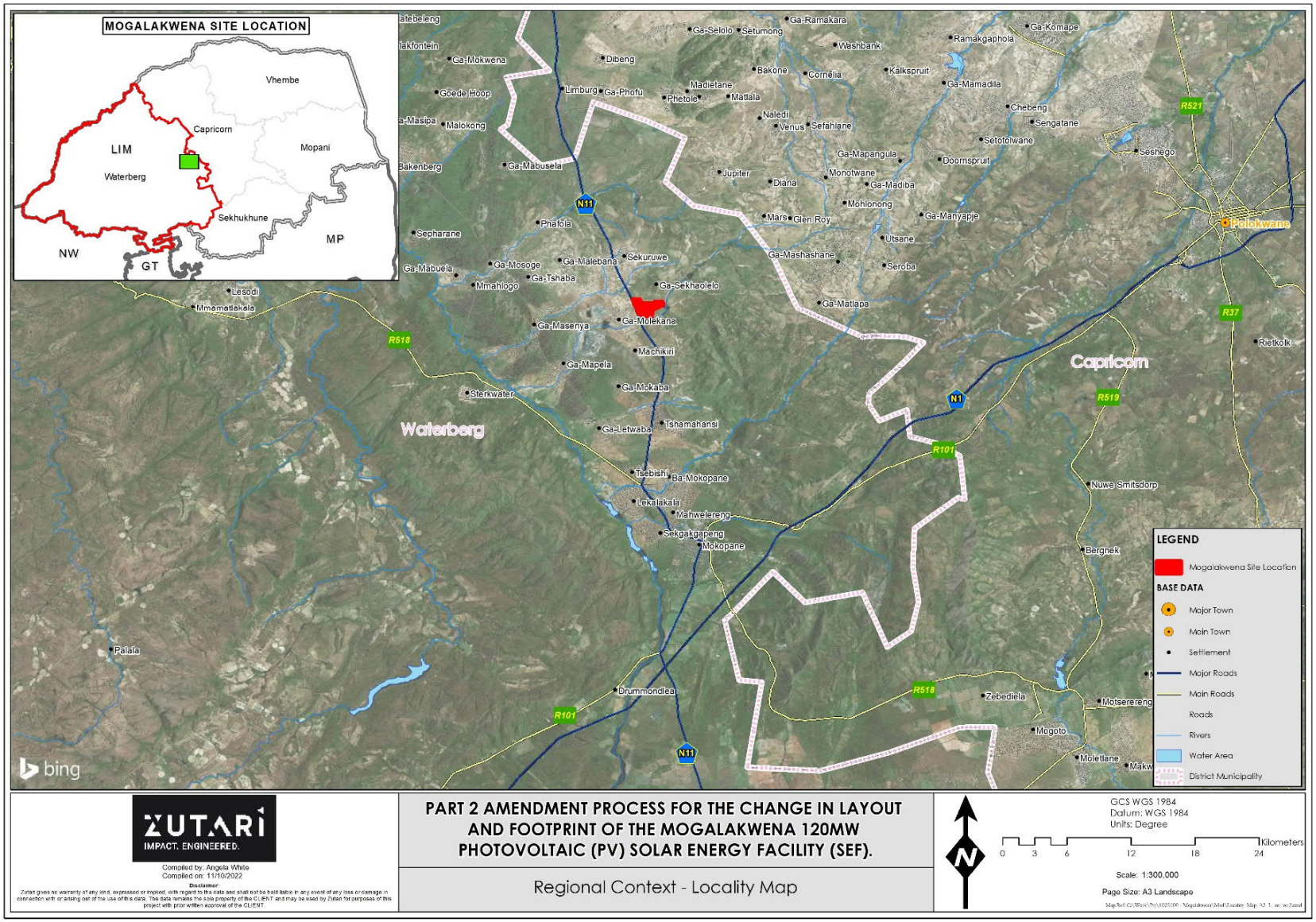

Figure 1: Locality map

2. PROJECT DESCRIPTION

2.1 Overview and location

Figure 2 illustrates the layout plan proposed for the revised (amended) footprint. A more detailed layout plan is included in Appendix C. The proposed expansion of the footprint is shown in yellow, overlaid on the CBA area shown in red.

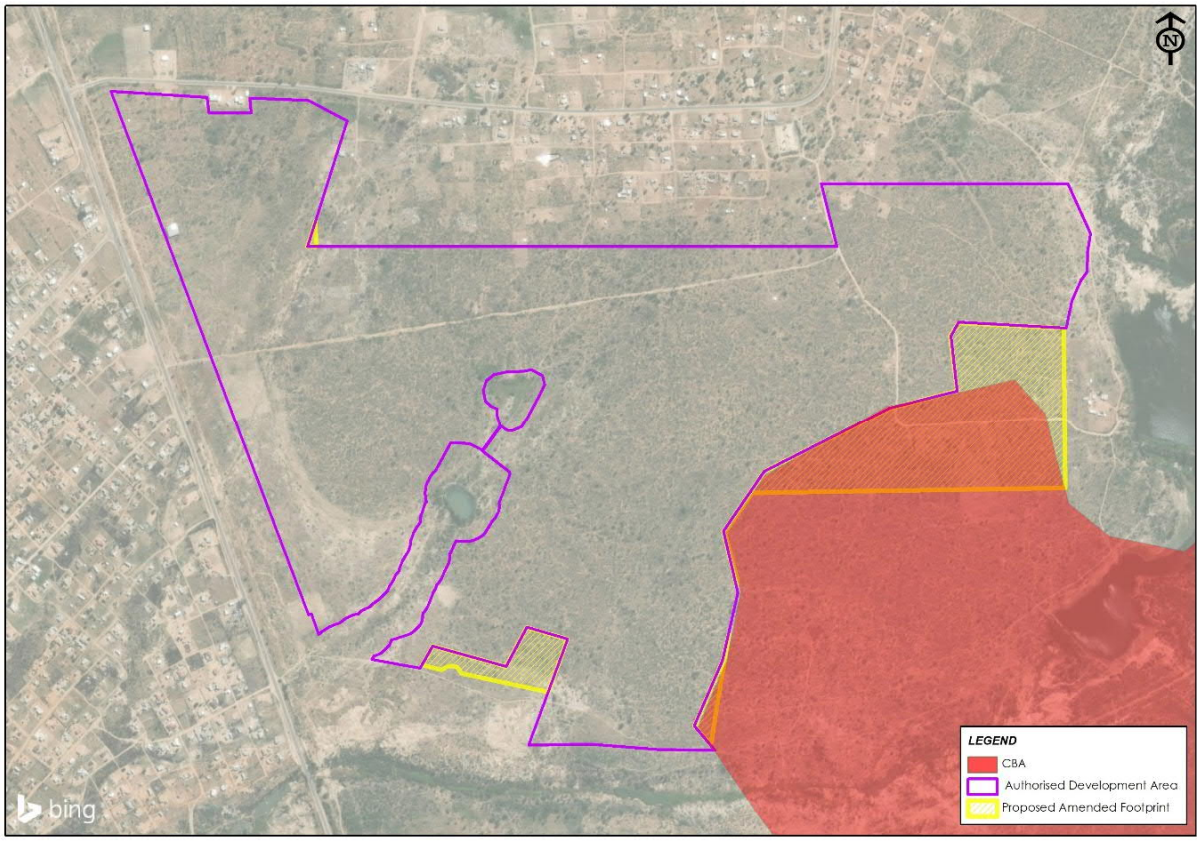

Figure 2: Amended project footprint layout map

Figure 3 shows the proposed layout of solar panel arrays and other infrastructure on the site and Figure 4 shows the areas of the proposed expansion, together with other pertinent features of the site.

The 21-digit Surveyor-General code of the property on which the PV SEF is proposed is T0LR00000000082300003 (Farm no. 3/823). The corner coordinates are presented in Table 1 below.

Table 1: Boundary coordinate points of the PV site

Position	Latitude	Longitude
North eastern corner	23°58'46.52"S	28°58'45.16"E
South-eastern corner	23°59'11.27"S	28°58'45.46"E
Southern corner	23°59'33.17"S	28°58'11.79"E
South-western corner	23°59'24.19"S	28°57'34.63"E
Northern point	23°58'40.87"S	28°57'28.09"E

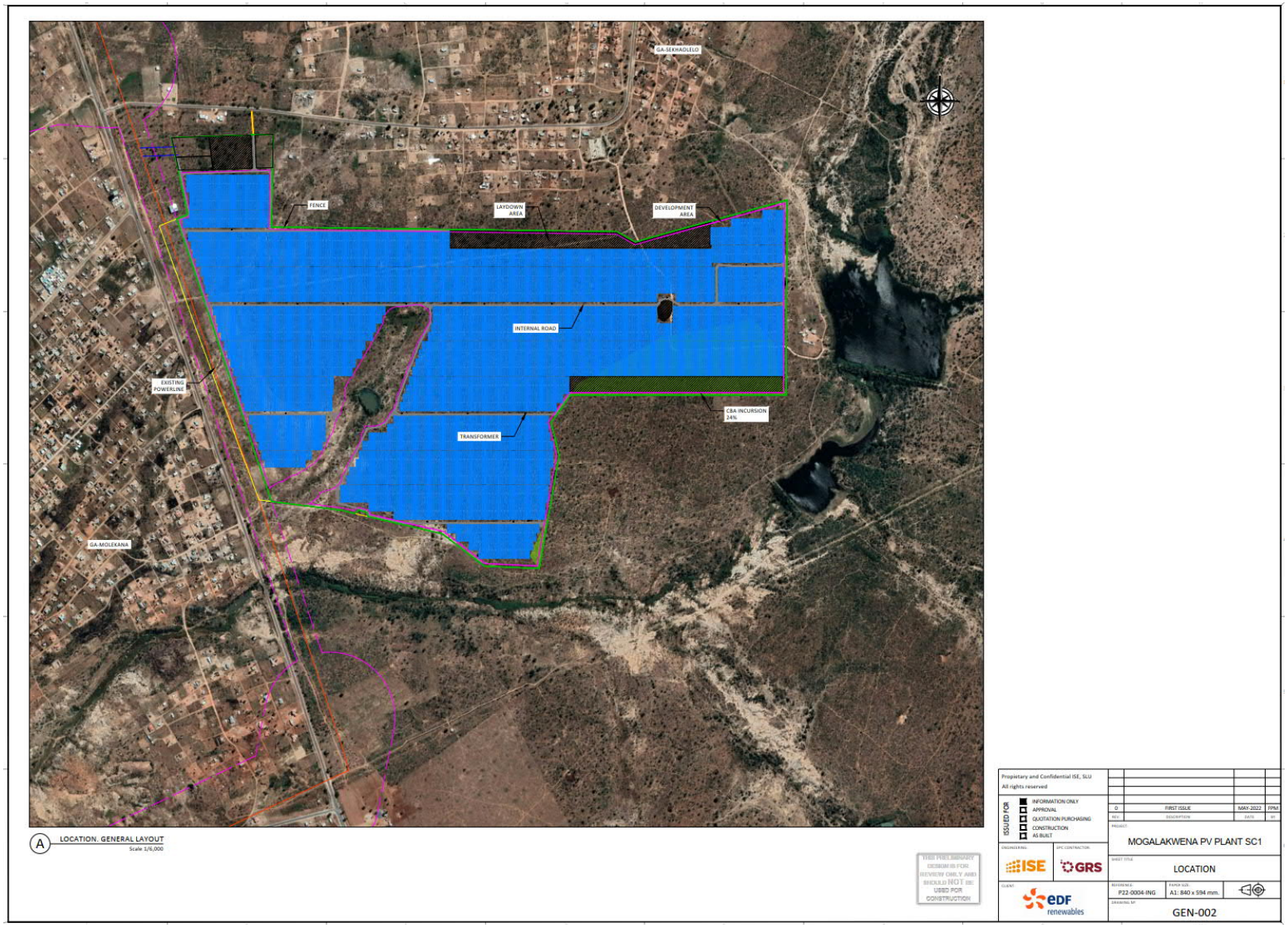

Figure 3: PV Plant Layout Plan within the proposed total amended footprint

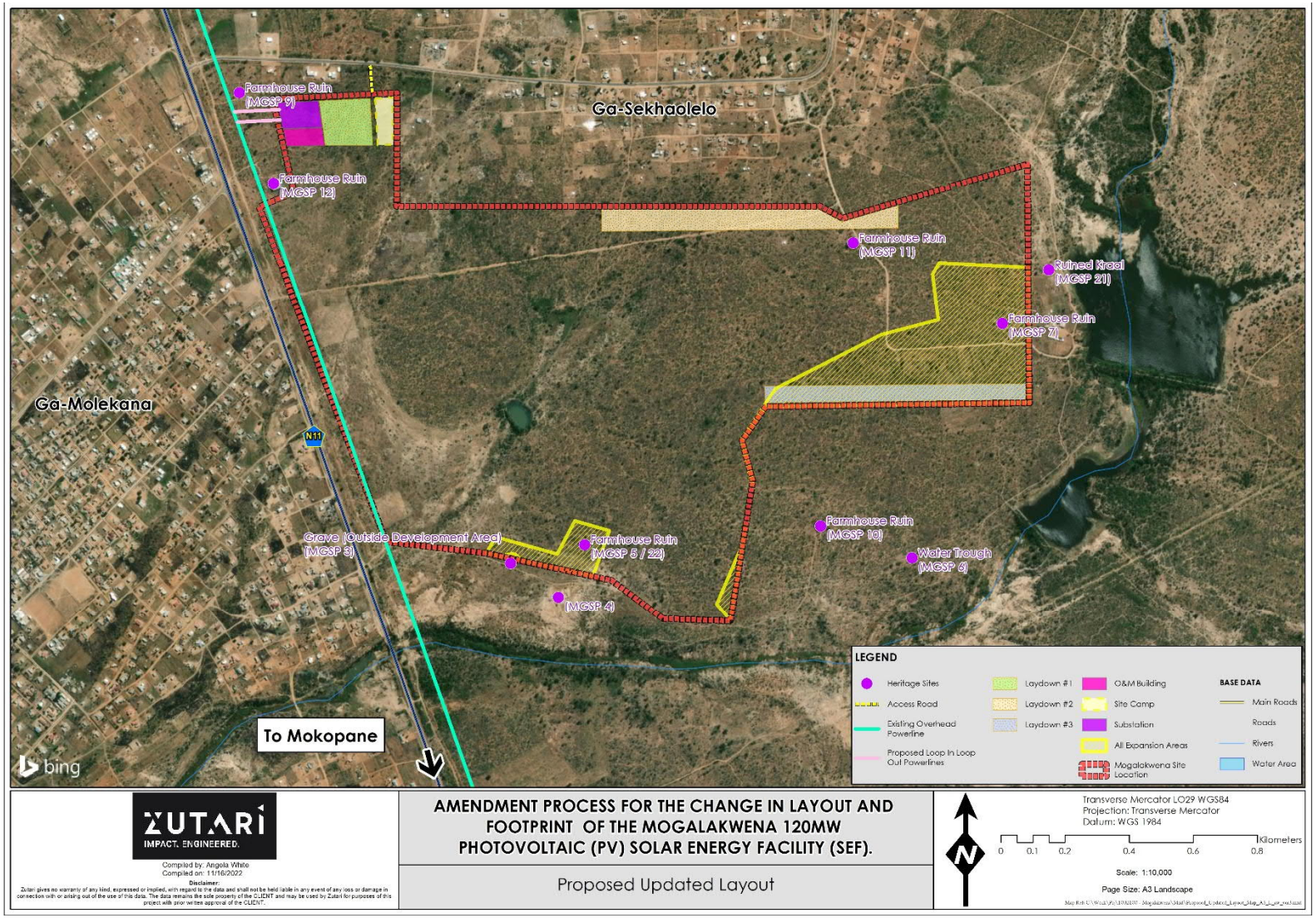

Figure 4: The layout of the project indicating the proposed layout expansion

2.2 Authorised project components

The project components authorised by the EA, are listed in the EA as follows:

- A solar farm, comprising of numerous rows of PV modules mounted on steel tracking mounts and footings (concrete or driven into the ground) with associated support infrastructure, including inverters, to generate up to 120 MW;
- Internal access roads for servicing and maintenance of the site;
- Buildings, including a connection building, control building, guard cabin;
- Weather stations within the fenced perimeter of the site;
- Perimeter "ClearVu" fencing;
- Substation and/or switchyard located at the solar farm, covering an area of 1ha, to convert the power from solar farm voltage to transmission voltage; and
- Overhead transmission line/s (OHL), to transmit power from the solar farm to the existing substation and/or switchyard at the mine.

2.3 Details and Activities Authorised by NEMA

This section contains the details of the EA and the activities currently authorised by the EA.

Departmental Reference number in respect of which an amendment is applied for:	LEDET REF NO: 12/1/9/2-W89
Date of issue of initial EA	9 December 2021

Table 2: Applicable listed activities in terms of GN No. 983 of 2014

GN R983 of 2014 (Basic Assessment)		
No.	**Listed activity**	**Relevance of the activity**
11	The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;	Transmission lined will be required for distribution of electricity with a capacity of 132kV.
12	The development of- (b) infrastructure or structures with a physical footprint of 100 square metres or more;	Infrastructure to cross the stream on site will be required.
19	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) a watercourse;	Infill of drainage lines will be required as part of stormwater management plan.
24	The development of- (ii) a road with a reserve wider than 13,5 metres, or where no reserve exists where the road is wider than 8 metres.	Associated with the development are internal roads.

Table 3: Applicable listed activities in terms of GN No. 985 of 2014

GN R984 of 2014 (Scoping and Environmental Impact Report)		
No	**Listed Activity**	**Relevance of the Activity**
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of Facility or infrastructure is for photovoltaic installations and occurs a) within an urban area;	The PV facility will be located outside an urban area and would have a generation capacity of up to 120MW.
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The site extends over 766ha (273ha to be utilised)

Table 4: Applicable listed activities in terms of GN No. 985 of 2014

GN R985 of 2014 (Provincial Basic Assessment activities)		
No	**Listed Activity**	**Relevance of the Activity**
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. (e) In Limpopo: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA;	Internal gravel roads will be constructed to facilitate servicing and maintenance of the site. These gravel roads will be wider than 4m. The site falls within portions of a Critical Biodiversity Area (CBA) and an Ecological Support Area (ESA) The Witvinger Nature Reserve is situated approximately 3.4km south east of the preferred site.
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. In Limpopo: (ii) Within critical biodiversity areas identified in bioregional plans.	A portion of the project is proposed to be developed within a CBA and will require clearance of vegetation.

3. DETAILS OF THE PROPOSED AMENDMENTS AND SPECIALIST INPUTS

3.1 Background information

Condition 4 of the EA excludes the CBA from the development footprint. Since the revised footprint proposes to develop a portion of a CBA, various applicable specialists were appointed to assess the potential impacts of this proposed change on the environment. A summary of the specialist findings has been included in the Amendment Report, with the specialist reports included as Appendices to this report.

The existing EA includes Activities 4 and 12 of GNR 985 of 2014. Thus, no new listed activities are triggered by this proposed amendment. This enables the use of a Part 2 Amendment application under Section 31 of the EIA Regulations (GN R 982 of 2014).

The revised layout also changes the requirement for extensive transmission lines as initially proposed during the EIA process. The transmission lines to the mine fall away, to be replaced by a short tie-in from the substation to the Eskom lines along the western side of the site. The length of these lines is 140m. A single pylon will be required for these lines.

3.2 Terrestrial Biodiversity Assessment

Scientific Terrestrial Services CC (STS) was appointed by Zutari (Pty) Ltd to conduct a Biodiversity Assessment for the initial EIA process. STS was again approached by Zutari to update the assessment to include the proposed layout expansion contemplated in this Amendment Report and includes specific focus areas that were highlighted by the screening tool as potentially sensitive habitat (Figure 5Figure 4). Table 5 summarises the desktop analysis of the study area.

3.2.1 Desktop habitat characteristics

Table 5 below provides desktop information on the habitat characteristics of the sturdy area within which the solar PV site is located.

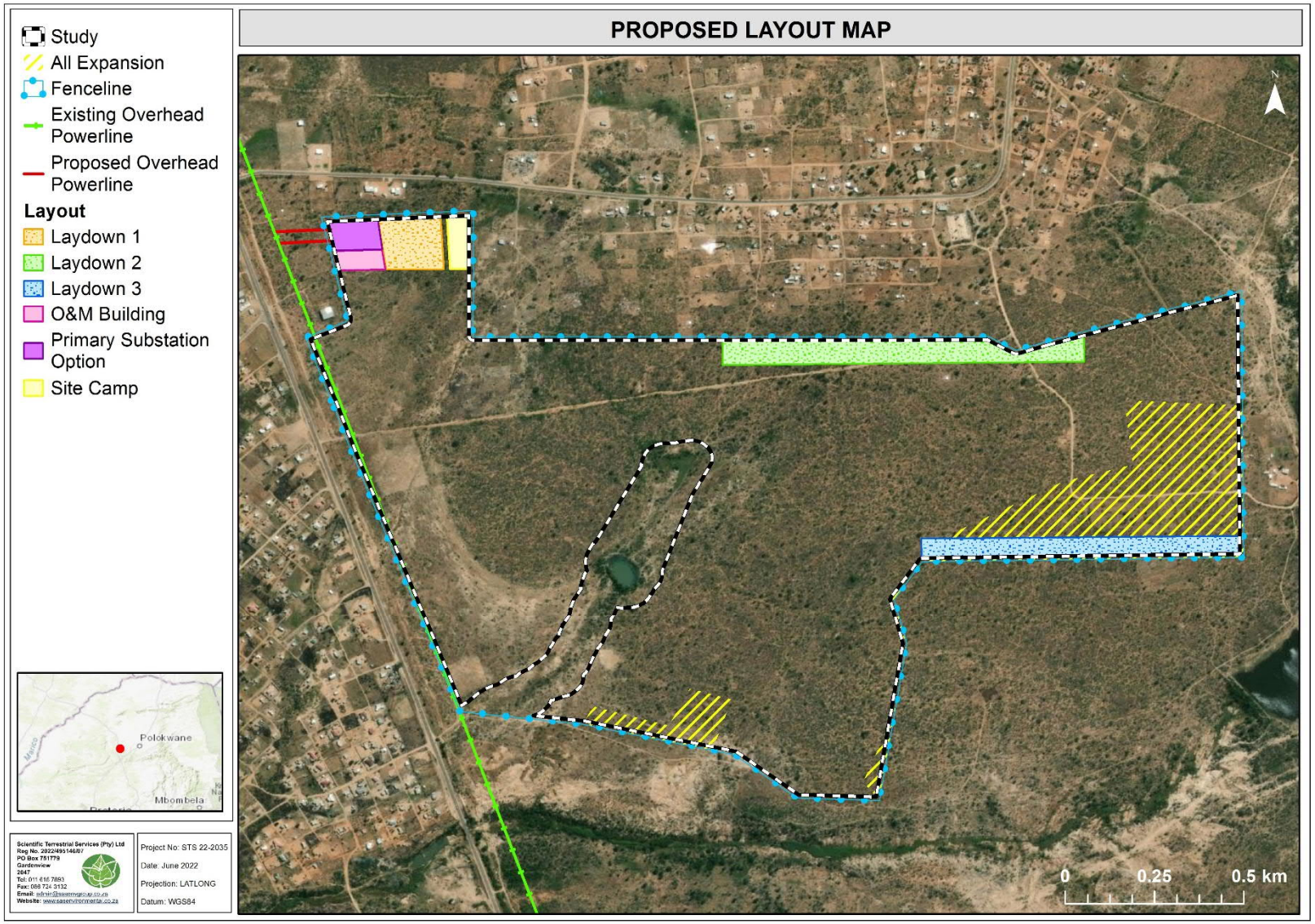

Figure 5: Focus areas for the biodiversity assessment of the proposed project footprint expansion

Table 5: Summary of desktop biodiversity characteristics of the Study Area [Quarter Degree Square (QDS) 2328DD

Details of the Study Area in terms of the national VEGMAP project (SANBI, 2018a)		**Description of the vegetation type associated with the Study Area**	
Biome	The Study Area is situated within the **Savanna Biome**.	**Vegetation Type**	Makhado Sweet Bushveld (SVcb 20)
Bioregion	The Study Area is located within the **Central Bushveld Bioregion**	**Climate**	Summer rainfall with very dry winters
Vegetation Type	The Study Area is located within the **Makhado Sweet Bushveld** (SVcb 20) vegetation type.	**Altitude (m)**	850 to 1200
		MAP* (mm)	454
		MAT* (°C)	18.5
Conservation details pertaining to the area of interest (various databases)		**MFD* (Days)**	7
NBA (2018) (Figure 4)	Most of the Study Area falls within the remaining extent of the **Makhado Sweet Bushveld** which is currently **Least Concerned** and **Poorly Protected.** Ecosystem types are categorised[1] as "not protected", "poorly protected", "moderately protected" and "well protected" based on the proportion of each ecosystem type that occurs within a protected area recognised in the Protected Areas Act, 2003 (Act No. 57 of 2003), and compared with the biodiversity target for that ecosystem type.	**MAPE* (mm)**	2174
		MASMS* (%)	81
		Distribution	Limpopo Province
		Conservation	**Vulnerable** in Mucina and Rutherford (2006) but the status of the vegetation type has been updated in the 2018 Final Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018a) to now being of Least Concern (LC). Target 19%. About 1% statutorily conserved, mainly in the Bellevue Nature Reserve. Some 27% transformed, mainly by cultivation, with some urban and built-up areas. The southwestern half of the unit has densely populated rural communities. Erosion is low to high.
National Threatened Ecosystems (2011)	The Study Area is not situated within a threatened ecosystem, according to the National Threatened Ecosystem Database (2011). The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value. The first national list of threatened terrestrial ecosystems for South Africa was gazetted on 9 December 2011 (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GoN 1002), 9 December 2011). **Note**: *The National List of Threatened Terrestrial Ecosystems published in terms of the NEMBA in 2011 remains in legal force. The data contained in NBA 2018 represents an update of the assessment of threat status for terrestrial ecosystems, but the National List of Threatened Terrestrial Ecosystems has not yet been revised*.	**Geology and Soils**	The area is underlain by the gneisses and migmatites of the Hout River Gneiss (Randian Erathem) and the potassium-deficient gneisses of the Goudplaats Gneiss (Swazian Erathem). Sandstones and mudstones of the Matlabas Subgroup (Mokolian Waterberg Group) are also found. Soils include deep, greyish sands, eutrophic plinthic catenas, red-yellow apedal freely drained soils with high base status, clayey in bottomlands. Land types mainly Bd, Bc, Ae and Ia.

[1] The ecosystem protection level status is assigned using the following criteria:

i. If an ecosystem type has more than 100% of its biodiversity target protected in a formal protected area either A or B, it is classified as Well Protected;
ii. When less than 100% of the biodiversity target is met in formal A or B protected areas it is classified it as Moderately Protected;
iii. If less than 50% of the biodiversity target is met, it is classified it as Poorly Protected; and
iv. If less than 5% it is Hardly Protected.

SAPAD (2021) [2]; SACAD (2021) [3]; NPAES (2009) (Figure 5) and Limpopo C-Plan (Figure 6)	According to the South Africa Protected Areas Database (SAPAD, 2021_Q4) and the National Protected Areas Expansion Strategy Database (NPAES, 2009) the **Witvinger Nature Reserve** (a formally protected area) is situated approximately 2.7 km south east of the Study Area, which is managed by the LEDET. This corresponds with the Limpopo C-Plan database which included buffers around protected areas as defined in "Listing Notice 3" (National Environmental Management Act, 1998 (Act No. 107 of 1998). The South Africa Conservation Areas Database (SACAD, 2021_Q4) does not indicate the presence of any additional conservation areas within 10 km of the Study Area.	**Vegetation & landscape features**	Slightly to moderately undulating plains sloping generally down to the north, with some hills in the southwest. Short and shrubby bushveld with a poorly developed grass layer. **Remark:** This area is transitional between the higher-lying Polokwane Plateau and the lower-lying vegetation units of the Limpopo River Valley.
IBA (2015)	The Study Area is not located within 10 km of an Important Bird and Biodiversity Area (IBA, 2015). The **Waterberg System Important Bird Area** is located approximately 13.5 km south west of the proposed OHL Corridor.		
CBA 1	A small south-eastern portion of the Study Area falls within a **Category 1 Critical Biodiversity Area (CBA)**. These are **Irreplaceable Sites** required to meet biodiversity pattern and / or ecological processes targets. It should be noted that the proposed layout footprint does not fall within the CBA. Land Management Recommendations: Obtain formal conservation protection where possible. Implement appropriate zoning to avoid net loss of intact habitat or intensification of land use. Incompatible Land-Use: Urban land-uses including Residential (including golf estates, rural residential, resorts), Business, Mining & Industrial; Infrastructure (roads, power lines, pipelines).		
ESA 1	The majority of the Study Area, the central portion, falls within a **Category 1 Ecological Support Area (ESA)**. These are natural, near natural and/or degraded areas that are selected to support CBAs by maintaining ecological processes. Land Management Recommendations: Implement appropriate zoning and land management guidelines to avoid impacting on ecological processes. Avoid intensification of land use and fragmentation of natural landscapes. Incompatible Land-Use: Urban land-uses including Residential (including golf estates, rural residential, resorts), Business, Mining & Industrial; Infrastructure (roads, power lines, pipelines). **Note**: Certain elements of these activities could be allowed subject to detailed impact assessment to ensure that developments were designed to maintain the overall ecological functioning of ESAs.		

[2] **SACAD (2021):** The types of conservation areas that are currently included in the database are the following: 1. Biosphere reserves, 2. Ramsar sites, 3. Stewardship agreements (other than nature reserves and protected environments), 4. Botanical gardens, 5. Transfrontier conservation areas, 6. Transfrontier parks, 7. Military conservation areas and 8. Conservancies.

[3] **SAPAD (2021):** The definition of protected areas follows the definition of a protected area as defined in the National Environmental Management: Protected Areas Act, (Act 57 of 2003). Chapter 2 of the National Environmental Management: Protected Areas Act, 2003 sets out the "System of Protected Areas", which consists of the following kinds of protected areas - 1. Special nature reserves; 2. National parks; 3. Nature reserves; 4. Protected environments (1-4 declared in terms of the National Environmental Management: Protected Areas Act, 2003); 5. World heritage sites declared in terms of the World Heritage Convention Act; 6. Marine protected areas declared in terms of the Marine Living Resources Act; 7. Specially protected forest areas, forest nature reserves, and forest wilderness areas declared in terms of the National Forests Act, 1998 (Act No. 84 of 1998); and 8. Mountain catchment areas declared in terms of the Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970).

Other Natural Areas	The remaining northern portion of the Study Area falls within an area considered to be **other natural areas**. These are natural and intact areas but are not required to meet targets, nor have they been identified as Critical Biodiversity Areas or Ecological Support Areas. No management objectives, land management recommendations or land-use guidelines are prescribed. These areas are nevertheless subject to all applicable town and regional planning guidelines and policy. Where possible existing "Not Natural" areas should be favoured for development before "Other natural areas".
National Web-based Screening Tool (2020)	
The screening tool is intended to allow for pre-screening of sensitivities in the landscape to be assessed within the EA process. This assists with implementing the mitigation hierarchy by allowing developers to adjust their proposed development footprint to avoid sensitive areas. The different sensitivity ratings pertaining to the Plant [and Animal] Protocols are described below: ➢ **Very High:** Habitat for species that are endemic to South Africa, where all the known occurrences of that species are within an area of 10 km^2 are considered Critical Habitat, as all remaining habitat is irreplaceable. Typically, these include species that qualify under Critically Endangered (CR), Endangered (EN), or Vulnerable (VU) D criteria of the IUCN or species listed as Critically/ Extremely Rare under South Africa's National Red List Criteria. For each species reliant on a Critical Habitat, all remaining suitable habitat has been manually mapped at a fine scale. ➢ **High:** Recent occurrence records for all threatened (CR, EN, VU) and/or rare endemic species are included in the high sensitivity level. ➢ **Medium:** Model-derived suitable habitat areas for threatened and/or rare species are included in the medium sensitivity level. ➢ **Low:** Areas where no SCC are known or expected to occur.	
Terrestrial Biodiversity Theme (Figure 7)	For the terrestrial biodiversity theme, the Study Area is considered to have an overall **sensitivity of very high**. The triggered sensitivity features include CBA Category 1 and ESA Category 1.
Animal Species Theme (Figure 8)	For the animal species theme, the majority of the Study Area is considered to have an overall **sensitivity of medium,** with a small eastern section classified as **high sensitivity** (associated with Focus Area 3; Figure 3). Species identified by the EIA Screening tool include: *Mycteria ibis* (Yellow Billed Stork; LC), *Dasymys robertsii* (Robert's shaggy rat), *Lycaon pictus* (African Wild Dog: EN) and *Sagittarius serpentarius* (Secretary bird; EN).
Plant Species Theme (Figure 9)	For the plant species theme, the entire Study Area is considered to have a **low sensitivity**.
Strategic Water Source Areas (SWSA)	
SWSAs are defined as areas of land that supply a disproportionate (i.e., relatively large) quantity of mean annual surface water runoff in relation to their size. They include transboundary areas that extend into Lesotho and Swaziland. The sub-national Water Source Areas (WSAs) are not nationally strategic as defined in the report but were included to provide a complete coverage.	
Name and Criteria	The Study Area is not within 10 km of a Strategic Water Source Area.

NBA = National Biodiversity Assessment; SAPAD = South African Protected Areas Database; SACAD = South African Conservation Areas Database; NPAES = National Protected Areas Expansion Strategy; IBA = Important Bird Area; MAP = Mean annual precipitation; MAT = Mean annual temperature; MAPE = Mean annual potential evaporation; MFD = Mean Frost Days; MASMS = Mean annual soil moisture stress (% of days when evaporative demand was more than double the soil moisture supply); CBA = Critical Biodiversity Areas; ESA = Ecological Support Area

3.2.2 Ground-truthed habitat characteristics

Ground-truthing confirmed that the habitat units that actually occur on the site. These are discussed below and their spatial distribution is depicted in Figure 6.

a. Dichrostachys Bushveld: this subunit comprised the largest extent (approximately 165 ha) of the Bushveld Habitat Unit and supports a moderately low to moderate species richness. Thorny, woody species, particularly *Dichrostachys cinerea*, dominated within this habitat subunit. The subunit is currently utilised for grazing purposes and the grass layer throughout is dominated by species that are indicative of overgrazing, including *Heteropogon contortus* and *Aristida congesta* subsp*. barbicollis*;

b. Mixed Bushveld: this subunit comprised the smallest extent (approximately 4 ha) of the Bushveld Habitat Unit and supported a higher diversity of floral species, particularly broad-leaf woody species, than the remaining Bushveld Subunits. The subunit has been subjected to grazing pressures and grass species that are indicative of overgrazing, including *Heteropogon contortus* and *Aristida congesta* subsp. *barbicollis* are common within this subunit;

c. Degraded Bushveld: this subunit comprised the second largest extent (approximately 35 ha) of the Bushveld Habitat Unit and supported a low diversity of floral species. This habitat unit is largely degraded in nature and has historically been subjected to edge effects, including dumping, soil disturbance (attributed to vegetation clearing and excavation activities), severe historic and current grazing pressures, Alien and Invasive Species (AIP) infestation, firewood collection, and frequent fires. This subunit is characterised by a high abundance of weedy, pioneer species, most of which are either alien and invasive plants (AIPs) or species that thrive within disturbed conditions.

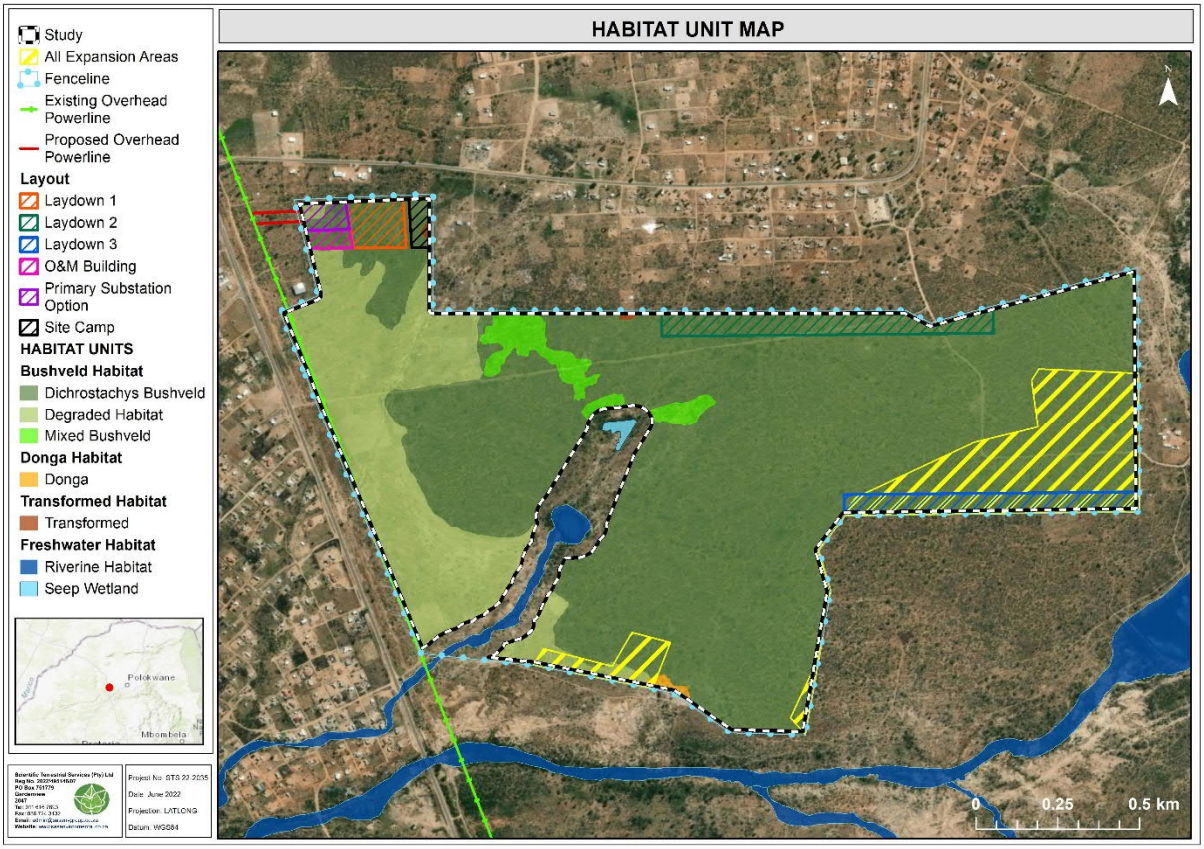

Figure 6: Ground-truthed habitat units on the site

Figure 7 shows the mapped floral sensitivity of the site. According to this map, all proposed footprint expansion areas have **a moderately low** floral sensitivity.

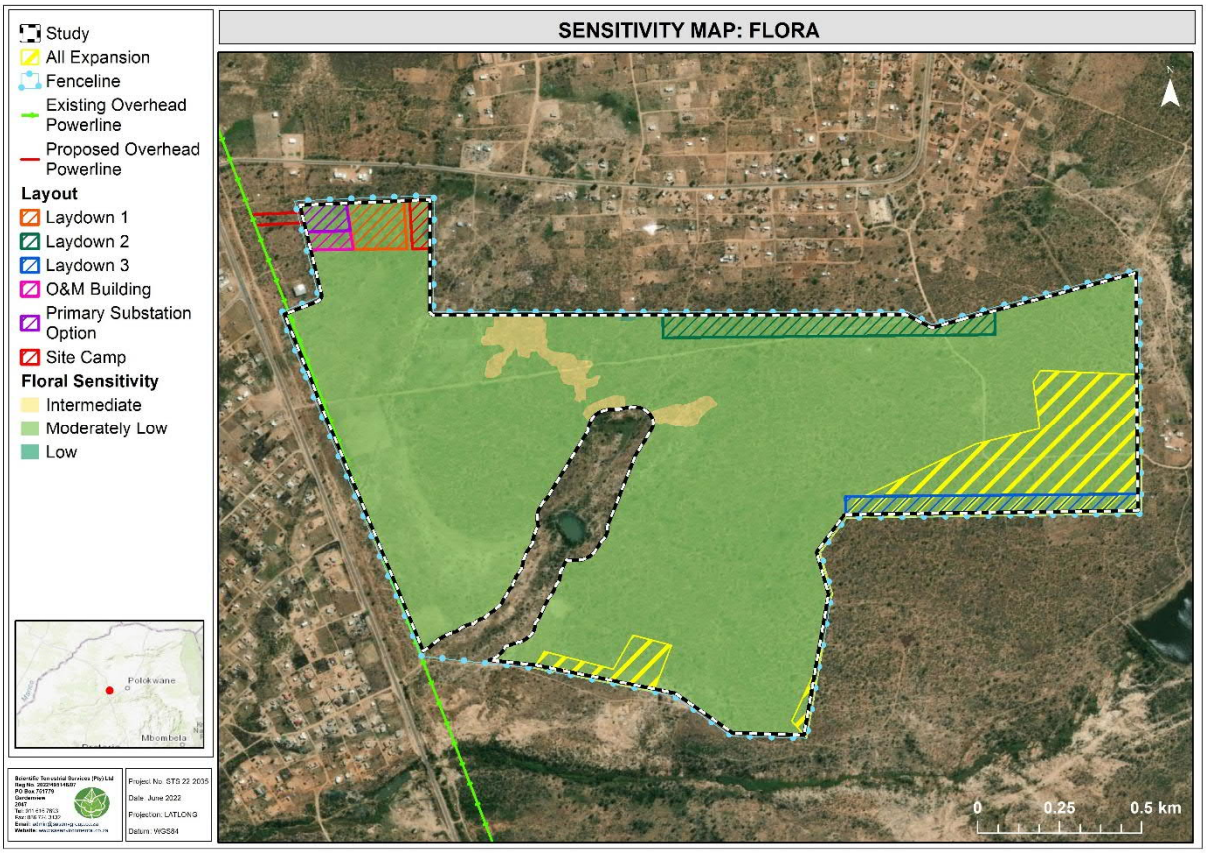

Figure 7: Floral sensitivity of the site

Figure 8 shows the faunal sensitivity of the site. According to this map, all proposed footprint expansion areas have **a moderately low** faunal sensitivity.

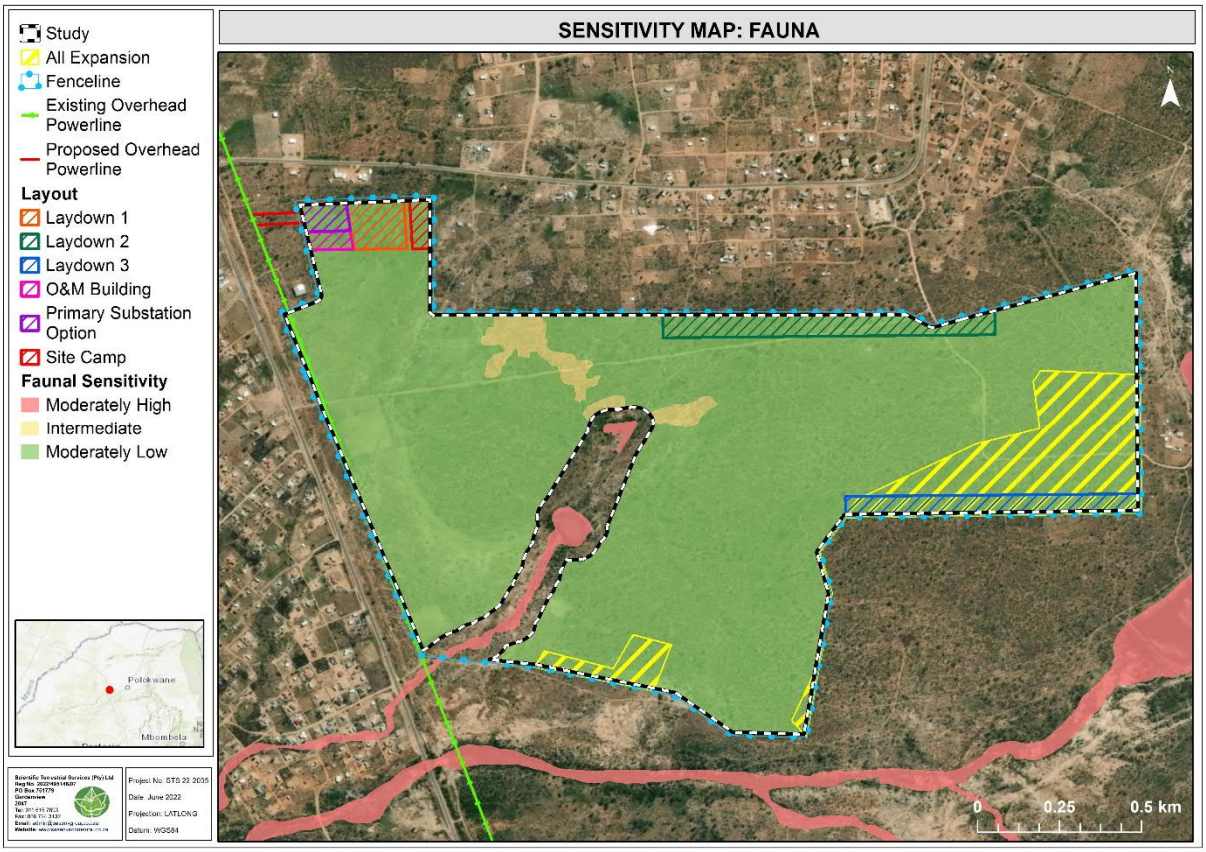

Figure 8: Faunal sensitivity of the site

3.2.3 Conclusions

Prior to mitigation measures implemented, the impact of the proposed development on the floral ecology within the study area is anticipated to be moderate to minor negative. With mitigation measures implemented, the direct and indirect impacts on the floral ecology will be reduced to minor to negligible negative levels during both the preconstruction, construction and operational phases of the project.

Figure 6 shows that the vast majority of the proposed expansion area has Dichrostachys Bushveld habitat – the same as most of the already authorised site – with small areas of degraded habitat on the southern boundary. As indicated above, grasses within this habitat unit are indicative of overgrazing, and the prevalence of *Dichrostachys cineria* as the dominant woody plant is a further indicator of over-utilisation and disturbance. **Considering the abundance of anthropogenic influences experienced, e.g., firewood collection, altered fire regimes, cultivation, grazing, and the overall encroached nature of the subunit, the Dichrostachys Bushveld subunit is no longer considered to be representative of the reference vegetation type (Makhado Sweet Thornveld).** Furthermore, all the proposed expansion areas are assessed to have moderately low floral sensitivity (Figure 7).

Therefore, habitat within the designated CBA 1 area within the proposed expansion is no different from the majority of the already authorised site. Hence, the CBA 1 area no longer represent important natural and ecological features or processes.

No threatened (Red Data List) species were found in the study area, nor was suitable habitat identified for such species. The proposed project will therefore not impact on threatened species. However, protected species as per the Limpopo Environmental Management Act, namely *Huernia cf. zebrina subsp. magnifolia*, the National Forests Act, namely *Sclerocarya birrea subsp. caffra*, *Combretum imberbe*, *Elaeodendron*, and *Boscia albitrunca*, and the TOPS List, namely *Harpagophytum zeyheri subsp. zeyheri*, were identified within the proposed expansion areas.

From a faunal point of view, it is concluded that existing and past disturbance cause the Mixed Bushveld habitat to have limited ecological value, although there is potential for increased diversity of common, resilient and small bodied insectivorous and herbivorous fauna in the summer months and therefore has an intermediate sensitivity. The Dichrostachys Bushveld and Transformed Habitat have the lowest ecological value from a faunal perspective, as bush encroachment and informal settlements have significantly degraded faunal resources in these localities. Therefore, they have a moderately low faunal sensitivity.

One faunal Species of Conservation Concern (SCC), *Ceratogyrus darlingi* (Horned Baboon Spider) was recorded within the proposed study area and there is a reasonable possibility that ten other SCC may utilise the study area to forage, travel and aestivate.

Faunal impacts of the proposed infrastructure (prior to mitigation) on faunal habitat, diversity and SCC is assessed to be moderate to minor, and following mitigation, is assessed to range from minor to negligible.

It is the opinion of the ecologist that there is no sufficient reason that the proposed development should not be authorized, provided that sensitive areas (which are not present within the study area) are excluded from the proposed development.

3.2.4 Spatial context of the expansion within the CBA 1

As already noted above, the habitat within the proposed expansion area into the CBA has moderately low sensitivity, faces many anthropogenic sources of disturbance and is no longer representative of the original reference vegetation type. It is worthwhile considering how much of the total CBA the proposed expansion area represents and where the expansion area is located relative to the CBA.

Since this proposed expansion area of the site is along the western boundary of the CBA 1 area, it would not fragment this CBA. This CBA provides a buffer of up to 3.2km around the Witvinger Nature Reserve south east of the site. The total area of the CBA 1 around Witvinger Nature Reserve is approximately 6427 ha. The area of the project that will intrude into this CBA represents approximately 0.25% of the

CBA 1. Given this small are of impact on the CBA 1, and the disturbed condition of the proposed expansion area, the overall conservation value of the CBA 1 would not be significantly reduced by the expansion of the plant footprint.

3.2.5 Key Recommendations

It is recommended that:

- a bush encroachment and AIP species management plan be developed to manage both the proliferation of bush encroachment and AIPs within the habitat Unit as a whole.
- the loss of ecosystem services (firewood collection, cultivation, grazing, and medicinal species), especially firewood collection, should be mitigated by providing the community with the woody vegetation removed from the site during construction.
- permits from LEDET and DFFE should be obtained to remove, cut, or destroy protected species before vegetation clearance takes place.
- a search and rescue plan should be devleoped for faunal SCC and implemented prior to construction.

3.3 Visual Impact Assessment

Create Landscape Architecture & Consulting was appointed to verify and confirm the potential changes to the landscape and visual impacts as the result of the proposed changes of the plant layout.

Table 6 below shows the comparison summary of the visual and landscape impacts for the already authorised portion of the project vs. the proposed expansion area.

Table 6: Summary of the impact comparison

Impact	Impact description	Impact significance based on initial authorised layout			Impact significance based on expanded layout		
		Construction phase	Operational phase	Decommissioning phase	Construction phase	Operational phase	Decommissioning phase
The change in landscape character and sense of place	Change in the landscape character and sense of place of the study area through the introduction of industrial type infrastructure.	Without mitigation: Minor With mitigation: Negligible	Without mitigation: Minor With mitigation: Minor	Without mitigation: Negligible With mitigation: Negligible	Remains the same as before expansion	Without mitigation: Negligible With mitigation: Negligible	Remains the same as before expansion
Visual intrusion and VAC	Level of compatibility and the ability of the landscape to visually absorb the proposed infrastructure, including contrasts in form, line, colour, and texture resulting from vegetation clearing.	Without mitigation: Negligible With mitigation: Negligible	Without mitigation: Minor With mitigation: Negligible	Without mitigation: Negligible With mitigation: Negligible	Remains the same as before expansion	Remains the same as before expansion	Remains the same as before expansion
Visibility and visual exposure	Visibility and presence of the cleared PV Facility and associated infrastructure. (Glint and glare and industrialisation of views).	Without mitigation: Minor With mitigation: Negligible	Without mitigation: Minor With mitigation: Negligible	Without mitigation: Negligible With mitigation: Negligible	Remains the same as before expansion	Remains the same as before expansion	Remains the same as before expansion
Night time lighting	Visibility of lighting associated with the proposed project.	Without mitigation: Negligible With mitigation: Negligible	Without mitigation: Minor With mitigation: Negligible	Without mitigation: Negligible With mitigation: Negligible	Remains the same as before expansion	Remains the same as before expansion	Remains the same as before expansion

3.3.2 Conclusion and recommendations

The impact on visual and landscape aspects of the project are expected to be largely similar to that which has already been authorised by the initial EIA process. Even though the PV plant footprint (considering the proposed expansion) will be larger, the overall impact significance will most likely be lower during the operational phase as a direct result of the smaller footprint of the transmission line (infrastructure component with the highest visibility), resulting in a negligible operational phase impact for landscape character and sense of place. Other impacts related to visual and landscape aspects of the project remain unchanged when compared to the authorised footprint.

3.4 Freshwater Ecosystems and Aquatic Ecological Impact Assessment

Scientific Aquatic Services (SAS) was appointed by Zutari to update the freshwater ecosystem and aquatic ecological assessment since the footprint of the proposed solar facility has been amended.

Note that this assessment was undertaken primarily for Water Use License applications for the project. The proposed project expansion areas do not encroach closer to freshwater resources further than is already authorised in the existing EA.

During the field assessment various freshwater ecosystems associated with the proposed project were identified, these include the Mohlosane River, Groot Sandsloot River, a single seep wetland and various ephemeral drainage lines (EDLs). These were all considered moderately modified and of moderate ecological importance and sensitivity (**Error! Reference source not found.**).

Table 7: Summary of the field assessment results

Freshwater Ecosystem	Present Ecological State (PES) / Ecostatus	Ecoservices	Ecological Importance and Sensitivity (EIS)	Recommended Ecological Category / Recommended Management Objective / Best Attainable State
Mohlosane River	Category C/D(Moderately to Largely Modified)	Intermediate	Moderate	REC Category: C BAS Category: C RMO: Maintain
Groot-Sandsloot River	Category C (Moderately Modified)	Intermediate	Moderate	REC Category: C/D BAS Category: C RMO: Maintain
Ephemeral Drainage Lines	Category C (Moderately Modified)	Intermediate	Moderate	REC Category: C BAS Category: C RMO: Maintain
Seep Wetland	Category C (Moderately Modified)	Intermediate	Moderate	REC Category: C BAS Category: C RMO: Maintain
Extent of modification	**Low** The assessed freshwater ecosystems (EDL's, Groot-Sandsloot and EDLs) will not directly be traversed by the proposed Mogalakwena PV infrastructure although some sections of the proposed infrastructure (solar PV footprint areas) are along the full supply level of the dam. In addition, potential edge effects of the plant should be minimised by ensuring that all construction activities, especially those nearest to the freshwater environments, are undertaken during the winter/dry season when flow is minimal Should these recommendations be adhered to, the proposed PV infrastructure is considered to have an overall low impact on the freshwater ecosystems.			

3.4.1 Summary of the DWS Risk Assessment Results

Table 8 below presents the results of the freshwater ecosystems risk assessment as per the DWS Risk Assessment Matrix.

Table 8: Summary of the DWS Risk Assessment results

Ref:	Project phase	Impact	Without Mitigation	With Mitigation
			Significance	Significance
1	Construction	Removal of vegetation within the development footprint and associated disturbances to soil resulting in loss of freshwater habitat.	Moderate - negative	Negligible - negative
2	Construction	Modification of hydrological function and water quality of the freshwater ecosystems	Moderate - negative	Negligible - negative
3	Construction	Changes to the freshwater geomorphological processes and sedimentation	Moderate - negative	Negligible - negative
4	Construction	Impacts on the freshwater ecosystems leading to the loss of biota.	Moderate - negative	Negligible - negative
5	Operation	Removal of vegetation within the development footprint and associated disturbances to soil resulting in loss of freshwater habitat.	Negligible - negative	Negligible - negative
6	Operation	Modification of hydrological function and water quality of the freshwater ecosystems	Negligible - negative	Negligible - negative
7	Operation	Changes to the freshwater geomorphological processes and sedimentation	Negligible - negative	Negligible - negative
8	Operation	Impacts on the freshwater ecosystems leading to the loss of biota.	Minor - negative	Negligible - negative

3.4.2 Conclusion and recommendations

Since the current footprint layout of the solar facility was amended to avoid traversing or encroaching into the freshwater ecosystems, the overall risk significance for the Mohlosane River, Groot-Sandsloot and the EDL's was assessed to be of 'Low-risk' significance. On condition that the site-specific mitigation measures are implemented during all phases of the project and conducting construction activities during dry season the risk significance of the proposed project can be of 'Low' risk significance.

3.5 Heritage Impact Assessment

PGS conducted an update of the Heritage Impact Assessment for the proposed solar facility. The desktop findings show that the surroundings of the study area are characterised by the by a long and significant history. While the assessment of the available historical maps did not reveal the presence of any heritage features.

The fieldwork component of the amendment study was aimed at assessing all the amended footprint areas currently proposed and which had not been assessed during the fieldwork of the screening and scoping phases. The aim of all this fieldwork was to identify tangible remains of archaeological, historical and heritage significance. Four (4) sites, that were previously recorded fell within the amended footprint (MGSP 3, MGSP 5/ MGSP 22, MGSP 7, & MGSP 11), while four (4) sites fell within a 100m of the proposed amended footprint boundary (MGSP 4/MGSP 17, MGSP 9, MGSP 12 & MGSP 21).

3.5.1 Summary of the impact assessment and mitigation

Table 9: Summary of the heritage impact assessment

Impact	Impact description	Without Mitigation	With Mitigation	Mitigation
Impact on Burial Grounds and Graves (Construction)	Destruction of /Damage to Graves and Burial Grounds	Moderate–negative significance	Moderate–negative significance	These sites are MGSP 3: As cemeteries and graves have Medium to High Heritage Significance, the best option is to change the development footprint to allow for the *in situ* preservation of these sites. This can only be achieved is a buffer area of at least 100mbetween the proposed development footprints and the sites can be established. Should it not be possible to preserve these sites in situ, the required mitigation measures are presented in the specialist report (included in appendix 4) These sites are MGSP 9: The following initial mitigation measure is required: A social consultation process to assess whether any local residents or the wider public is aware of the presence of graves at these sites. Depending on the outcome of the social consultation process, three different outcomes would be: Outcome 1: The social consultation absolutely confirms that no graves are located here •Outcome 2: The social consultation absolutely confirms that graves are located here. •Outcome 3: The social consultation does not yield any confident results. Mitigation measures for sites falling under outcome 1,2 and 3 are discussed in detail in the specialist report (included in appendix 4)
Impact on Possible Graves and Homesteads with the Risk for Unmarked Graves (Construction and Operation)	Destruction of / Damage to Graves	Moderate–negative significance	Negligible–negative significance	
Impact on Stone Age (Construction)	Destruction of /Damage to Stone Age	Moderate–negative significance	Negligible–negative significance	These sites are MGSP4 (MGSP 17):

Impact	Impact description	Without Mitigation	With Mitigation	Mitigation
				• The sites must be assessed in the field by a suitably qualified Stone Age specialist (for site MGSP 4) • The recommendations made by the respective specialist for each site must be adhered to. Such recommendations may include archaeological excavation

3.5.2 Conclusion and recommendations

No heritage resources of significance have been identified within the footprint of this application. Heritage resources that are expected to be affected are related to the authorised footprint. As a result, on the condition that the recommendations made in this report are adhered to, no heritage related reasons can be given for the development not to continue.

3.6 Social Impact Assessment

The purpose of the social impact assessment is to provide input to the assessment of impacts of the proposed changes in the solar facility footprint. Table 10 below shows the summary of the impacts that were assessed for the footprint extension.

3.6.1 Summary of impact and mitigation

Table 10: Summary of the social impacts and mitigation measures

Impact	Impact description	Without Mitigation	With Mitigation	Potential Mitigation
Community expectations (Construction)	Communities expect that they should benefit from the mine and its associated project	Negative	Positive	Communication strategy, open and honest communication, establish working group with representatives from various communities or interest groups
Community resistance to proposed project (Construction)	Some groups are strongly opposed to project, mainly due to poor social license to operate from mine	Negative	Positsive	Engage with communities, determine social protocols, strategy for regaining social license to operate, policy on dealing with community conflict
Community relations (Construction)	The relationship between the mine and the community is tense due to mistrust and perception that mine is not delivering on benefits committed to in the past	Negative	Positive	Community relations strategy, grievance mechanism
Uncertainty (Construction)	Some community members are uncertain about how project will affect their lives	Negative	Positive	Communication strategy
Relocation (Construction)	Some households may need to be relocated	Negative	Negative	Relocation action plan, livelihood restoration plan
Loss of livelihoods (Construction)	Concerns that project may lead to loss of livelihoods as some use site for grazing and agricultural activities	Negative	Negative	Compensate affected people for loss of livelihood, indigenous plant nursery
Job creation (Construction)	Jobs for approximately 1 500 people will be created during the construction phase	Positive	Positive	Use local labour as far as possible, recruitment policy, skills development plan
Economic opportunities (Construction)	Economic opportunities associated with project for entrepreneurs	Positive	Positive	Procure locally as far as possible, local procurement policy

Impact	Impact description	Without Mitigation	With Mitigation	Potential Mitigation
Community shareholding (Construction)	It is planned that the community will hold shares in the project and lease land to mine	Positive	Positive	Establish community trust in collaboration with communities
Traffic impacts (Construction)	Increase in traffic creates concerns regarding community safety	Positive	Positive	Traffic management plan
Physical infrastructure (Construction)	Potential shortage of housing and access to basic services such as water and electricity. Potential presence of construction camp	Negative	Negative	Plan contractor housing in advance, construction camp according to international best practice
Environmental impacts with social dimensions (Construction)	Impacts such as dust, noise, light and visual can impact on the quality of life and sense of place of community members	Negative	Negative	Mitigation measures of relevant specialist studies, community liaison forum
Community expectations (Operation)	Communities expect that they should benefit from the mine and its associated project	Negative	Positive	Communication strategy, open and honest communication, establish working group with representatives from various communities or interest groups
Community relations (Operation)	The relationship between the mine and the community is tense due to mistrust and perception that mine is not delivering on benefits committed to in the past	Negative	Positive	Community relations strategy, grievance mechanism
Job creation (Operation)	Jobs for apparently 50 people will be created during the operation phase	Positive	Positive	Use local labour as far as possible, recruitment policy, skills development plan
Economic opportunities (Operation)	Economic opportunities associated with project for entrepreneurs	Positive	Positive	Procure locally as far as possible, local procurement policy

Impact	Impact description	Without Mitigation	With Mitigation	Potential Mitigation
Community shareholding (Operation)	Implementation and management of community shareholding	Positive	Positive	Manage community trust in collaboration with communities
Environmental impacts with social dimensions (Operation)	Impacts such as dust, noise, light and visual can impact on the quality of life and sense of place of community members	Negative	Negative	Mitigation measures of relevant specialist studies, community liaison forum
Community expectations (Decommissioning)	Communities expect that they should benefit from the mine and its associated project	Negative	Positive	Communication strategy, open and honest communication, working group with representatives from various communities or interest groups
Community relations (Decommissioning)	The relationship between the mine and the community is tense due to mistrust and perception that mine is not delivering on benefits committed to in the past	Negative	Positive	Community relations strategy, grievance mechanism
Loss of livelihoods (Decommissioning)	Those employed at the facility will become unemployed	Negative	Negative	Implement measures in accordance with Labour Relations Act

3.6.2 Conclusion and recommendations

The change in footprint will most likely not cause any additional impacts other than those that were identified in the original SIA report and social impact management plan is included in the updated specialist report (included in appendix 4). The proposed solar facility has great expectations from the community, speciality the demands for jobs. The impacts associated directly with the construction and operation of a PV plant are not major. However, the strained relations between the mine, and the strained relations between some community groups pose a significant business risk to the project. It is the responsibility of the mine to repair relations with the communities to reduce the business risk for the PV facility.

3.7 Agricultural Compliance Statement

The original agricultural compliance statement completed in June 2021 as part of the EIA process, assessed a larger area covering the entire site that is within the property boundary. The only impact was the possible loss of agricultural potential by occupation of the land by the solar plant facility. The significance of this impact, in terms of its effect on agricultural production, was assessed as negligible. The reason is that the site is not currently used for agricultural production and located in an expanding urban development and mining activity. It is unlikely to be used for agricultural production, even in the absence of the proposed footprint expansion.

The proposed refinement of the facility footprint has no agricultural impact. The changes to the overhead transmission line connection also have no agricultural impact. The proposed amendment will not change the nature or significance of any of the impacts assessed in the original compline statement. There are no agricultural advantages or disadvantages related to it. The amendment does not require any changes or additions to the mitigation measures for agricultural impacts that were recommended for the authorised development. Therefore, no changes to the EMPr are required.

3.8 Noise Compliance Statement and Screening Noise Report

Enviro-Acoustic Research carried out a screening assessment to assess the potential noise impact as the result of the proposed changes of the solar energy facility.

The initial assessment that was conducted as part of the EIA concluded:

- That the daytime noise impact from the construction phase of the plant may be moderate; and
- That the daytime and night-time noise impact from the operational phase of the PV facility would none.

The proposed changes in the footprint of the solar energy facility will slightly move the locations of activities that would generate noise in the following manner:

- During the tconstruction phase:
    - The fence and project facilities are moved further from Noise-sensitive Receptor (NSR) 1, 2, 3, 6 and 7 (from less than 50m to more than 65m). The significance of the noise impact will likely reduce (as determined by Hassall, 2021);
    - The fence and project facilities are moved closer to NSR 4 and 5 (from 195m to ±80m). The significance of the noise impact will likely slightly increase to moderate;
- During the operational phase:
    - The substation is located at a similar position from NSR 1, 2, 3, 6 and 7, though the PV Invertors may be located further from the NSR. The potential significance of the noise impact would remain none;

- The PV Invertors are moved closer to NSR 4 and 5. Hassall (2021) calculated that the noise level will be less than 35dBA (31dBA) at 50m. The potential significance of the noise impact would remain none at these NSR

Considering the distance of potential noise source from Noise-sensitive Receptors (NSRs), the temporary nature of construction noise impacts as well as the low magnitude of operational noises, the changes in the footprint will not increase the significance of the noise impact. The specialist findings concluded that there are no further scoping or other acoustic studies required for the proposed changes to the plant footprint. Therefore, it is recommended that the changes in the footprint be authorized from an acoustic perspective.

4. PUBLIC PARTICIPATION PROCESS

As a Part 2 amendment in terms of the NEMA EIA regulations of 2014 (as amended), this report must be subjected to a 30-day public participation process (PPP) to comply with Regulation 32 of the EIA Regulations (GN R 982 of 2014). The aim of the PPP is to inform Interested and Affected Parties (I&APs) and stakeholders (including organs of state that have jurisdiction over the relevant activity and the competent authority) of the proposed amendment to allow an opportunity to review and comment on the application for amendment. Registered I&APs are listed in Appendix 5 and proof of the notification measures described below are included in Appendix 6.

The PPP includes the following:

- Advertisement in the Bosveld Review and Polokwane Observer to notify I&APs of the proposed amendment and their opportunity to participate;
- Notice boards erected on the site to inform potential I&APs of the proposed amendment and opportunity to participate;
- Written notifications sent by email and normal mail to all registered I&APs;
- Download links for the Part 2 Amendment Report provided in all correspondence. The report can be downloaded from the Zutari website at https://zutari/mogalakwena-pv/;
- I&APs may also contact **PPP@Zutari.com** to request a digital copy of this report; and
- The Draft Amendment report will be made available for 30-day comment period from 17 November 2022 to 9 January 2023.

All comments and responses received from the public and authorities will be in a Comments and Responses Report (CRR) which will be attached to the Amendment Report for submission to the LEDET.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Based on the information at its disposal, Zutari, as the Environmental Assessment Practitioner (EAP), is of the opinion that the impacts of the proposed expansion of the footprint of the Mogalakwena solar PV SEF will not create a significant negative impact.

The reasons for this recommendation are based on the conclusions of the range of specialist studies prepare for this proposed expansion. The findings of these studies are summarised below.

- The *Dichrostachys* Bushveld subunit in which the majority of the expansion is proposed is no longer considered to be representative of the reference vegetation type (Makhado Sweet Thornveld). Furthermore, all the proposed expansion areas are assessed to have moderately low floral sensitivity (Figure 7). Habitat within the designated CBA 1 area within the proposed expansion is no different from the majority of the already authorised site. Hence, the CBA 1 area no longer represent important natural and ecological features or processes.
- Since this proposed expasion area is located along the western boundary of the CBA 1 area, it would not fragment this CBA. This CBA provides a buffer of up to 3.2km around the Witvinger Nature Reserve south east of the site. The total area of the CBA 1 around Vitvinger Nature Reserve is approximately 6427 ha. The area of the project that will intrude into this CBA represents 0.25% of the CBA. Given this small proportion of the impact on the CBA 1, the overall conservation value of the CBA 1 will not be significantly reduced by the expansion of the plant footprint.
- It is the opinion of the ecologist that there is no sufficient reason that the proposed expasion should not be authorized, provided that sensitive areas (noe of which occur on the site) are excluded from the proposed development.
- The visual impact assessment concludes that proposed expansion of the PV plant footprint area will have the same impacts as the initial authorised layout.
- Considering the distance of potential noise source from noise-sensitive receptors, the temporary nature of construction noise impacts as well as the low magnitude of operational noises, the changes in the footprint will not increase the significance of the noise impact.
- The current footprint layout of the solar facility encroach into the freshwater ecosystems and the overall risk significance to freshwater resources is assessed to be of 'Low-risk' significance, provided that the site-specific mitigation measures are implemented throughout the project cycle;
- In terms of the heritage fabric of the amended footprint, the impact on identified heritage sites will result in negative impacts of 'Low' to 'Medium' significance. On condition that the recommendations made in the heritage specialist report are adhered to, no heritage related reasons can be given for the development not to continue; and
- The social impacts associated directly with the construction and operation of a PV plant are not major. However, the strained relations between the mine, and the strained relations between some community groups pose a significant business risk to the project. It is the responsibility of the mine to repair relations with the communities to reduce the business risk for the PV facility.

5.2 Recommendations

Zutari recommends that the application for amendment of the EA for the authorised solar PV plant should be approved.

Permits for the removal / relocation of all SCC that were marked during the field investigation must be obtained and are currently in process. A search and rescue of all SCC must be conducted prior to the construction commencement. Good record-keeping will be necessary to record this process and to document all successes and failures associated with the relocation of any SCC. It is strongly advised

that rescue and relocation plan is designed and implemented prior to development for the Horned Baboon Spider during development.

Fromn a heritage perspective, all recommendations of the Heritage Impact Assessment must be followed to mitigate impacts on the heritafe sites within the proposed footprint area.

The applicant must adhere to all recommended mitigation measures and conditions deemed appropriate by the LEDET.

APPENDIX 1: Environmental Authorisation

APPENDIX 2: Authority communications

APPENDIX 3: Maps and Drawings

APPENDIX 4: Specialist Assessments

APPENDIX 5: Public Participation Process

In diversity there is beauty and there is strength.

MAYA ANGELOU

Document prepared by:
Zutari (Pty) Ltd
Reg No 1977/003711/07
Riverwalk Office Park
41 Matroosberg Road
Ashlea Gardens
Extension 6
Pretoria
South Africa
PO Box 74381
Lynnwood Ridge
0040

T +27 12 427 2000
F +27 86 556 0521
E tshwane@zutari.com

ZUTARI
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