

The Proposed Construction of the 14MW Machadodorp PV 1 Solar Energy Facility on Portion 8 of the farm De Kroon 363 in the Emakhazeni Local Municipality in Mpumalanga Province.

Site Verification and Motivation for Amendment of the
Environmental Authorisation

DFFE Ref.: 14/12/16/3/3/1/738/AM5

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PROJECT DETAILS

Title	:	Construction of the 14MW Machadodorp PV 1 Solar Energy Facility on Portion 8 of the farm De Kroon 363 in the Emakhazeni Local Municipality in Mpumalanga Province.
DFFE Reference	:	14/12/16/3/3/1/738/AM5
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Client	:	Machadodorp1 PV Project (Pty) Ltd
Report Status	:	Draft Motivation Report for 30-day review and comment period

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PURPOSE OF THE REPORT

Machadodorp1 PV Project (Pty) Ltd proposes to make an amendment to an existing Environmental Authorisation (EA) for the proposed construction of the 14MW Machadodorp PV 1 Solar Energy Facility on Portion 8 of the farm De Kroon 363 of the Emakazheni Local Municipality in Mpumalanga Province (DFFE Reference: 14/12/16/3/3/1/738), issued on the 21 May 2013. The amendment being applied for is to extend the commencement period (validity) of the Environmental Authorisation by an additional 10 years.

An application for amendment has been submitted to the Department of Forestry, Fisheries and the Environment (DFFE). Additional information has been requested (in terms of Regulation 30(1)(a) of the EIA Regulations, 2014 as amended) for the Department to be able to process the application for amendment. Savannah Environmental, as independent consultant, has prepared this Site Verification and Motivation Report in support of the application for the proposed amendments on behalf of Machadodorp1 PV Project (Pty) Ltd.

This report aims to provide details pertaining to the environmental impacts as a result of the requested amendment in order for interested and affected parties to be informed and submit comments for the competent authority to be able to reach a decision in this regard. This report is supported by specialists' site verification and motivation reports to inform the conclusion and recommendations regarding the proposed amendment (refer to **Appendix A - C** of this report). This Site Verification and Motivation Report must be read together with these specialist reports (as well as the original specialist assessments conducted during the EIA process) to obtain a complete understanding of the proposed amendments and the implications thereof from an environmental perspective.

This Motivation Report has been made available for a 30-day review and comment period in accordance with the requirements of the DFFE from **Thursday 13 July 2023 to Tuesday 15 August 2023**. The availability of the Motivation Report for the 30-day comment and review period was advertised in **Lowvelder Newspaper** on, **Thursday 13 July 2023** (refer to **Appendix D** of the Motivation Report).

The Motivation Report is available for download from Savannah Environmental's website: <https://www.savannahsa.com/public-documents/energy-generation/>. To register on the project database as an interested and affected party, as well as obtain further information about the project, or submit written comments, please contact:

<p>Cornelius Holthauzen of Savannah Environmental Post: PO Box 148, Sunninghill, 2157 Johannesburg Tel: 011 656 3237 Fax: 086 684 0547 Mobile: 060 978 8396 Email: publicprocess@savannahsa.com www.savannahsa.com</p>

All comments received during the 30-day review and comment period will be included within a Comments and Responses Report (C&RR) to be submitted to the DFFE with the Final Motivation Report for consideration and decision-making.

1. OVERVIEW OF THE PROJECT

1.1. Location

The 14MW Machadodorp PV 1 solar energy facility is proposed on Portion 8 of Farm De Kroon 363 located approximately 4 km south-west of Machadodorp, also known by its official name eNtokozweni, in the Mpumalanga Province, and falls within the jurisdiction of the Nkangala District Municipality DC31 and the Emakhazeni Local Municipality (see Figure 1.1). The site is accessible from the N4 highway towards eNtokozweni (Machadodorp), and an existing access road (gravel) on the proposed farm portion.

The following infrastructure associated with the proposed solar energy facility has been authorised by the Department of Forestry, Fisheries and the Environment (DFFE):

- » Photovoltaic (PV) panels with an installed capacity of up to 10MW;
- » On-site transformer station to facilitate the connection between the solar energy facility and the grid;
- » Two power line options are proposed for connection: Option 1 will connect to the existing 22kV power line south of the site via a short power line (approx. 100m). Electricity generated will then be evacuated to the Machadodorp substation using existing transmission infrastructure on site. Option 2 would be to connect to the Eskom's Prairie-Machadodorp 132kV power line on the east of the site thereby evacuating the electricity directly to the Assmang Machadodorp Works mine substation;
- » Cabling between project components, to be laid underground where practical;
- » Internal access roads; fencing; and
- » Workshop area for maintenance storage, and offices.

1.2. Status (baseline) of the Environment assessed through the Environmental Impact Assessment (EIA) Process (BAR report, January 2013)

The findings of the specialist studies undertaken during the EIA undertaken during 2012 and 2013 assess both the benefits and potential negative impacts anticipated as a result of the proposed PV development and conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding. The table below summarises the baseline status of the environment that was assessed through the EIA process during 2012 and 2013 for the proposed SEF.

Topography and site extent	<p>The site, in the vicinity of eNtokozweni (Machadodorp), is located at the edge of the escarpment before ascending into the subtropical Lowveld plains in an easterly direction.</p> <p>However, the character of the subject property and its immediate surroundings typifies an agrarian landscape with vast open field for grazing. The project site is completely devoid of any trees or large shrubs, the topography in the vicinity of the subject property is characterised by undulating plains and open valleys. No prominent mountains or steep hills are evident on the highlands.</p> <p>The height variations of the subject property vary between 1580m and 1625m above mean sea level. The preferred project site is relatively flat on a slight downward northerly slope and only varies by approximately 30m over a distance of approximately 680m with an average gradient of between 1 and 8% which drains to the north, east and west into tributaries of the De Kroonspruit, which flows north-eastwards towards the town of (eNtokozweni) Machadodorp.</p>
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	<p>The project site consists of a single site to be established on Portion 8 of the Farm De Kroon No. 363 JT. The total property area of approximately 110ha was considered for installation of the facility while only approximately 20ha have been made available for the establishment of the proposed activity.</p> <p>The study area is underlain by rocks of the Lydenburg Member of the Silverton Formation (Pretoria Group, Transvaal Sequence) which are estimated to be between 2.15 billion years old.</p> <p>The Lydenburg Member consists predominantly of green or brown, fine grained laminated shales with minor interbedded carbonate layers and hornfels. These rocks have been intruded locally by younger diabase/dolerite dykes. The local shales on the farm are conveniently exposed in two pits near proposed site of the substation. The shales are light brown to orange, micaceous, slightly weathered and moderately to highly fractured. The bedrock is shallow and overlain by a very thin silty sandy gravel. The soil types can be broadly classified according to the Universal Soil Classification as GM or GC (poorly graded silt-clay-gravel mixes with low to moderate plasticity). The thickness of the soil cover is generally less than 0.3m and low outcrops of the underlying bedrock are common. Thick accumulations of soil are anticipated in the valleys along the western and eastern farm boundaries.</p> <p>The subject property borders the N4 national route to the north, while the R36 is located some 2km to the east. The N4 is the major link road between Pretoria in the west and Maputo, via Mbombela (Nelspruit), in the east. The current Pretoria – Maputo railway line crosses some 2km to the east, adjacent to Emthonjeni.</p> <p>The Fairview Trac-Machadodorp 132kV electrical power line servitude crosses the subject property in the east. The Prairie-Machadodorp 132kV electrical power line connects to the Fairview Trac-Machadodorp line in the south –eastern corner of the subject property.</p> <p>Together these lines traverse the subject property enroute to the Machadodorp substation in the north.</p> <p>The electricity generated on site will be evacuated into the electrical grid at a point underneath the combined Fairview Trac-Machadodorp line.</p>
Environmental Considerations	<p>ECOREX Consulting Ecologists CC conducted the terrestrial ecology study for the Authorised BAR during November 2012. The study comprised flora and vertebrate fauna (mammals, birds, reptiles, frogs). The key objective of this study was to conduct a baseline terrestrial ecology study of the precinct area and assess the biodiversity value of the terrestrial habitats represented.</p> <p>The study area was found to be situated within Lydenburg Montane Grassland, which has a national ecosystem status of Vulnerable. The entire study area comprises one vegetation community which has a distinctive vegetation structure, floristic composition and position in the landscape, namely <i>Ctenium concinnum</i> - <i>Brachiaria</i> Untransformed Grassland. One hundred and twenty plant species were recorded within the study area during a single day's fieldwork. Six species were considered to be species of conservation importance, i.e. threatened, endemic and / or protected species. Two of these listed in the Red Data publication as being of conservation concern (<i>Boophone disticha</i>, <i>Eucomis autumnalis</i> subsp. <i>clavata</i>), although neither are considered threatened.</p> <p>No fauna species of conservation concern were confirmed during fieldwork. Two Near Threatened mammal species were considered to have a high likelihood of occurring in the study area, namely Aardvark and Serval, although only Serval has national NT status. One threatened bird species</p>

	<p>(Southern Bald Ibis) and two near Threatened species (Lanner Falcon and Secretarybird) have a High likelihood of occurrence. Two reptiles with provincial conservation status have a moderate likelihood of occurring (Coppery Grass Lizard and Many-spotted Snake).</p> <p>Findings of the terrestrial ecology study identified the site as untransformed grassland that appears to have been heavily grazed historically, identifying the prominent vegetation type as <i>Ctenium concinnum</i> – <i>Brachiaria serrata</i> Untransformed Grassland with a rating of High Conservation Importance and Moderate Functional Importance. Integration of these values produced a Biodiversity Value of High.</p> <p><i>Ctenium concinnum</i> – <i>Brachiaria serrata</i> Untransformed Grassland is in an untransformed state, is representative of a nationally threatened vegetation type, has low levels of infestation by alien species, is connected to larger portions of untransformed habitat, and has a high potential for supporting species of conservation concern. The rating of High Biodiversity Value described above is thus justified.</p> <p>However, the entire study area falls within an area that was found to be ranked as Least Concern within the Mpumalanga Biodiversity Conservation Plan (MBCP). Areas classified as Least Concern and No Natural Habitat Remaining are the preferred areas for a wide variety of land-use types, which includes urban and business development.</p> <p>The Soils Report undertaken by Outeniqua Geotechnical Services cc during November 2012 as part of the initial EA process concluded that, if suitable mitigation measures be applied, the proposed activity would have an overall low <i>negative</i> impact on the soil and the agricultural potential within the development area. The proposed development would potentially make a significant <i>positive</i> impact on the geological environment in terms of a reduction in demand (and exploitation) for non-renewable energy sources. This is particularly important in a cumulative context on a national scale.</p> <p>The site has been found to be technically well positioned for the development of a photovoltaic solar power plant. The facility position will take advantage of the right environmental conditions for sustainable renewable electricity generation, and transmission due to existing powerline and substation infrastructure in the area.</p>
<p>Land use type</p>	<p>Although the property falls within an area with a high agricultural potential in general, the property itself is mostly non-arable with shallow soils and/or rock outcrops and natural grasses dominant. The current land use on the proposed site is grazing livestock only (cattle) and there is no crop production. The estimated carrying capacity is 5 – 7 hectares per large stock unit under these conditions.</p> <p>The property is situated within the Ad10 landtype and the dominant soils consist of rock outcrop and shallow soils of the Mispah and Glenrosa forms. Effective rooting depths of <30cm and gravelly sandy clay topsoil textures occur. Yellow and red apedal soils of the Clovelly and Hutton soil forms with medium soil depths (30 – 70cm) and sandy clay to clay textures occur sub-dominantly. The soils are well drained with high water holding capacities. Due to the high rainfall, the soils are dystrophic (highly leached) with an acid reaction (low pH). Production of maize on the better apedal Hutton and Clovelly soils, is estimated at between 4 – 5 ton/hectare under rain fed conditions.</p> <p>Agricultural potential is primarily determined by the suitability of the soil profile to support crop production. The soil needs to be adequately thick to support root development and the drainage characteristics needs to be good to prevent chemical crusting on the surface. The presence of</p>

	<p>shallow soils places a significant limitation on agricultural potential. The agricultural potential of the site is therefore considered to be low.</p>
<p>Visual</p>	<p>The property falls within the Mpumalanga Highlands Meander, an area where tourism is brought to the fore. The significance of the Mpumalanga Highlands Meander is well known. The meander primarily focuses on tourism and the promotion of the towns that form part of this initiative. Apart from the physical activities that users of the meander may take part in, a number of passive tourist facilities have also been established in the region. The most prominent facilities, namely the Rolling Hills Estate and the Highlands Suites and Kloppenheim Country Estate</p> <p>However, the character of the subject property and its immediate surroundings typifies an agrarian landscape with vast open field for grazing. Commercial livestock (cattle) farming is the main form of farming in the region. The sense of place of the Machadodorp region is twofold, namely an agrarian landscape, dotted by agricultural farmsteads set against a backdrop of conservation-worthy rivers, streams and valleys.</p> <p>The height variations of the subject property vary between 1580m and 1625m above mean sea level. The preferred project site is relatively flat and only varies by approximately 30m over a distance of approximately 680m.</p> <p>The project site is completely devoid of any trees or large shrubs. The topography in the vicinity of the subject property is characterised by undulating plains and open valleys. No prominent mountains or steep hills are evident on the highlands.</p> <p>The Fairview Trac-Machadodorp 132kV electrical power line servitude crosses the subject property in the east. The Prairie-Machadodorp 132kV electrical power line connects to the Fairview Trac-Machadodorp line in the south –eastern corner of the subject property. Together these lines traverse the subject property en-route to the Machadodorp substation in the north.</p> <p>The electricity generated on site will be evacuated into the electrical grid at a point underneath the combined Fairview Trac-Machadodorp line.</p> <p>Major movement routes in the vicinity of the site include the N4; the R36, and the R541. Few major farmsteads, and tourism facilities are visible in the region of the proposed development.</p>
<p>Industry and Economic Stimulus</p>	<p>The proposed Machadodorp SEF is located in the Mpumalanga Province which covers an area of 76 495 km², which is the represents 6.5% of the total area of South Africa. The SEF is located in the Emakazheni Local Municipality (ELM) in the Mpumalanga Province. The ELM is one of seven local municipalities that make up the Nkangala District Municipality (NDM). The town of Belfast is the administrative seat of the ELM, while Middelburg is the administrative centre of the NDM. Nelspruit, which is located ~109 east of the town of Machadodorp, is the capital of the Mpumalanga Province.</p> <p>In 2007, the population of the Mpumalanga was ~ 3.6 million with a growth rate of approximately 1.5% per annum, which was lower than the national population growth rate ~ 2% per annum in 2007. This has been attributed to a number of factors, including slow economic growth, low employment and the subsequent out-migration to neighbouring provinces. The impact of HIV/AIDS has also been identified as a contributing factor.</p> <p>Mpumalanga's labour market is characterised by a low participation rate and a high unemployment rate. In 2007, the unemployment rate in the province was estimated at 22.9%. Unemployment rates in Mpumalanga are high even for individuals who have completed their secondary education.</p>

	<p>Mpumalanga's economy remains heavily reliant upon the primary sector, accounting for 22% of GGP of which mining and quarrying account for 83.5% of the value added, with the balance contributed by agriculture and other small industries.</p> <p>The key economic sectors in the province include Mining and Energy, Agriculture, Manufacturing and Tourism.</p> <p>Mpumalanga produces 90% of South Africa's coal and provides the sources of 77% of the country's electricity generation. Other products mined include granite (for construction), gold, platinum-group metals, and chrome & vanadium (ferro-alloys).</p> <p>Mpumalanga is the fourth largest petroleum user of the 9 provinces in South Africa, largely due to the prevalence of energy-intensive sectors such as mining (7%), agriculture (3%), industry (36%) and transport (26%).</p> <p>The dominant land use activity on and around the proposed project site is farming, specifically sheep and cattle farming. In addition to farming the other major land use in the area is mining and the associated processing operations.</p> <p>At a provincial level the Mpumalanga Provincial Growth and Development Strategy (MPGDS) makes reference to the need to identify and develop domestic renewable energy projects and promote renewable energy technology use at the commercial, industrial and domestic level. In addition, the Nkangala District Municipality (NDM) IDP 2012/13 states that, "in promoting environmental sustainability, the NDM has realized the need to explore other energy forms, which are renewable, beyond focusing on coal-generated electricity as the main supply of energy."</p> <p>The findings of the SIA conducted during November 2012 indicate that the development of the Machadodorp SEF will create employment and business opportunities for locals during both the construction and operational phase of the project. The development of Machadodorp SEF also creates an opportunity to support local economic development in the area. This represents a social benefit for an area where there are limited opportunities. However, the benefits will be limited due to the relatively small scale of the project.</p> <p>The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole. The establishment of the proposed Machadodorp SEF was supported by the 2012 specialist study.</p>
<p>Site access</p>	<p>The subject property borders the N4 national route to the north, while the R36 is located some 2km to the east. The N4 is the major link road between Pretoria in the west and Maputo, via Mbombela (Nelspruit), in the east. The current Pretoria – Maputo railway line crosses some 2km to the east, adjacent to Emthonjeni.</p> <p>An internal gravel road network will be used by construction vehicles and will be retained throughout the lifetime of the facility for use by maintenance vehicles. Existing roads and tracks will be used, where possible.</p>
<p>Other planned Projects in the area (during EIA Phase)</p>	<p>According to the DFFE SA Renewable Energy EIA Application Database (REEA) there are no other renewable energy facilities planned within a 30km radius of the project site. The specific facilities can be viewed on the Cumulative Map Figure 1.2</p>

1.3. Potential Environmental Impacts determined through the Environmental Impact Assessment (EIA) Process:

From the specialist investigations undertaken as part of the authorised EIA completed by Savannah Environmental (Pty) Ltd, January 2013, environmental aspects, impacts and mitigation measures concerning the construction of the 14MW Machadodorp PV Solar Energy Facility and associated infrastructure were identified and assessed. Specialist studies undertaken included the following:

- » Ecology, (including faunal and vegetation), assessed by Warren McClelland of ECOREX Consulting Ecologists.
- » Visual, assessed by Zone Land Solutions.
- » Heritage, assessed by Nkosinathi Tomose of NGT Projects & Heritage Consultants (Pty) Ltd.

According to the BAR, the project will result in no significant impacts in the surrounding environment provided that recommended mitigation and management measures are implemented.

The key conclusions and recommendations of the original BAR pertinent to this application, as reported in the BAR (Savannah Environmental (Pty) Ltd, January 2013) are summarised as follows.

1.3.1. Summary of environmental findings in the Environmental Basic Assessment (2013)

The following conclusions can be drawn from the studies undertaken within this Basic Assessment:

- » The overall impact on **ecology** is likely to be of **low-medium significance**. The entire site surveyed is homogenous and has the same sensitivity value. There are no wetlands, riparian zones or rocky outcrops within the study area that would need to be demarcated as sensitive. The entire site has high biodiversity value (an integration of high conservation importance or sensitivity and moderate functional importance) for a number of reasons (e.g. it is representative of a vulnerable grassland type) However, the entire study area falls within an area that has been ranked as Least Concern within the Mpumalanga Biodiversity Conservation Plan (MBCP) (Ferrar and Lötter, 2007). Areas classified as Least Concern and No Natural Habitat Remaining is the preferred areas for a wide variety of land-use types, which includes urban and business development.
- » No archaeological or heritage resources sites were located during the site survey of the proposed Machadodorp PV 1 Solar Energy Facility, and subsequently **no environmental impact** was assessed. However, owing to the subterranean nature of some archaeological and heritage resources sites such as unmarked burials or graves or possible encounter of "chance-finds" – the following recommendations are made:
 - * The proposed project construction phase should pay special attention to previously un-observed resources or "chance-finds" – these are resources that may be unearthed by the construction excavation activities.
 - * If such resources are found to occur, the construction activities should be stop and a professional archaeologist should be called onsite to inspect and investigate the finds and make necessary recommendations.
 - * Furthermore, it is recommended that an Environmental Control Officer should be inducted on heritage management before the commencement of construction activities so that he/she can be

able to identify and positively manage any “chance finds” during the construction phase of the project.

- » The Precambrian period is not rich in fossils; it is unlikely that excavation during the construction phase may uncover an abundance of previously unknown or undiscovered fossils. Therefore, the proposed development of the photovoltaic installations has a small footprint, and the **sensitivity** of these sedimentary rocks ranges from **low to zero**. The above-mentioned reasons, therefore, suggest that no further **paleontological** studies are recommended for this development. Should substantial fossil remains be exposed during construction; however, proper procedures should be followed. These include safeguarding the fossils preferably *in situ* and alerting SAHRA as soon as possible so that appropriate action (e.g. recording, sampling, and collection) can be taken by a qualified palaeontologist. Based on the above it is the author's view and opinion that the proposed development can go ahead as planned in terms of heritage resources management and planning

- » In terms of soil impacts, the most significant potential negative impacts are that of **soil degradation**. However, if these impacts are successfully mitigated the proposed activity will have an overall **low negative impact** on the soil and the agricultural potential. An assessment of the cumulative impacts on soil degradation in the vicinity takes into account the nearby Machadodorp Ferro-Chrome smelter to the south-east of the study area and localised minor development along the N4 National Road. The Machadodorp Ferro-Chrome smelter is a significant potential contributor to cumulative soil degradation. In comparison, the proposed solar energy development is considered to be a relatively small contributor to the cumulative impact of the degradation of the local soil resource. If suitable mitigating measures are applied, the proposed activity will have an overall **low negative impact** on the soil and the agricultural potential. The proposed development can potentially make a significant positive impact on the geological environment in terms of a reduction in demand (and exploitation) for non-renewable energy sources. This is particularly important in a cumulative context on a national scale.

- » The results of the **Visual Impact Assessment** for the proposed Machadodorp PV1 Solar Energy Facility therefore found that the proposed activity will have a **medium** impact from all key Observation Points. To this end, the results of the viewshed analysis from defined Key Observation Points (KOP), together with a photograph indicating the actual view have been included in the specialist report as **Appendix C**. From the individual KOP viewsheds, despite the proximity of some of the observation points, the topography of the subject property and the nature of the project installations, effectively mean that the proposed activity will not have a significant detrimental visual impact. Based on the above, it is herewith recommended that the proposed activity be approved subject to the mitigation measures described in the respective Visual Impact Study and the Environmental Management Programme. It is furthermore recommended that the proposed project does not sterilize the entire landholding upon which it is to be developed. Once the exact position of the activity has been determined, consideration should be given to erecting the PV ‘strings’ in such a manner so that cattle can roam underneath the panels. Alternatively, the project site should be demarcated and the existing extensive agricultural practices be allowed to continue unabated.

- » The overall **social** impact is likely to be of a predominantly **low significance** with the implementation of appropriate mitigation and enhancement measures. The findings of the SIA undertaken for the proposed 13.85MW Machadodorp SEF indicate that the development will create employment and business opportunities for locals during both the construction and operational phase of the project. The establishment of a Community Trust also creates an opportunity to support local economic development

in the area. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole. It is therefore recommended that the 13.85MW component of the Machadodorp1 PV Project (Pty) Ltd Machadodorp SEF as proposed be supported, subject to the implementation of the recommended mitigation measures and management actions contained in the report.

- » The overall impact on the two proposed **power lines** options are of **low** environmental **significance**, this is due to the fact the two options are adjacent to one another (ie 10m apart); therefore they are not different from an environmental perspective.

Based on the findings of the studies undertaken, in terms of environmental constraints identified through the Environmental Basic Assessment process, no environmental fatal flaws were identified to be associated with the establishment of the proposed Machadodorp PV 1 Solar Energy Facility and associated infrastructure.

The significance levels of the majority of identified negative impacts can generally be reduced to acceptable levels by implementing the recommended mitigation measures. With reference to the information available at this planning approval stage in the project cycle, the confidence in the environmental assessment undertaken is regarded as acceptable.

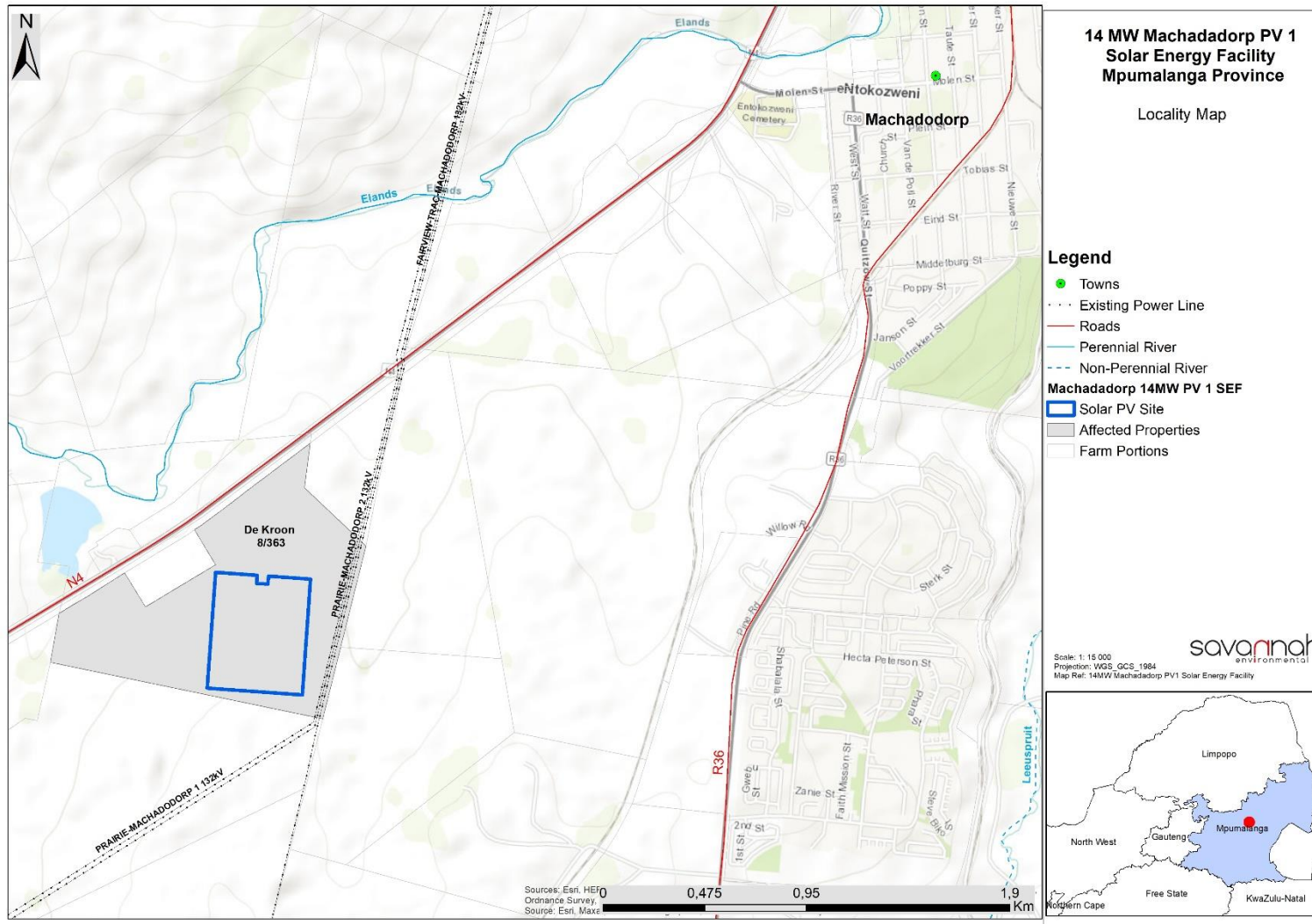


Figure 1.1: Locality map showing the 14MW Machadodorp PV 1 Solar Energy Facility, near Machadodorp, Mpumalanga Province.

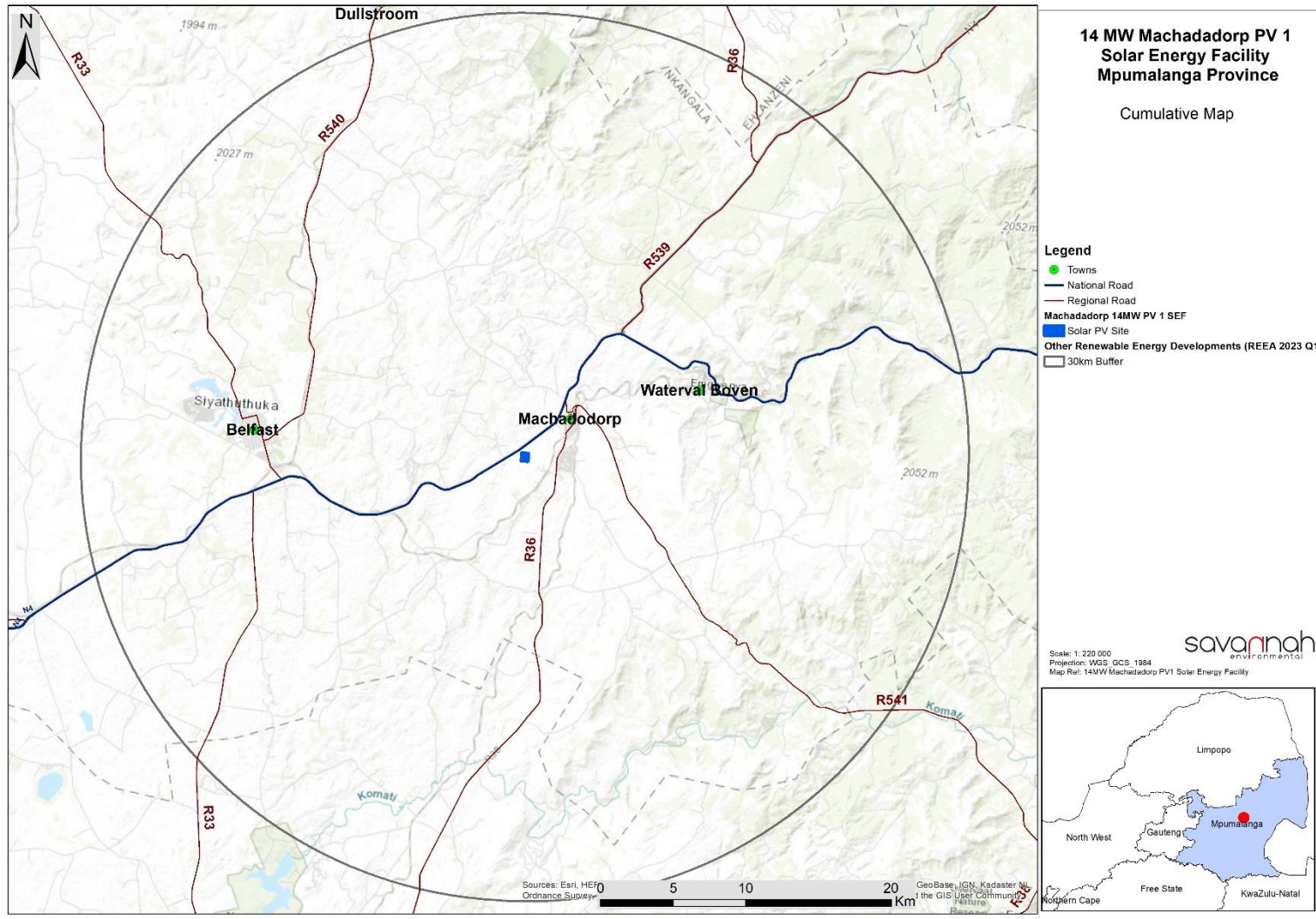


Figure 1.2: Cumulative map showing the authorised development footprint of the 14MW Machadodorp PV 1 Solar Energy Facility relative to other similar developments in the area.

2. DESCRIPTION OF REQUESTED AMENDMENT

This section of the Motivation Report details the amendments considered within this report and by the specialist site verification investigations (refer to **Appendix A - C**). The amendment being applied for relates to various aspects of the project description as detailed in the EA dated 21 May 2013. The requested amendment will result in the extension of the validity period of the Environmental Authorisation by an additional 10 years. The amendment request is detailed below. Motivation for the amendment is included in Section 3 of this report.

The following amendments are applied for:

2.1. Extension of the validity of the Environmental Authorisation

Condition 6 of the original EA dated 21 May 2013 (14/12/16/3/3/1/738) states that the proposed activity must commence within a period of three (3) years from the date of issue, which expired on 21 May 2016. The amended environmental authorisation dated 16 May 2016 (14/12/16/3/3/1/738/AM2) extended the validity of the EA by an additional two (2) years to a total of five (5) years from the date of the original EA, of which expired on 21 May 2018. A further amendment (14/12/16/3/3/1/738/AM3) dated 14 May 2018 extended the validity of the EA by an additional four (4) years to a total of nine (9) years from the date of the original EA, of which expired on 21 May 2022. 14/12/16/3/3/1/738/AM3 issued 08 June 2022 extended the validity to 21 May 2023.

The applicant, Machadodorp1 PV Project (Pty) Ltd requests a further extension to the validity of the EA by an additional ten (10) years.

Therefore, the applicant requests that the DFFE amend the fourth EA amendment (14/12/16/3/3/2/359/AM4), dated 08 June 2022 as follows:

From

'The activity must commence within a period of ten (10) years from the date of issue of this authorisation (i.e. the authorisation lapses on 21 May 2023). If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken'.

To

*'The activity must commence within a period of **twenty (20) years** from the date of issue of this authorisation (i.e. the authorisation lapses on **21 May 2033**). If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken'.*

3. MOTIVATION FOR THE REQUESTED AMENDMENT

The section below describes the motivation for the requested amendment.

3.1. Extension of the validity of the Environmental Authorisation

Condition 6 of the original EA dated 21 May 2013 (14/12/16/3/3/1/738) states that the proposed activity must commence within a period of three (3) years from the date of issue, which expired on 21 May 2016. The amended environmental authorisation dated 16 May 2016 (14/12/16/3/3/1/738/AM2) extended the validity of the EA by an additional two (2) years to a total of five (5) years from the date of the original EA, of which expired on 21 May 2018. A further amendment (14/12/16/3/3/1/738/AM3) dated 14 May 2018 extended the validity of the EA by an additional four (4) years to a total of nine (9) years from the date of the original EA, of which expired on 21 May 2022. 14/12/16/3/3/1/738/AM3 issued 08 June 2022 extended the validity to 21 May 2023.

The key motivating factor for the request to amend the EA validity period, is that the project is intended to be bid into future rounds of the Department of Mineral Resources and Energy's (DMRE's) Renewable Energy Independent Power Producers Procurement (REIPPP) Programme or a similar private offtake bid, the timing of which is unconfirmed at this time. A valid environmental authorisation will be required for future project development and bid submission purposes. Therefore, the validity of the Environmental Authorisation (EA) is required to be extended.

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

In terms of Conditions 7 of the EA dated 21 May 2013 and Regulation 29 of the EIA Regulations 2014, as amended, it is possible for an applicant to apply, in writing, to the competent authority for an amendment of the environmental authorisation if the amendment will not change the scope of a valid environmental authorisation nor increase the level or nature of the impact. An application in this regard has been submitted to the DFFE who have confirmed that the applications fall within the ambit of a Part 1 amendment process.

An application in this regard has been submitted to the DFFE who have confirmed that the application falls within the ambit of a Part 1 amendment process.

Further to the receipt of the application, the DFFE have requested additional information be provided in the way of a site verification and motivation report, and that a public participation process is required to be undertaken in support of the application.

The results of the review of all specialist studies undertaken in 2012, and a current assessment, including a site verification evaluation providing an indication of the status of the receiving environment (by the relative specialists) is included in **Section 5**.

4.1. Details of Environmental Assessment Practitioner and Expertise to conduct the Amendment Process

In accordance with Regulation 12 of the 2014 EIA Regulations (GNR 326), the applicant, Machadodorp1 PV Project (Pty) Ltd has appointed Savannah Environmental (Pty) Ltd as the independent environmental consultant responsible for managing the Application for Amendment; inclusive of the required independent specialist studies and public participation process.

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

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

- » **Jo-Anne Thomas**, the principal EAP on this Project, is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA - 2019/726). She provides technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental auditing and monitoring, environmental permitting, public participation, Environmental Management Plans and Programmes, environmental policy, strategy and guideline formulation, and integrated environmental management. Her key focus is on integration of the specialist environmental studies and findings into larger engineering-based projects, strategic

assessment, and providing practical and achievable environmental management solutions and mitigation measures. Responsibilities for environmental studies include project management (including client and authority liaison and management of specialist teams); review and manipulation of data; identification and assessment of potential negative environmental impacts and benefits; review of specialist studies; and the identification of mitigation measures.

- » **Michael Morreira** works as an Environmental Consultant at Savannah Environmental. Michael has 11 years of experience working in Nature Conservation, managing eco-tourism ventures and game reserves. Michael holds a National Diploma and a B-tech Degree in Game Ranch Management. Michael also holds a full Internationally recognised MBA with a specialisation in Sustainable Development and International Business. Since 2020 – Michael has been working as a consultant conducting Environmental Impact Assessments, Environmental Social Governance and Sustainability Due Diligence and Assurance Assessments, Environmental Permitting processes and a number of related tasks.

5. POTENTIAL FOR CHANGE IN THE SIGNIFICANCE OF IMPACTS AS ASSESSED IN THE EIA AS A RESULT OF THE REQUESTED AMENDMENT

The DFFE in reference to Regulation 30(1)(a) requires assessment of the impacts related to the proposed amendments. Understanding the nature of the proposed amendments and the impacts associated with the project (as assessed within the EIA), the following has been considered:

- » Impacts on ecology, (including faunal and vegetation)
- » Visual impacts
- » Impacts on heritage, palaeontology, and archaeological

The potential for change in the significance and/or nature of impacts based on the proposed amendment as described within this Site Verification and Motivation Report is discussed below and detailed in the specialist's assessment reports (conducted in 2023) contained in **Appendix A - C**¹. This section of the Motivation Report must be read together with the specialist reports contained in **Appendix A - C** in order for the reader to obtain a complete understanding of the proposed amendments and the implications thereof.

5.1. Current State of the Environment

Table 5.1 summarises the current status of the project environment.

Table 5.1: Current status of the environment

Topography and site extent	The project site consists of a single site to be established on Portion 8 of the Farm De Kroon No. 363 JT. The total property area of approximately 110ha was considered for installation of the facility while only approximately 20ha will be utilised for the establishment of the proposed activity. The height variations of the subject property vary between 1580m and 1625m above mean sea level. The preferred project site is relatively flat on a slight downward northerly slope and only varies by approximately 30m over a distance of approximately 680m with an average gradient of between 1 and 8% which drains to the north, east and west into tributaries of the De Kroonspruit, which flows north-eastwards towards the town of (eNtokozweni) Machadodorp.
Environmental Considerations	<p>The project site is situated within Lydenburg Montane Grassland. The area comprises one vegetation community which has a distinctive vegetation structure, floristic composition and position in the landscape, namely Ctenium concinnum - Brachiaria Untransformed Grassland. This type of grassland is classified as an Ecological Support Area (ESA): Local Corridor ESA. Local Corridors identify areas that provide important ecological connectivity between and play an important role in supporting the functioning of Critical Biodiversity Areas (CBA's).</p> <p>Findings of the terrestrial ecology study confirmed the site as untransformed grassland that appears to have been heavily grazed historically. The lists of potentially occurring plant and animal SCC, supplemented by the respective specialist reports and DFFE Screening reports, remain valid, with very few additions of SCC with High likelihood.</p>

¹ It must be noted that the original specialists who undertook the BAR studies and subsequent amendments have been used for these assessments as far as possible. However, where the original specialists were not available for whatever reason, suitably qualified and experienced specialists have been used to provide an assessment of the proposed amendments.

	<p>The entire study area falls within an area that was found to be ranked as Least Concern within the Mpumalanga Biodiversity Conservation Plan (MBCP). Areas classified as Least Concern and No Natural Habitat Remaining are the preferred areas for a wide variety of land-use types, which includes urban and business development.</p> <p>The site has been found to be technically well positioned for the development of a photovoltaic solar power plant. The facility position will take advantage of the right environmental conditions for sustainable renewable electricity generation, and transmission due to existing powerline and substation infrastructure in the area.</p>
Land use type	<p>The dominant land use activity on and around the proposed project site is farming, specifically sheep and cattle farming. In addition to farming the other major land use in the area is mining and the associated processing operations.</p> <p>Although the property falls within an area with a high agricultural potential in general, the property itself is mostly non-arable with shallow soils and/or rock outcrops and natural grasses dominant. The current land use on the proposed site is grazing livestock only (cattle) and there is no crop production.</p>
Visual	<p>The property falls within the Mpumalanga Highlands Meander, an area where tourism is brought to the fore. The significance of the Mpumalanga Highlands Meander is well known. The meander primarily focuses on tourism and the promotion of the towns that form part of this initiative.</p> <p>The sense of place of the Machadodorp region is twofold, namely an agrarian landscape, dotted by agricultural farmsteads set against a backdrop of conservation-worthy rivers, streams and valleys.</p> <p>The height variations of the subject property vary between 1580m and 1625m above mean sea level. The preferred project site is relatively flat and only varies by approximately 30m over a distance of approximately 680m.</p> <p>The project site is completely devoid of any trees or large shrubs. The topography in the vicinity of the subject property is characterised by undulating plains and open valleys. No prominent mountains or steep hills are evident on the highlands.</p> <p>The Fairview Trac-Machadodorp 132kV electrical power line servitude crosses the subject property in the east. The Prairie-Machadodorp 132kV electrical power line connects to the Fairview Trac-Machadodorp line in the south –eastern corner of the subject property. Together these lines traverse the subject property en-route to the Machadodorp substation in the north.</p> <p>The electricity generated on site will be evacuated into the electrical grid at a point underneath the combined Fairview Trac-Machadodorp line.</p> <p>Major movement routes in the vicinity of the site include the N4; the R36, and the R541. Few major farmsteads, and tourism facilities are visible in the region of the proposed development.</p>
Industry and Economic Stimulus	<p>The proposed Machadodorp PV 1 SEF is located in the Emakazheni Local Municipality (ELM) in the Mpumalanga Province. The ELM is one of seven local municipalities that make up the Nkangala District Municipality (NDM). The town of Belfast is the administrative seat of the ELM, while Middelburg is the administrative centre of the NDM. Nelspruit, which is located ~109 east of the town of Machadodorp, is the capital of the Mpumalanga Province.</p> <p>At a provincial level the Mpumalanga Provincial Growth and Development Strategy (MPGDS) makes reference to the need to identify and develop domestic renewable energy projects and promote renewable energy technology use at the commercial, industrial and domestic level. In</p>

	<p>addition, the Nkangala District Municipality (NDM) IDP 2012/13 states that, “in promoting environmental sustainability, the NDM has realized the need to explore other energy forms, which are renewable, beyond focusing on coal-generated electricity as the main supply of energy.”</p> <p>The development of the Machadodorp PV 1 SEF will create employment and business opportunities for locals during both the construction and operational phase of the project. The development of Machadodorp PV 1 SEF also creates an opportunity to support local economic development in the area. This represents a social benefit for an area where there are limited opportunities. However, the benefits will be limited due to the relatively small scale of the project.</p> <p>The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole. The establishment of the proposed Machadodorp PV 1 SEF was supported by the 2012 specialist study.</p>
<p>Site access</p>	<p>The subject property borders the N4 national route to the north, while the R36 is located some 2km to the east. The N4 is the major link road between Pretoria in the west and Maputo, via Mbombela (Nelspruit), in the east. The current Pretoria – Maputo railway line crosses some 2km to the east, adjacent to Emthonjeni.</p> <p>An internal gravel road network will be used by construction vehicles and will be retained throughout the lifetime of the facility for use by maintenance vehicles. Existing roads and tracks will be used, where possible.</p>
<p>Other planned Projects in the area (during EIA Phase)</p>	<p>According to the DFFE SA Renewable Energy EIA Application Database (REEA) there are no other renewable energy facilities planned within a 30km radius of the project site. The specific facilities can be viewed on the Cumulative Map Figure 1.2.</p>

5.2. Impacts on Ecology (including fauna, avifauna and vegetation)

Digital Earth was appointed to undertake a site verification assessment to confirm the current state of the environment and provide a motivation for the amendment from a terrestrial ecological perspective. The verification report (Appendix A) is based on a review of available information and a brief field survey conducted in May 2023. The field survey coincided with the end of the wet season and the data quality are acceptable for this report.

The 2023 Ecological assessment found that there are no changes to the environment within the authorised development area. The natural habitat, ecological sensitivity, and impact rating as provided in the initial assessment conducted in 2012 remain valid. The mitigation measures provided in the initial assessment are still applicable and there are no new mitigation measures which need to be included into the EA.

5.2.1. Conclusion

There is no objection to the request to extend the commencement period of the Machadodorp PV 1 Project in terms of the terrestrial ecosystems of the PAOI, provided that the recommendations suggested in the baseline report are followed.

5.3. Visual Impacts

LOGIS was appointed to undertake a site verification assessment to confirm the current state of the environment and provide a motivation for the amendment from a visual perspective. The verification report (Appendix B) is based on a review of available information. The conclusions of the assessment were verified through consultation with the project proponent and the current land owner(s), as well as the observation of satellite imagery of the study area taken during 2012 and 2023.

Based on the assessment, it was concluded that the description of the affected environment, as described in the original VIA report remains largely unchanged. The location and layout of the proposed PV Facility on Portion 8 of the Farm De Kroon No. 363 JT similarly remains unchanged. There is however signs of a new development, presumably a service station, opposite the Caltex Star Stop and Milly's Trout Store, immediately south of the N4 national road. The ground works for this development is located approximately 200m west of the proposed Machadodorp PV 1 SEF. Other than this development on the same farm earmarked for the SEF development, the land use zonation for the larger study area (agriculture) remains the same.

Based on the methodology used in the 2023 visual assessment, additional visual receptors were identified that may be impacted by the project. Potentially very high magnitude (receptors located within 1km of the proposed development):

- » 1 - N4 National Road
- » 2 - De Kroon 1 (Milly's)
- » 3 - Shavile homestead (mentioned as KOP 12 in the VIA report)
- » 4 - Schoongezicht 1 homestead

Potentially high magnitude (receptors located within 1 - 3km of the proposed development):

- » 5 - Goede Hoop 1 homestead (appears derelict)
- » 6 - Unknown homesteads
- » 7 - Goede Hoop 2 homestead
- » 8 - Schoongezicht 2 homestead
- » 9 - De Kroon 2 homestead
- » 10 - Driefontein homestead

Potentially moderate magnitude (receptors located within 3 - 5km of the proposed development):

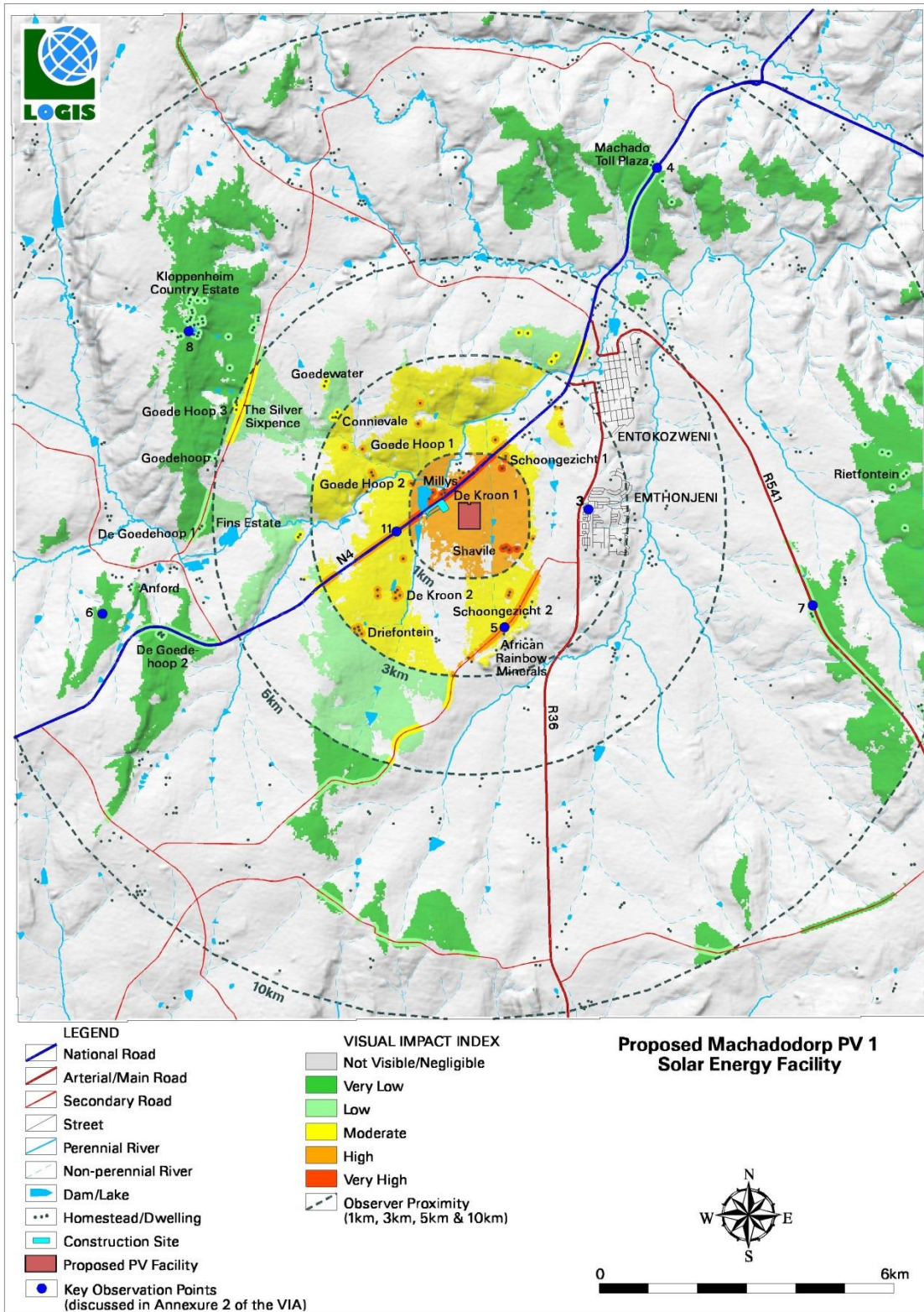
- » 11 - Goede Hoop 3 homestead (The Silver Sixpence)
- » 12 - Goedewater homestead
- » 13 - Connievale homestead
- » 14 - Unknown homestead

Potentially low magnitude (receptors located beyond 5km of the proposed development):

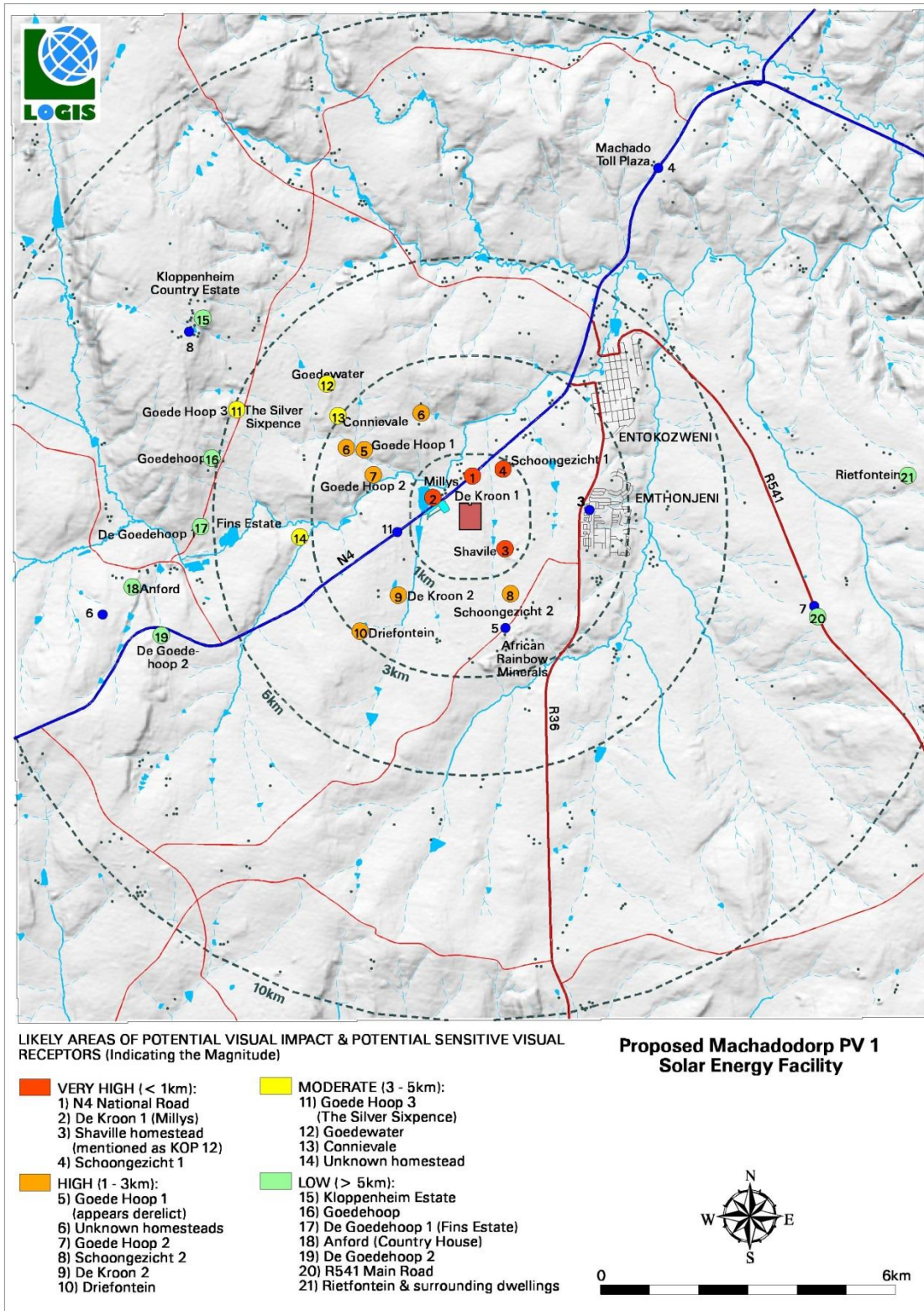
- » 15 - Kloppenheim Estate
- » 16 - Goedehoop
- » 17 - De Goedehoop 1 (Fins Estate)

- » 18 - Anford (Country House)
- » 19 - De Goedehoop 2
- » 20 - R541 Main Road (mentioned as KOP 7)
- » 21 - Rietfontein & surrounding dwellings

The visual impact index and the receptors mentioned above are indicated on Figures 5.1 and 5.2.



Map 5.1: Visual impact index.



Map 5.2: Likely areas of potential visual impact and potential sensitive visual receptors.

In spite of the fact that some of the additional receptor sites may experience visual impacts of **very high** to **high** magnitude, these impacts may still only be of **moderate** (medium) significance. This is due to the fact

that none of the recipient sites (e.g. adjacent land owners)² have objected to the proposed development. The likelihood of the impact occurring is therefore low.

The proposed extension of the validity of the EA by an additional ten years is therefore not expected to alter the influence of the project infrastructure on *areas of higher viewer incidence* (observers traveling along the roads within the region) or *potential sensitive visual receptors* (residents of homesteads in closer proximity to the infrastructure).

The proposed amendment to the validity of the EA is consequently not expected to influence the anticipated visual impact, as stated in the original VIA report (i.e. the visual impact is expected to occur regardless of the amendment). This statement relates specifically to the assessment of the visual impact within a 1km (and potentially up to 3km) radius of the SEF structures (potentially *moderate* significance), but also generally apply to potentially *moderate* to *low* visual impacts at distances of up to 5km from the structures.

From a visual perspective, the proposed amendment will therefore require no (zero) changes to the significance rating within the original visual impact assessment report that was used to inform the approved EIA. In addition to this, no new mitigation measures are required.

There are no new assessment guidelines which are now relevant to the authorised development which were not undertaken as part of the initial visual impact assessment. Additional to this, and as stated above, there have been no changes to the environment of the region surrounding the proposed development site, and only one new development (in progress) on the farm earmarked for the PV Facility.

There are no proposed or authorised solar energy facility developments within a 30km radius of the proposed Machadodorp PV 1 SEF. The relatively constrained area of potential visual exposure of the development is unlikely to be of any significance in terms of cumulative visual impacts within the larger region.

5.3.1. Conclusion

The proposed amendment will require no changes to the impact significance ratings as stated within the original VIA report which was used to inform the approved EIA. In addition to this, no new mitigation measures are required.

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

5.4. Heritage Impacts (including Archaeological and Palaeontology Assessments)

PGS Heritage was appointed to undertake a site verification assessment to confirm the current state of the environment and provide a motivation for the amendment from a visual perspective. The verification report (Appendix C) is based on a review of available information as well as a field survey undertaken between 19 and 21 April 2023.

² To the author's knowledge and according to the Comments and Responses Report included in the BA Report.

From a Heritage Impact (including Archaeological and Palaeontology) point of view, it was concluded that no archaeological or heritage resources sites were located during the desktop assessment and site survey for the proposed Machadodorp PV 1 Solar Energy Facility. This concurs with the results of the original HIA undertaken for the project. No change in the impact ratings are therefore required and no additional mitigation measures were recommended. It is the combined considered opinion of the heritage specialists that the proposed project will have no impact on heritage resources.

5.4.1. Conclusion

In light of the above, there is no heritage objection to granting the extension to the validity to develop the 14MW Machadodorp PV1 Solar Energy Facility based on the current site conditions on condition that the chance find recommendations made in the original HIA completed for this project are adhered to.

6. CONCLUSION AND MOTIVATION FOR APPROVAL OF THE REQUESTED AMENDMENTS

The specialists verifications undertaken as part of the amendment application process have concluded that there are no fatal flaws associated with the proposed amendment being requested by the developer for the construction of the 14MW Machadodorp PV 1 Solar Energy Facility on Portion 8 of the farm De Kroon 363 of the Emakazheni Local Municipality in Mpumalanga Province. Based on the specialist findings, it is concluded that the proposed amendment to extend the validity of the EA is not expected to result in an increase to the significance ratings for the identified potential impacts, and no additional mitigation measures are required. There are no proposed or authorised solar energy facility developments within a 30km radius of the proposed Machadodorp PV 1 SEF and therefore is unlikely to be of any significance in terms of cumulative visual impacts within the larger region.

The following are the key motivating factors regarding the conclusion to granting the requested amendment:

- » Impacts identified within the original report are still applicable for the proposed amendments. No additional impacts or changes in impact significance will result from the proposed amendment being granted as the environment has not changed. This provided that mitigation measures as documented in the EMPr and as required in respective specialist reports are implemented.
- » There is no objection to the proposed amendments by any of the specialist consultants who have completed a verification assessment. There is no disadvantage to developing the project on this site considering the results of the site verification assessment, and the request to extend the commencement period should be granted by the Department.
- » The development has the ability to create employment, opportunities for contractors in the region, ownership opportunities for local communities, skills, supplier and enterprise development spend and the implementation of socioeconomic development initiatives.
- » Green infrastructure makes a contribution to the just energy transition.

Based on the nature of the requested amendment for the 14MW Machadodorp PV 1 Solar Energy Facility and associated infrastructure on Portion 8 of the farm De Kroon 363. Taking into consideration the conclusions from the specialist site verification and motivation reports (**Appendix A - C**) and the findings of this report, it is concluded that the proposed amendment is acceptable from an environmental perspective, subject to the implementation of the recommended mitigation measures included in the BAR, Environmental Management Programme (EMPr), and respective Specialist reports.

7. PUBLIC PARTICIPATION

A public participation process is being conducted in support of the Amendment Application to amend the Environmental Authorisation (DFFE Reference: 14/12/16/3/3/1/738) issued for the construction of the 14MW Machadodorp PV 1 Solar Energy Facility on Portion 8 of the farm De Kroon 363. The Public Participation has been undertaken in accordance with the requirement of Chapter 6 of the EIA Regulations of December 2014, as amended. The following key public participation tasks have been undertaken:

- » The database/register of I&APs has been updated and maintained.
- » Placement of site notices at the site on the **28th June 2023** (refer to **Appendix D**).
- » Written notifications to registered I&APs as well as Organs of State regarding the availability of the draft Motivation Report were distributed on **Thursday 13 July 2023** (and will accompany the final motivation as **Appendix D** and **Appendix D**).
- » Placement of an advertisement in the **Lowvelder** newspaper on **Thursday 13 July 2023** announcing the availability of the Motivation Report for a 30-day review and comment period.
- » The Motivation Report has been made available for the 30-day review and comment period from **Thursday 13 July 2023 to Tuesday 15 August 2023** on the Savannah Environmental website: <https://savannahsa.com/public-documents/>.

Comments received during the 30-day review and comment period will be included as **Appendix D** in the final submission of the Motivation Report to the DFFE for consideration in the decision-making process. Comments will be included and responded to in a Comments and Responses Report, to be included as **Appendix D** of the Final Motivation Report. Proof of attempts made to obtain comments from relevant Organs of State and key stakeholders will also be included in **Appendix D** of the Final Motivation Report.