THE PROPOSED DEVELOPMENT OF DOMINION 3 SOLAR PARK AND ASSOCIATED INFRASTRUCTURE LOCATED NEAR KLERKSDORP, NORTH WEST PROVINCE, SOUTH AFRICA

CLIENT: RED ROCKET (PTY) LTD
CONTACT: MR MATTEO GIULIO LUIGI BRAMBILLA

terramanzi
GROUP (PTY) LTD

people. planet. prosperity.

RED ROCKET
Force of Nature

tel: +27 21 701 5228
fax: +27 86 558 1213
mobile: +27 82 575 3800
email: info@terramanzi.co.za
website: www.terramanzi.co.za
postal: postnet suite 211, private bag X26, tokai, 7966

14 NOVEMBER 2022

APPLICABLE LEGISLATION	COMPETENT AUTHORITY REFERENCE NUMBER/S
NEMA EIA Regulations (2017) (as amended)	DFFE REFERENCE NUMBER: 2022-04-0011
WULA in terms of Section 21 of the National Water Act (Act No. 39 of 1998)	A Water Use Licence Application will be submitted to DWS for Section 21(c) and (i) water uses.
National Heritage Resource Act (SAHRA)	Heritage Impact Assessment sent to SAHRA

Report Title	Draft Basic Assessment Report (BAR) for public consultation for the proposed development of Dominion 3 Solar Park and associated infrastructure near Klerksdorp, North West Province.
Author (EAP)	Roschel Maharaj (Terramanzi Group (Pty) Ltd) Kristen Shaw (Terramanzi Group (Pty) Ltd)
Specialist Sub-Consultants	Avifaunal Impact – Enviro – Insight (C/O Luke Verburgt) Heritage Impact– PGS Heritage (C/O Wouter Fourie) Noise Impact – dBAcoustics (C/O Barend van der Merwe) Visual Impact – SAS Environmental Services (C/O S. Erwee & S. van Staden Freshwater Impact - SAS Environmental Services (C/O S.van Staden) Terrestrial Biodiversity - SAS Environmental Services (C/O C. Steyn, D. van der Merwe & S.van Staden) Climate Impact – Airshed (C/O Hanlie Libernberg-Enslin) Agricultural Impact – SAS Environmental Services (C/O T. Setsipane, S. van Staden & B Mzila) Town Planning Impact - Warren Petterson Planning (WPP) (C/O Mr Corné Briedenhann) Traffic Impact Assessment – Innovative Transport Solutions (ITS) (C/O Nico Jonker) Geotechnical Impact – GEOSS (C/O Shane Teek & Michael Baleta) Social Impact – Tony Barbour Environmental Consulting (C/O Tony Barbour
Client	Red Rocket (Pty) Ltd C/O Mr Matteo Giulio Luigi Brambilla
Report Version	Draft Basic Assessment Report (BAR) for Public Consultation
Submission Date	11 November 2022

Please use the following as a reference for this Report:

Terramanzi Group Project Number: 220303 - 03

Project Title: Draft Basic Assessment Report (BAR) for public consultation for the proposed development of Dominion 3 Solar Park and associated infrastructure near Klerksdorp, North West Province.

Purpose of this Document:

The Dominion Solar PV Cluster 1-3, is intended to establish 3 Photovoltaic Solar Energy Facility (PVSEF) Projects, located near Klerksdorp, North-West Province. The projects are located in the **Klerksdorp Renewable Energy Development Zone (REDz),** and the **Central Corridor of the Strategic Transmission Corridor (EGI),** therefore, the proposed projects require Basic Assessment Applications and are seen as being a priority project for South Africa's power generation.

The Dominion 3 Solar Park (Pty) Ltd is one of the three proposed PVSEF projects.
The naming for these separate Projects is as follows:

- Dominion 1 Solar Park
- Dominion 2 Solar Park
- Dominion 3 Solar Park – The focus of this Basic Assessment Report (BAR)

Dominion 3 Solar Park (Pty) Ltd. (hereinafter referred to as the "Applicant") intends to develop a Photovoltaic Solar Energy Facility (PVSEF) and associated infrastructure (also interchangeably referred to as the proposed development of Dominion 3 Solar Park and associated infrastructure – hereinafter referred to as Dominion 3 Solar Park of up to 100MW megawatts (million watts MW) on portion 11, 31 and 32 of Remainder of Farm Wolverand 425, in the City of Matlosana Local Municipality, within the jurisdiction of the Dr. Kenneth Kaunda District Municipality.

The Associated infrastructure includes:

- Back to Back Substation (Including facility substation, Eskom collector station with feeder bays (15000m^2)(140MVA)
- Battery Energy Storage Systems (BESS)- Storage Capacity (500MWh)
- Access Roads are 8m wide and 20km in length
- O&M building (1500m^2)

The locations of the associated infrastructure on-site, will be finalised and aligned to specialist findings with the aim of avoiding sensitive/ no-go areas.

The site consists of approximately 240 hectares of farmland and is well suited for solar installations as it comprises a very flat area with little agricultural or natural potential, and the site has a very high solar theme sensitivity.

The proposed Dominion 3 Solar Park has been assessed by independent specialists as part of this Environmental Authorisation Process to allow for the development of an Opportunities and Constraints Map, in accordance with the statutory requirements, in order to guide the Applicant and Professional Team with the development considerations for the site. This Opportunities and Constraints Map referred to as the overall sensitivity map showing the development area (please refer to Section 10) has been designed to provide a clear and accountable record of areas that are immediately deemed suitable and those areas which are considered potentially no suitable for development. Based on the above, the Applicant has investigated and presented a development footprint within the development area (hereinafter referred to as the Preferred Alternative) which is presented in this Report. Based on the findings of the Basic Assessment Report, including inputs received from the appointed Specialists, the Preferred Alternative has been deemed as acceptable and implementable for this Environmental Authorisation Process.

Purpose of this Document (continued):

To date, all necessary specialist studies have been undertaken and included in this Basic Assessment Report (BAR) and attached as Appendix B. This Draft Basic Assessment report is subjected to a 30-day public consultation thereafter it will be submitted to the Competent Authority, the National Department of Environment, Forestry, and Fisheries (DFFE), for Decision.

The findings of this Draft Basic Assessment report of the project indicated that the site is broadly suitable for the proposed activity, subject to the strict requirements of the independent experts appointed to assess the site for suitability for the proposed activity. The main concerns raised during the public consultation 30-day period will be addressed as efficiently as possible as part of the Final Basic Assessment Report submitted for decision.

As per the requirements of the NEMA EIA Regulations (2014, as amended), this BAR has been issued for public participation in terms of GNR 326, Regulation 41(b)).

This BAR will be available for comment for 30 calendar days from 14 November to 13 December 2022, as stipulated by the NEMA EIA Regulations (2014, as amended)

Summary of what this BAR addresses:

- Details of the Environmental Assessment Practitioner (EAP)
- Location of the proposed development
- Plan which locates the proposed activity or activities applied for at an appropriate scale
- Description of the scope of the proposed activity
- Description of the policy and legislative context applicable to the proposed development
- A motivation for the need and desirability for the proposed development
- Full description of the process followed to reach the proposed preferred activity, site, and location within the site
- An Environmental Impact Assessment
- An Environmental Management Programme (EMPr)
- Undertakings under oath or affirmation by the EAP

APPLICATION PHASE

The Phase requires the EAP to submit a NEMA Application Form to the Competent Authority in accordance with Regulation 16 of GNR 326 of the NEMA EIA Regulations (2014, as amended)

BASIC ASSESSMENT REPORT PHASE (90 DAYS)

This phase involves detailed site assessments of the Project on the receiving environment and culminates in a reccomendation by the EAP, on the preferred alternative for the Project, based on the development opportunities and constraints identified in this phase.

This phase typically allows for a 30 day public consultation period.

BASIC ASSESSMENT REPORT (BAR) DECISION PHASE

The BAR findings are submitted to the Competent Authority for a decision for consideration to grant an Environmental Authorisation

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Appendix B –Specialist Reports

- Town Planning Impact - Warren Petterson Planning (WPP) (C/O Mr Corné Briedenhann)
- Agricultural Impact – SAS Environmental Services (C/O T. Setsipane, S. van Staden & B Mzila)
- Terrestrial Biodiversity - SAS Environmental Services (C/O C. Steyn, D. van der Merwe & S.van Staden)
- Avifaunal Impact – Enviro – Insight (C/O Luke Verburgt)
- Freshwater Impact - SAS Environmental Services (C/O S.van Staden)
- Visual Impact – SAS Environmental Services (C/O K. Nienaber & S. van Staden
- Heritage Impact– PGS Heritage (C/O Wouter Fourie)
- Traffic Impact Assessment – Innovative Transport Solutions (ITS) (C/O Nico Jonker)
- Noise Impact – dBAcoustics (C/O Barend van der Merwe)
- Climate Impact – Airshed (C/O Hanlie Libernberg-Enslin)
- Geotechnical Impact – GEOSS (C/O Shane Teek & Michael Baleta)
- Social Impact – Tony Barbour Environmental Consulting (C/O Tony Barbour)

Appendix C – Public Participation Folder

- Newspaper Advertisement – November 2022
- Site Notice – November 2022
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- Stakeholder database – November 2022

Appendix D – Environmental Management Programme (EMPr)

- Environmental Management Programme – PV Facility
- Generic Environmental Management Programme – Substation and BESS
- Alien Vegetation Management Plan – November

Appendix E – Authorisations & Competent Authority Correspondence:

- (Pre-Application meeting) Request for Pre-Application Meeting – Dominion 3 Solar Park - Basic Assessment process.
- Pre – Application Meeting Minutes Approval

Appendix F – Application and declarations

- EA application form –November 2022
- Applicant Declaration – November 2022
- EAP Declaration – November 2022
- EAP Oath – November 2022

Appendix G – EAP Curriculum Vitae

Appendix H – Landowner Consents

Appendix I – Definitions and Terminology

1 DEFINITIONS AND TERMINOLOGY REFERRED TO IN THIS REPORT

PLEASE REFER TO APPENDIX I FOR THE DEFINITIONS AND TERMINOLOGY REFERRED TO IN THIS REPORT

2 PROJECT OVERVIEW AND ENVIRONMENTAL IMPACT STATEMENT

In accordance with ***Appendix 1 Regulation 3(l) of GN No. R. 326 of the NEMA EIA Regulations (2017 as amended)****:*

An environmental impact statement which contains:

3(l) i *– A summary of the key findings of the environmental impact assessment;*

3(l) ii *– A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and*

3(l) iii *- A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.*

2.1 PROJECT OVERVIEW

The Dominion Solar PV Cluster 1-3, is intended to establish three Photovoltaic Solar Energy Facility (PVSEF) Projects, adjacent to the N12 located near Klerksdorp, North-West Province. The projects are located in the **Klerksdorp Renewable Energy Development Zone 10 (REDz),** and the **Central Corridor of the Strategic Transmission Corridor (EGI),** therefore, the proposed projects require Basic Assessment Applications and are seen as being a priority project for South Africa's power generation.

The Dominion 3 Solar Park (Pty) Ltd is one of the three proposed PVSEF projects.
The naming for these separate Projects is as follows:

- Dominion 3 Solar Park – The focus of this Basic Assessment Report (BAR)
- Dominion 2 Solar Park
- Dominion 3 Solar Park

Dominion 3 Solar Park (Pty) Ltd. (hereinafter referred to as the "Applicant") intends to develop a Photovoltaic Solar Energy Facility (PVSEF) and associated infrastructure (also interchangeably referred to as the proposed development of Dominion 3 Solar Park and associated infrastructure – hereinafter referred to as Dominion 3 Solar Park of up to 100MW megawatts (million watts MW) portion 11, 31 and 32 of Remainder of Farm Wolverand 425, in the City of Matlosana Local Municipality, within the jurisdiction of the Dr. Kenneth Kaunda District Municipality. The project will have a generating capacity of no more than 100MW and Battery Energy Storage Systems ("BESS") of 500MWh. Tier 1 bi-facial, single axis trackers will be utilised for the panels. An on-site substation with a capacity of 140MVA, will enable the connection of a 132kV Overhead Powerline ("OHPL"). The final interconnection solution will be dependent on the requirements of Eskom, which are still to be defined and will be included in a separate Basic Assessment Process. The associated infrastructure will also include internal access roads, Back to Back Substation (Including facility substation, Eskom collector station with feeder bays (15000 m^2)(140MVA) and a O&M Building.

These locations on-site, will be finalised and aligned to specialist findings with the aim of avoiding sensitive/ no-go areas. The access road would approximately be 8m and the 132kV powerline route, is anticipated to traverse the adjacent farms to the final interconnection solution dependent on the requirements of Eskom, which are still to be defined and will be assessed in a sperate Basic Assessment Report.

The site consists of approximately 240 hectares of farmland and is well suited for solar installations as it comprises a very flat area with little agricultural or natural potential, and the site has a very high solar theme sensitivity.

Terramanzi Group (Pty) Ltd have been appointed to facilitate the Basic Assessment Reporting process to obtain environmental authorisation in terms of the National Environmental Management Act ("NEMA") Environmental Impact Assessment ("EIA") Regulations (2014, as amended). The purpose of the facility is to generate clean electricity from a renewable energy source (i.e., solar radiation) in order to contribute to the National energy grid and/or any Private off takers (where applicable).

The proposed development triggers activities listed in Listing Notice 1 (GNR 327) and Listing Notice 3 (GNR 325) of the NEMA EIA Regulations (2014, as amended), therefore, an environmental authorisation is required to be issued by the Competent Authority before development commences.

A Basic Assessment (BA) is required to be carried out as part of the environmental authorisation application process for activities listed in Listing Notice 1 (GNR 327) and Listing Notice 3 (GNR 324) of the NEMA EIA Regulations (2014, as amended).

As part of this Basic Assessment Process, several assessments have been undertaken by independent specialists, as required in terms of the NEMA EIA Regulations (2014, as amended).

The Dominion 3 Solar Park and the associated infrastructure was assessed by independent specialists as part of this Environmental Authorisation Process to guide the Applicant and Professional Team to accommodate the most acceptable and implementable facility layout for the development area.

Based on the above, the Applicant has investigated and presented a development footprint (hereinafter referred to as the Preferred Alternative) which is presented in this draft Basic Assessment Report. The preferred alternative has been assessed against the No-Go Alternative within this Basic Assessment Report.

An Opportunities and Constraints Map has been developed to guide the Applicant and Professional Team to accommodate the most acceptable and implementable facility layout for Dominion 3 Solar Park and associated infrastructure. These locations on-site, will be finalised and aligned to specialist findings with the aim of avoiding sensitive/ no-go areas.

Based on the findings of the draft Basic Assessment Report, including inputs received from the appointed specialists, the Preferred Alternative has been deemed as acceptable and implementable for this Environmental Authorisation Process.

Figure 2.1: This figure shows the location of the proposed Dominion 3 Solar Park within a broad geographical context.

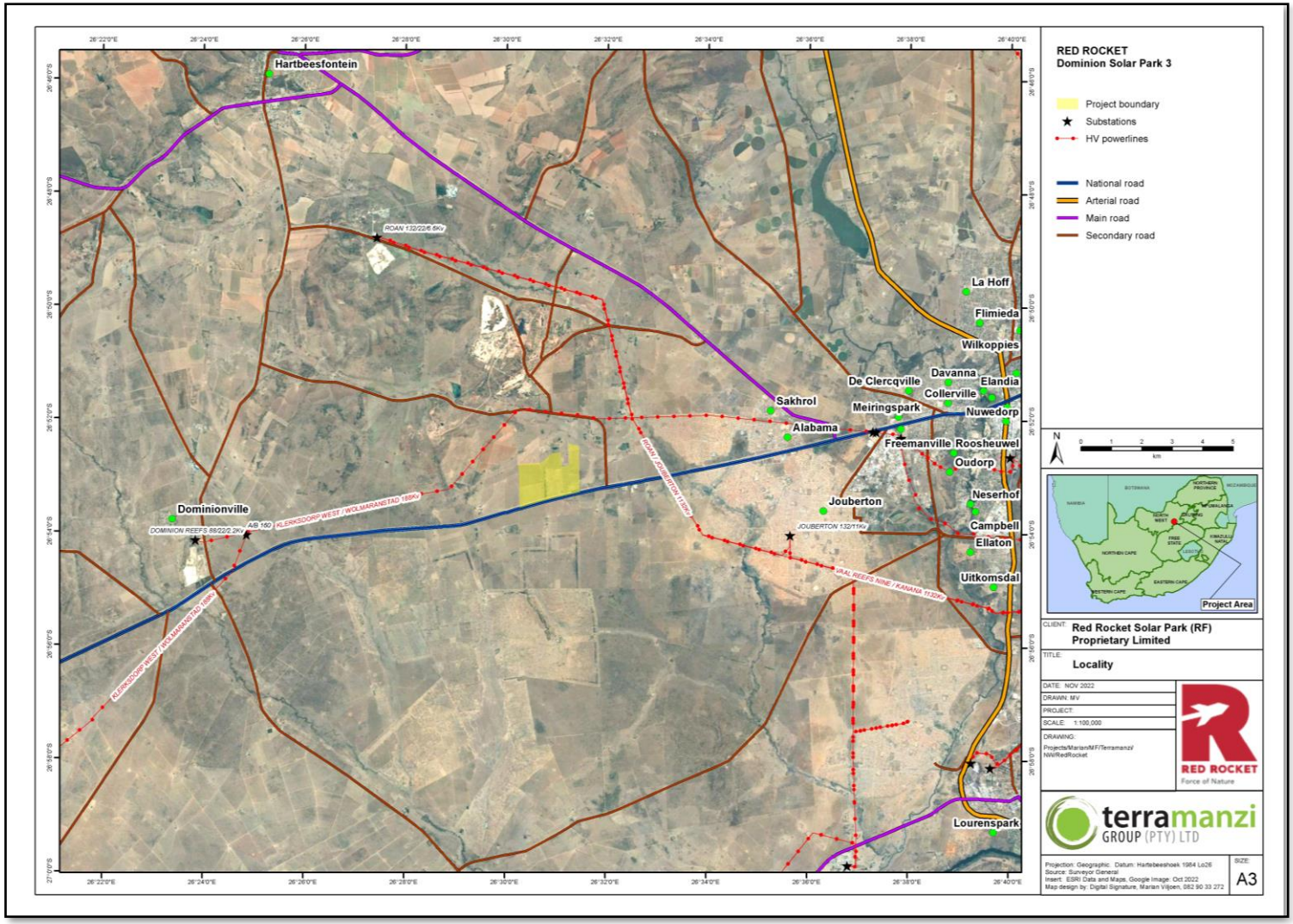

Figure 2.2: This figure shows the location of the proposed Dominion 3 Solar Park .

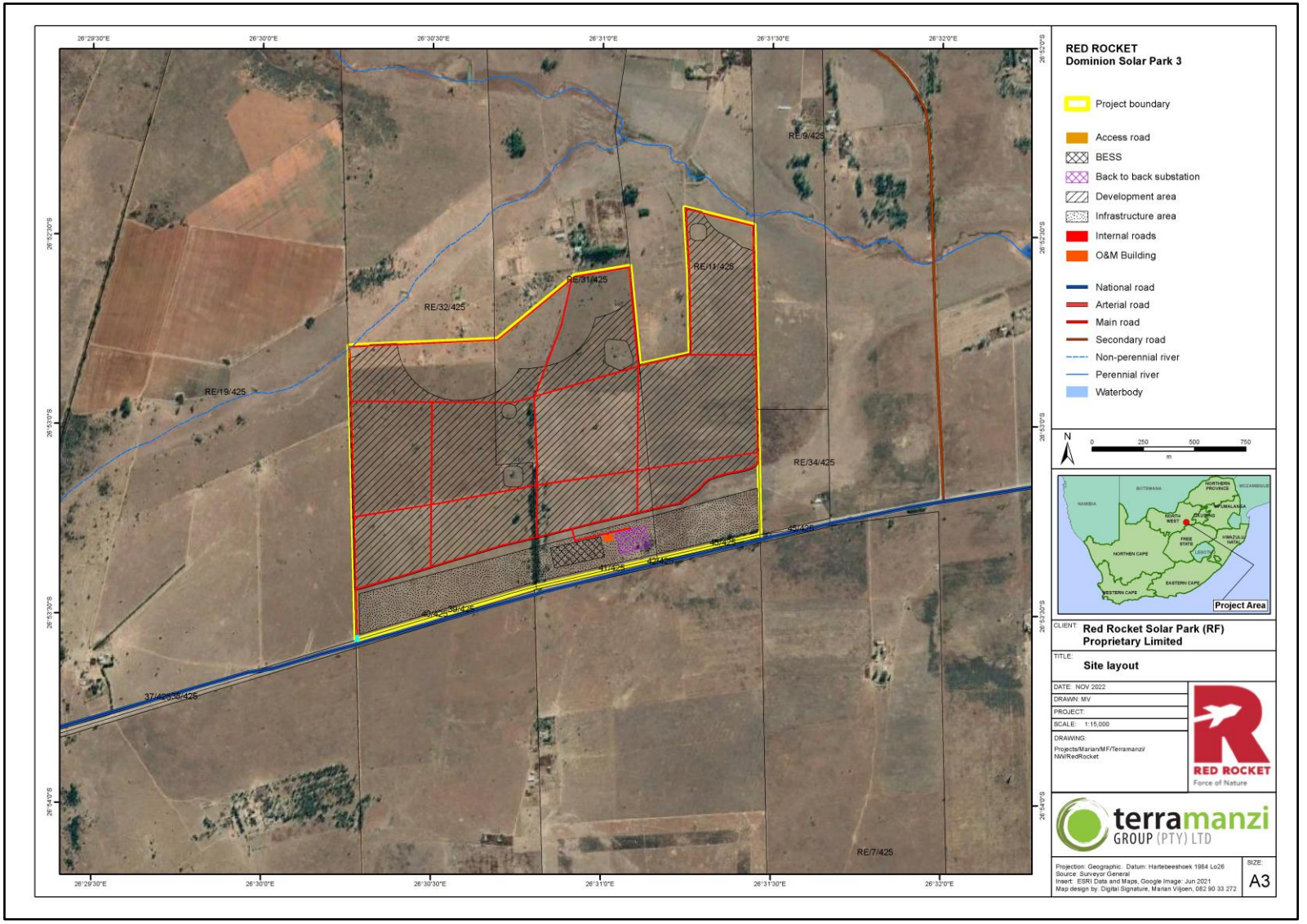

Figure 2.3: Proposed Facility Layout 1 for the Dominion 3 Solar Park.

2.2 SUMMARY OF INDEPENDENT SPECIALISTS UNDERTAKEN AS PART OF THIS BASIC ASSESSMENT REPORT

A list of the Specialist Assessments conducted to date have been included below:

Table 2.1: List of Specialist assessments carried out for the Proposed Dominion 3 Solar Park to date.

Specialist Assessment	Specialist	Date
Town Planning Report	Mr Corné Briedenhann (Warren Petterson Trading cc)	2022
Agricultural Impact Assessment	T. Setsipane, S. van Staden & B Mzila (SAS Environmental Services)	2022
Terrestrial Biodiversity	C. Steyn, D. van der Merwe & S.van Staden (SAS Environmental)	2022
Avifaunal Impact Assessment	Luke Verbugt (Enviro-Insight cc)	2022
Freshwater Impact Assessment	S.van Staden (SAS Environmental)	2022
Visual Impact Assessment	K. Nienaber & S. van Staden (SAS Environmental)	2022
Heritage Assessment Archaeology and Palaeontology	Wouter Fourie & Elize Butler (PGS Heritage)	2022
Traffic Impact Assessment	Nico Jonker (Innovative Transport Solutions)	2022
Noise Impact Assessment	Barend van der Merwe (dBAcoustics)	2022
Climate Impact Assessment	Hanlie Liebenberg -Enslin (Airshed)	2022
Geotechnical Impact Assessment	Shane Teek & Michael Baleta (GEOSS)	2022
Social Impact Assessment	Tony Barbour Environmental Consulting (C/O Tony Barbour)	2022

The following Specialist Assessments were undertaken, and their key findings have been summarised below:

2.2.1 Town Planning – Mr Corné Briedenhann (Warren Petterson Trading cc)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a town planning perspective. The Town Planner will facilitate the necessary Town Planning Application as required in terms of the City of Matlosana Spatial Planning and Land Use Management By-Law, 2016

The subject farms are zoned Agricultural Zone in terms of the Klerksdorp Land Use Management Scheme, 2005. According to the scheme regulations, no provision is made for renewable energy facilities on land zoned Agricultural.

As stated above, no provision is made for renewable energy facilities in the Klerksdorp Land Use Management Scheme, 2005. The footprints of the proposed Dominion 3 Solar Park will have to be rezoned to 'Special', under which specific development controls will be imposed pertaining to the solar energy facilities. A land use application will therefore be required in terms of Section 54 (3) (g) of the City of Matlosana Spatial Planning and Land Use Management By-Law, 2016

*Based on the findings of the Town Planning report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Town Planning perspective.*

2.2.2 Agricultural Findings – T. Setsipane, S. van Staden & B Mzila (SAS Environmental Services)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from an agricultural perspective

Based on the observations made during the site assessment the study area is dominated by open veld which are often utilised for grazing landuses. In addition, during the time of assessment no cultivation of crops was observed which may be attributed to the climatic and soil constraints.

The identified soil forms within the study area include the soils of Bainsvlei, Nkonkoni, Arcadia, Cartref, Rensburg and Mispah/Glenrosa formations. Mispah/Glenrosa were the dominant soil forms within the investigated footprint area followed by Bainsvlei and Nkonkoni soil forms.

The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible and should be assessed further in the EIA phase of the project. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.

*From a soil, land use and land capability point of view, this project regarded as **being of low impact significance due to the inherent soil constraints of the area to support crop agriculture**. However, mitigation measures and recommendations outlined in this document need to be strongly considered and implemented accordingly in efforts to conserve soil resources in the post development landscape*

In line with the new Department of Water and Sanitation (DWS) guidelines for hydropedological studies, this study was done at a high level (level 1 and 2) since solar cluster projects are generally not significant land use changing developments and have a limited impact on the hydropedological processes.

*Based on the findings of the Agricultural Soil and Land use report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from an Agricultural perspective.*

2.2.3 Terrestrial Biodiversity (Floral) Assessment C. Steyn, D. van der Merwe & S.van Staden (SAS Environmental Services)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a terrestrial (flora) perspective.

Direct impacts through clearance of vegetation will result in the loss of approximately 239 ha of vegetation. Of this, approximately 112 ha will be clearance of moderately low (Degraded, Secondary Grassland, and Wet-response Habitat) and low sensitivity habitat (Transformed Habitat), and 114 ha of intermediate sensitivity habitat (Vachellia erioloba Veld). No direct loss of Wetland Habitat (of moderately high sensitivity) will take place with the proposed layout. Considering this, ***the proposed activities will avoid loss of significant and high residual negative impacts to floral ecology****, and all impacts are anticipated to be restricted to local-scale loss of habitat only. Loss of "Natural Habitat" as per the IFC definition will not entirely be avoided for the Vachellia erioloba Veld but will effectively be avoided for the Wetland Habitat.*

The exact impact on floral SCC will only be determined after the floral walkdown of the authorised footprints have been undertaken. The direct impact of the Dominion 3 Solar Park's activities on the ***floral SCCs is not anticipated to result in the loss of significant SCCs****, given that a walkdown of the site takes place and measures taken to rescue potentially occurring VU species (nationally and provincially protected species are not likely to result in significant loss to population dynamics). The NFA-protected trees (Vachellia erioloba –present on site), the TNCO-protected species (Ammocharis coranica, Brachystelma spp., Gladiolus cf. crassifolius, Habenaria sp. – medium POC for Dominion 3 Solar Park), and sensitive species 1261 (VU) should be targeted during the floral walkdown within the Vachellia erioloba Veld and Degraded Grassland. Floral SCCs are not anticipated to occur in the Transformed Habitat, Secondary Grassland, or Wet-response Habitat. Permit application and guidance with regards to rescue and relocation, or destruction, of floral SCC will be required from the DFFE and the North West DEDECT.*

The below tables summarise the outcome of the impact assessment.

IMPACTS IN FLORAL ECOLOGY						
	PLANNING		CONSTRUCTION		OPERATIONAL AND MAINTENANCE	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Degraded Grassland	Low	Very low	Medium-low	Medium-low	Low	Low
Vachellia erioloba Veld	Low	Very low	Medium-low	Medium-low	Low	Very low
Secondary Grassland	Low	Very low	Low	Very low	Low	Very low
Wet-response Habitat	Low	Very low	Low	Low	Low	Very low
Wetland Habitat	Low	Very low	Medium-low	Low	Medium-low	Low
Transformed Habitat	Low	Very low	Medium-high	Medium-low	Medium-low	Low
IMPACT ON FLORAL SCC						
	PLANNING		CONSTRUCTION		OPERATIONAL AND MAINTENANCE	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Degraded Grassland	Medium-low	Low	Low	Very low	Low	Very low
Vachellia erioloba Veld	Low	Very low	Low	Very low	Low	Very low
Secondary Grassland	Very low	Very low	Very low	Very low	Very low	Very low
Wet-response Habitat	Very low	Very low	Very low	Very low	Very low	Very low
Wetland Habitat	Medium-low	Low	Low	Very low	Medium-low	Low
Transformed Habitat	Medium-low	Low	Low	Very low	Medium-low	Low

*Based on the findings of the Ecologist and the Terrestrial Flora Assessment report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Flora perspective.*

2.2.4 Terrestrial Biodiversity (Fauna) Assessment C. Steyn, D. van der Merwe & S.van Staden (SAS Environmental Services)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a terrestrial fauna perspective.

*Following the field assessment, five faunal habitats (5 SCC) were noted, namely the Degraded Grassland, Vachellia erioloba Veld, Secondary Grassland, Wetland Habitat and Anthropogenic Landscape Habitat). These habitat units have all been subjected to varying degrees of impacts from the high human presence, from grazing and from cultivation and as a result support a reduced diversity of faunal species. The Vachellia erioloba Veld and Moist Grassland are considered the most important habitat unit, as the Moist Grassland functions as an irreplaceable ecological system while the Vachellia erioloba Veld includes niche habitat for fauna. These largely intact units with higher floral richness increases habitat for many fauna and the rocky and bushy nature of the Vachellia erioloba Veld provides valuable opportunities for fauna. Due to existing and past disturbances within the Degraded Grassland and Secondary Grassland these units are of reduced sensitivity from a faunal perspective, although there is potential for increased diversity of common, or resilient and small bodied invertebrate and vertebrate mammal fauna. Although suitable habitat for foraging and shelter do occur for most fauna **the landscape is not considered valuable from a conservation perspective.** From a faunal ecological and resource management perspective the Transformed Habitat Unit obtained a "low" sensitivity, the Wet-Response and Secondary Grassland sub-unit obtained a "moderately low" sensitivity, while the Wetland Habitat, Degraded Grassland sub-unit and the Vachellia erioloba Veld sub-unit obtained a "intermediate" sensitivity.*

*The perceived impact significance of the proposed infrastructure development (prior to mitigation) on faunal habitat and diversity range from high to low. **Following mitigation, it is anticipated to that most impacts will be reduced to lower levels**. Impact scores remain medium high in the Vachellia erioloba Veld with mitigation fully implemented as the scale of development within this natural unit is large. In order to reduce the impact score some habitat for fauna should be left natural within the Vachellia erioloba Veld. The large scale clearing of vegetation and the long term nature of the project impacts habitat and concurrently diversity while the increased human presence may lead to higher potential for direct and indirect persecution of fauna. Also of concern, are unmanaged AIP proliferation and increased erosion which may potentially reduce faunal habitat suitability both within and on adjacent habitat. However, mitigation does occur for these and all other associated trigger activities from development, that will impact SCC and common fauna during the construction and operational phases. Should all mitigatory measures stipulated in section 19 be sufficiently implemented, significance of development risks and impacts can be considerably reduced*

*Based on the findings of the Ecologist and the Terrestrial Fauna Assessment report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Fauna perspective.*

2.2.5 Avifaunal Findings – Luke Verburgt (Enviro-Insight cc)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from an Avifaunal perspective

The total area for each Site of Ecological Importance (SEI) category as well as the intersection between the proposed infrastructure and each SEI category are shown for Dominion 3 Solar Park in ha. The degree of **avoidance mitigation has been achieved by the current infrastructure layout** can be quantified by comparing the proportional difference from 100%. In other words, a 76% intersect means that a 24% avoidance mitigation was achieved.

There are no major negative impacts to avifauna expected from the proposed development, provided that the proposed mitigation measures described in this report (section 19) are followed. The Combined Project Area and proposed project activities are considered to represent a low residual risk to avifauna (after application of mitigation) and therefore, the same is true for the Dominion 3 Solar Park. The specialists therefore recommends that the competent authority should grant environmental authorisation for this proposed PVSEF development (exclusive of any transmission lines which are to be evaluated separately), on condition that:

- All mitigation measures stipulated in the Basic Assessment report and specialist report are adhered to and captured in an Environmental Management Plan (EMP);
- The EMP must include the necessity for post-construction avifauna monitoring as stipulated in Jenkins et al (2017).

*Based on the findings of the Avifaunal specialist's impact report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Avifauna perspective.*

2.2.6 Freshwater Impact Assessment – S.van Staden and K. Nienaber (SAS Environmental Services)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from an Aquatic perspective

A freshwater ecosystem assessment was undertaken on the 13th and 14th of April 2022 during which two (2) seep wetlands and one (1) unchannelled valley bottom wetland were identified within the proposed Dominion 3 Solar Park and associated investigation area (defined as a 500m radius around the proposed Dominion 3 Solar Park). The results of the field assessment are as follows:

Freshwater ecosystem	Present Ecological State (PES)	Ecoservices	Ecological Importance and Sensitivity (EIS)	REC/BAS/RMO
Two seep wetlands within the proposed Dominion 3 Solar Park.	Category C (Moderately Modified)	Very Low - Low	Low/Marginal	REC Category: C BAS Category: C RMO: Maintain
Unchannelled Valley Bottom wetland in the proposed Dominion 3 Solar Park.	Category C (Moderately Modified)	Very Low-Moderately Low	High	REC Category: C BAS Category: C RMO: Maintain

Following the freshwater ecosystem assessment, the DWS Risk Assessment Matrix (2016) was applied to determine the significance of impacts of the proposed Dominion 3 Solar Park on the receiving freshwater environment. ***The proposed Dominion 3 Solar Park has been well-planned to avoid directly encroaching on any freshwater ecosystems*** *and an associated 24 m construction and operational phase buffer is a further mitigating factor. As a result, the outcome of the risk assessment indicates that the proposed activities pose a low risk significance to the identified freshwater ecosystems*

Based on the findings of the Freshwater specialist's impact report before the EAP, the appointed specialist ***has not identified any fatal flaws*** *with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Fresh water perspective.*

2.2.7 Visual Impact Assessment –S. Erwee & S. van Staden (SAS Environmental Services)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a Visual perspective

There are a limited number of receptors within the visual assessment zone, which are mostly situated to the north north east and north west, comprising farmsteads, the Alabama township, a small portion of the Jouberton township and an informal settlement. The only receptor located south of the Dominion 3 Solar Park are offices. The above mentioned sensitive receptors do however have existing tree lines which may potentially screen the view towards Dominion 3 Solar Park. Furthermore, there

are scattered tree clumps across the landscape as well which may partially obscure the view of the Dominion 3 Solar Park.

As the Dominion 3 Solar Park is located within a semi-rural landscape, with existing man-made structures such as powerlines, fences, roads and mining infrastructure, the visual impact associated with the proposed development is considered moderate. Sensitive receptors within the immediate vicinity (within a 1 km radius) will have the highest visual impact during the construction phase and immediately thereafter, however once the proposed PVSEF is operational the visual impact will be lowered as the PVSEF will form part of the existing industrial structures. The visual intrusion of Dominion 3 Solar Park is visually less intrusive to sensitive receptors located further than 1 km, as these receptors are less likely to observe the PVSEF, therefore **Dominion 3 Solar Park will have a moderately low visual impact** on the receiving environment. It can therefore be concluded that with adherence to the mitigation measures as outlined in this report, and in particular the placement of tall trees along the N12 road to partially obscure the associated infrastructure (BESS, substation and O&M Building) the proposed development **will not have a significant long term negative visual impact on the surrounding environment**, but rather be in keeping with the sense of place.

*Based on the findings of the Visual specialist's impact report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Visual perspective.*

2.2.8 Archaeology and Heritage Findings – Wouter Fourie (PGS Heritage)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a Heritage perspective

Heritage features

During the fieldwork a total of twelve heritage features and resources where identified:

- The impact on the recent structures (D3-001-D3-003, D3-006 to D3-008) identified during the fieldwork is calculated as having a **LOW significance** before and after the implementation of the proposed mitigation measures.
- The recent historic structures (D3-004, D3-005, D3-011 and D3-012) identified during the archival research and fieldwork was provisionally rated as having a high heritage significance with a grading of 3A due to the potential of infant or stillborn burial at these sites. The impact calculation shows a MODERATE impact significance pre-mitigation and **LOW after the implementation of mitigation measures.**
- Burial grounds and graves: The burial ground at site D3-009 and D3-010, consist of three graves, and have a high local heritage significance with 3A heritage grading. The possibility of the burial ground impacted by the proposed SF cannot be excluded and the project can potentially have a MODERATE impact without mitigation. Implementation of the recommended management and mitigation measures **can reduce the impact rating to LOW**

Palaeontology

The proposed Dominion 3 Solar Park is underlain by the Allanridge Formation and the Rietgat Formation (Platberg Group, Ventersdorp Supergroup). According to the PalaeoMap on the South

African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Allanridge Formation is Zero while that of the Rietgat Formation is Moderate (Almond and Pether 2008, SAHRIS website). The PDA notes that the paleontological significance and potential of the geology of the area is rated as low to zero. The impact significance is rated as **LOW** before and after mitigation.

Final project layout Impact Statement

From an archaeological and historical structure perspective, the proposed footprint areas have changed the pre- and post-mitigation impact to **LOW** for the heritage resources identified during the fieldwork. As such, the recommended mitigation measures as described in the HIA report and section 19 of this report remain.

Based on the findings of the Heritage specialist's impact report before the EAP, the appointed specialist ***has not identified any fatal flaws*** *with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Heritage perspective.*

2.2.9 Traffic Findings – Nico Jonker (Innovative Transport Solutions)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a Traffic perspective

In the Traffic Impact Assessment the impact of the additional traffic of the proposed Dominion 3 Solar Park development on the road network was investigated. The transportation activities include transportation activities during the construction phase as well as transportation activities during the operational phase of the project. The following conclusions were made in the report.

- The proposed development, located adjacent to the N12 freeway, is currently zoned for agriculture. Permission for the applicable land use rights will have to be obtained from the relevant authorities through a town planning process.
- Traffic counts were conducted, at the intersection of the N12 and D837 covering 6 hours on Wednesday, 20 April 2022.
- A growth rate of 2% per annum was applied to the 2022 background peak hour traffic volumes to estimate the future background volumes for the 2024 and 2027 horizon years.
- The expected number of person trips based on the employment opportunities for the development is 1400 during the construction phase and 120 person trips during the operational phase. This translates into 88 vehicle trips for the construction phase and 40 vehicle trips for the operational phase.
- Access to the proposed development is proposed from the N12 freeway via an access road. The location of the new intersection will in the future form part of the planned road network as per the latest roads masterplan.
- The spacing requirements of the proposed intersection are acceptable as per the Committee of Transport Officials (COTO) South African Road Classification and Access Management Manual (TRH 26).
- PTV Vistro software was used to conduct the capacity analysis for the intersections included in the study area. The existing and proposed intersections on the N12 are expected to operate at an acceptable Level of Service (LOS).

- Due to the locality of the proposed development, no existing pedestrian facilities are present. It is not expected that pedestrian facilities will be required.
- Due to the locality of the project in relation to other expected developments, and to be compliant with the road's master plan of the study area a full 2-way intersection of the N12 freeway and the proposed access road is required.
- The environmental impact of the transportation activities during the construction phase of the proposed development, with a significance rating of -5, is expected to be **low**.
- The environmental impact of the transportation activities during the operational phase of the proposed development, with a significance rating of -15, is expected to be **low**.

*Based on the findings of the Traffic specialist's impact report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Traffic perspective.*

2.2.10 Noise Findings - Barend van der Merwe (dBAcoustics)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a Noise perspective

The impact rating during the different stages of the construction phase of the project is as follows:

Site clearing and grubbing of footprint

Noise may be generated by the construction activities and the use of construction equipment such as Graders, TLB's and Front-end loaders. The use of this equipment will create an increase in noise levels in the immediate vicinity of the construction activities and in some cases at some distance from the activities.

Construction activities at the PV modules per solar park.

Noise could be generated by the following activities: earth drilling, generator noise and civil construction.

Construction of the infrastructure

The construction of the BESS, O&M building, Sub-station, roads may generate localised noise increase in particular the use of cranes and generators during the assembly stage of the sub-station and/or batteries.

There will be no noise intrusion into the abutting residential areas during the construction, and/or operation and decommissioning phases.

*Based on the findings of the Noise specialist's impact report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Noise perspective.*

2.2.11 Climate Impact Hanlie Libenberg-Enslin (Airshed)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a Climate Perspective

A Climate Change Assessment (CCA) was conducted to determine the potential long term climate change impacts as a result of the Dominion 3 Solar Park. Greenhouse gas (GHG) emissions for the project were calculated based on the Department of Forestry, Fisheries and Environment (DFFE) 2017 and 2022 Technical guidelines which are based on the Intergovernmental Panel on Climate Change (IPCC) emission factors and country specific nett calorific value and density information. This study considered Scope 1 emissions, which are the emissions directly attributable to the project and Scope 2 emissions, which are the emissions associated with bought-in electricity. Only Scope 1 emissions need to be quantified to be in line with the DFFE guidelines; the addition of Scope 2 would place the assessment in line with the guidelines provided by the International Finance Corporation (IFC).

The conclusions and recommendations of the assessment are summarised below:

- The region around Klerksdorp where Dominion 3 Solar Park is proposed to be developed is likely to experience increased temperatures and extreme weather-related events in the future. Climate change impacts will disproportionately affect under-developed communities that lack the physical and financial resources to cope with the physical effects of climate change, such as droughts, floods and increases in diseases.
- Construction- and operational-related GHG emissions from the proposed Dominion 3 Solar Park cannot be attributed directly to any particular climate change effects. In addition, GHG emissions from the proposed Dominion 3 Solar Park, when considered in isolation, will have a Low impact on the National GHG inventory total.
- Assuming that the hybrid facility replaces generative capacity from other fossil fuel sources, the facility could lower South Africa's GHG emissions from the Energy sector since the PV arrays and BESS provide renewable energy at a lower CO2-e emission per unit electricity.
- Assuming that the gas to power facility replaces generative capacity from other fossil fuel sources, the cumulative downstream impact from the facility could lower South Africa's GHG emissions from the Energy sector by 1.3% since Solar PV facility will have a lower emission per unit compared with the Eskom which is largely dependent on coal fired power stations. The cumulative impact significance on climate change could therefore be **Positive Medium**

Based on Dominion 3 Solar Park Scope 1 and Scope 2 GHG emissions, it is the specialist opinion that the project may be authorised due to its low impact significance, and the **positive** cumulative downstream impact since the Solar PV facility will have a lower emission per unit compared with the Eskom which is largely dependent on coal fired power stations

*Based on the findings of the Climate specialist's impact report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Climate perspective.*

2.2.12 Geotechnical Impact Shane Teek & Michael Baleta (GEOSS)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a Geotechnical perspective

The primary aim of the geotechnical investigation was to establish anticipated soil conditions across the site.

A summary of the pertinent findings are as follows:

- Increased soil erosion may transpire as an impact of development, this may persist for the life of the project.
- The thicknesses and engineering properties of the above horizons will need to be appropriately confirmed through future exploratory geotechnical investigations, prior to construction. Intrusive investigations will be required to confirm the anticipated conditions.
- Some geotechnical constraints have been identified, including the presence of potentially expansive soils and shallow bedrock and/or scattered rock outcrops and rockheads. These constraints may be mitigated via engineering design and construction measures.
- It is anticipated that shallow spread footings are suitable to support proposed typical single and double-storey structures that are commonly associated with such a development. However, this would have to be confirmed by intrusive investigations prior to construction.
- It is expected that light earth moving equipment would be sufficient to undertake the majority of the civil works. However, in areas of localised rock outcrops/rockheads, larger earth moving equipment may be required.
- GEOSS has endeavoured to highlight and characterise all potential geotechnical risks that are presented by the site that has been proposed for development. However, local variations may be present on site, and the findings are subject to further investigation.

*Based on the findings of the Geotechnical specialist's impact report before the EAP, the appointed specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Geotechnical perspective.*

2.2.13 Social Impact Assessment Tony Barbour (Tony Barbour Environmental Consulting)

Based on the evidence before the EAP, it is clear that the appointed specialist has not identified any fatal flaws with the project proposal and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable and implementable from a Social perspective

The findings of the SIA indicate that the development of the Dominion 3 Solar Park will create employment and business opportunities during both the construction and operational phase of the project. The findings of the SIA also indicate that the majority of the potential negative impacts can be effectively mitigated. The establishment of a Community Trust will also benefit the local community in the area. The significance of this impact is rated as High Positive. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The findings of the SIA also indicate that the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a

national level and at a local, community level. These benefits are linked to foreign Direct Investment, local employment and procurement and investment in local community initiatives. The establishment of the Dominion 3 Solar Park and associated infrastructure is therefore supported by the findings of the SIA.

Based on the findings of the Social specialist's impact report before the EAP, the appointed specialist ***has not identified any fatal flaws*** *with the project proposal, and it is reasonable to suggest that the Dominion 3 Solar Park is acceptable from a Social perspective.*

2.3 SUMMARISED IMPACTS ASSOCIATED WITH EACH ALTERNATIVE

This Section summarises the anticipated impacts of each alternative (preferred alternative and No-Go alternative) considered, as informed through independent specialist assessments and findings. The detailed comparative impact summary table is described and assessed in Section 12 of this draft BAR.

2.3.1 Potential Construction and Decommissioning Impacts

Construction and Decommissioning impacts have been assessed by the Professional Team and the EAP and are detailed in Section 12 of this Report.

- Agricultural Impact 1: Soil Erosion
- Agricultural Impact 2: Soil Compaction
- Agricultural Impact 3: Potential Soil Contamination
- Agricultural Impact 4: Loss of Agricultural Land Capability
- Terrestrial (Floral) Impact 1: Habitat and Diversity
- Terrestrial (Floral) Impact 2 on Floral SCC
- Terrestrial (Fauna) Impact 1 Habitat and Diversity
- Terrestrial (Fauna) Impact 2 on Fauna SCC
- Avifaunal Impacts 1: Direct loss of avifaunal habitat
- Avifaunal Impacts 2: Sensory disturbance
- Freshwater Impacts 1:Site Clearing
- Freshwater Impacts 2: Installation of Solar Panels
- Visual Impacts 1: Impact on the sense of Place
- Visual Impacts 2: Impact on Landscape Visual Intrusion and VAC Impacts
- Visual Impacts 3: Visual Exposure and Visibility Impacts
- Visual Impact 4: Impacts due to Night time Lighting
- Heritage Impact 1: Loss of Heritage Structures
- Heritage Impact 2:Loss of archaeological resources
- Heritage Impact 3 Loss of Burial Ground
- Heritage Impact 4: Loss of Fossil Heritage
- Traffic Impact 1:Transportation activities during construction
- Noise Impact 1: Noise from site clearing and grubbing
- Noise Impact 2: Noise from the construction activities at the PV modules per solar park

- Noise Impact 3: Noise from the construction activities of the infrastructure such as the BESS, O&M building sub-station and roads
- Noise Impact 4: Construction of the roads to and from the sites
- Geotechnical Impact 1: Geological Impact – soil erosion
- Climate Impact:1 Climate change impacts due to construction activities
- Social Impact 1: Creation of employment and business opportunities
- Social Impact 2: Presence of construction workers and potential impacts on family structures and social networks
- Social Impact 3: Influx of job seekers
- Social Impact 4: Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers
- Social Impact 5: Increased risk of veld fires
- Social Impact 6: Impact of construction activities and vehicles
- Social Impact 7: Loss of farmland
- Opportunity Loss State Owned Enterprise

2.3.2 Potential Operational Impacts

Operational impacts have been assessed by the Professional Team and the EAP and are detailed in Section 12 of this Report.

- Agricultural Impact 1: Soil Erosion
- Agricultural Impact 2: Soil Compaction
- Agricultural Impact 3: Potential Soil Contamination
- Agricultural Impact 4: Loss of Agricultural Land Capability
- Terrestrial (Floral) Impact 1: Habitat and Diversity
- Terrestrial (Floral) Impact 2 on Floral SCC
- Terrestrial (Fauna) Impact 1 Habitat and Diversity
- Terrestrial (Fauna) Impact 2 on Fauna SCC
- Avifaunal Impacts 1: Direct mortality through collision and electrocution
- Avifaunal Impacts 2: Attraction of birds
- Avifaunal Impact 3: Ecotoxicity
- Freshwater Impacts 1:Site Clearing
- Freshwater Impacts 2: Installation of Solar Panels
- Visual Impacts 1: Impact on the sense of Place
- Visual Impacts 2: Impact on Landscape Visual Intrusion and VAC Impacts
- Visual Impacts 3: Visual Exposure and Visibility Impacts
- Visual Impact 4: Impacts due to Night time Lighting
- Heritage Impact 1: Loss of Heritage Structures
- Traffic Impact 1:Transportation activities during operations
- Noise Impact 1: Noise generated by the BESS.
- Noise Impact 2: Noise generated by the Central inverter.
- Noise Impact 3: Noise generated by the Sub-station.
- Noise Impact 4: Noise generated by the O&M Building
- Noise Impact 5 Noise generated by the PV panels
- Noise Impact 6: Roads to and from site

- Noise Impact 7:Noise generated by the maintenance activities.
- Geotechnical Impact 1: Geological Impact – soil erosion
- Climate Impact:1 Climate change impacts due to Project operations
- Climate Impact:2 Climate change impacts due to Project operations (positive)
- Social Impact 1: Promotion of renewable energy projects
- Social Impact 2: Creation of employment and business opportunities
- Social Impact 3: Establishment of Community Trust
- Social Impact 4: Generate income for affected landowner/s
- Social Impact 5: Impact on property values
- Social Impact 6: Impact on tourism
- Opportunity Loss State Owned Enterprise
- Country Opportunity
- Renewable Energy

2.3.3 Overall Findings for this Draft Basic Assessment Report

Based on the information presented in this Report, inclusive of independent expert studies, the findings of this draft Basic Assessment indicate that the Project, in the form of the preferred alternative, (read strictly in conjunction with the mitigation measures stipulated in Section 19.1 of this draft report as well as the attached draft EMPr, which must form part of the Conditions of the Environmental Authorisation) will not result in unacceptable negative impacts.

The Preferred Alternative for this project is described as follows:

Proposed along the northern portion of the property are:

- Back to Back Substation (Including facility substation, Eskom collector station with feeder bays (15000m^2)(140MVA)
- An Battery Energy Storage System (BESS) - Storage Capacity (500MWh)
- An operations and maintenance Building (O&M Building) approximately 1 900m^2)

Proposed over the developable areas on the property area (Excluding environmental sensitivity):

- Internal Access Road 8m wide roads (20km)
- PV Modules

The preferred alternative has been assessed in this draft Basic Assessment Report. The positions of these ancillary infrastructure were selected keeping in mind that the site is currently actively farmed and to ensure there is no interference in the current and future farming activities. The construction of Dominion 3 Solar Park addresses a national and regional need for the generation of clean, renewable energy and greater access to electricity through the construction of necessary infrastructure. This goal is reflected in national plans and policies as well as regional SDF's, IDP's and Development Programmes. The project site has been earmarked for renewable energy generation and its associated infrastructure. The Preferred Alternative is the most feasible and reasonable alternative and has been comparatively assessed against the no-go alternative in this Report. Please kindly refer to Section 12 of this draft BAR.

The **Preferred Alternative** for the purposes of this Report refers to a Project alternative that takes into consideration and implements the findings and recommendations of the professional team, which

have been noted above in terms of operational, layout and infrastructure alternatives considered to date, and which have all been informed through independent expert assessments.

In conclusion and based on:

I. The Specialist Study Findings undertaken by the Professional Team appointed to this, Project and represented in Section 8 of this draft Basic Assessment Report;
II. The assessment undertaken by the EAP in conjunction with the Specialist Findings and represented in Section 8 and 12 of the draft Basic Assessment Report; and
III. The motivation of Alternatives in Section 9.

It is reasonable to suggest the overall impact associated with the project and associated infrastructure will be mitigated to an acceptable environmental level and **therefore it is reasonable to suggest that there is no reason why the Competent Authority should not authorise the preferred alternative.**

Table 2.3.1: Condensed Impact Rating Summary showing Total Score for Each Alternative with Mitigation

SUMMARY TABLE OF IMPACT OF EACH CRITERIA (WITH MITIGATION MEASURES)		
POTENTIAL IMPACT	**PREFERRED ALTERNATIVE**	**NO-GO ALTERNATIVE:**
Construction and Decommissioning		
Agricultural Impact 1: Soil Erosion	-12	1
Agricultural Impact 2: Soil Compaction	-12	1
Agricultural Impact 3: Potential Soil Contamination	-12	1
Agricultural Impact 4: Loss of Agricultural Land Capability	-8	1
Terrestrial (Floral) Impact 1: Habitat and Diversity	-18	1
Terrestrial (Floral) Impact 2 on Floral SCC	-8	1
Terrestrial (Fauna) Impact 1 Habitat and Diversity	-18	1
Terrestrial (Fauna) Impact 2 on Fauna SCC	-18	1
Avifaunal Impacts 1: Direct loss of avifaunal habitat	-12	1
Avifaunal Impacts 2: Sensory disturbance	-6	1
Freshwater Impacts 1:Site Clearing	-18	1
Freshwater Impacts 2: Installation of Solar Panels	-12	1
Visual Impacts 1: Impact on the sense of Place	-18	1
Visual Impacts 2: Impact on Landscape Visual Intrusion and VAC Impacts	-27	1
Visual Impacts 3: Visual Exposure and Visibility Impacts	-12	1

Visual Impact 4: Impacts due to Night time Lighting	-8	1
Heritage Impact 1: Loss of Recent Structures	-12	1
Heritage Impact 2:Loss of Historic structures	-8	4
Heritage Impact 3 Loss of Burial Ground	-12	4
Heritage Impact 4: Loss of Fossil Heritage	-8	1
Traffic Impact 1:Transportation activities during construction	-4	1
Noise Impact 1: Noise from site clearing and grubbing	-2	-8
Noise Impact 2: Noise from the construction activities at the PV modules per solar park	-2	-8
Noise Impact 3: Noise from the construction activities of the infrastructure such as the BESS, O&M building sub-station and roads	-2	-8
Noise Impact 4 Construction of the roads to and from the sites	-2	-16
Climate Impact:1 Climate change impacts due to construction activities	-12	4
Geotechnical Impact 1: Geological Impact – soil erosion	1	1
Social Impact 1: Creation of employment and business opportunities	18	-6
Social Impact 2: Presence of construction workers and potential impacts on family structures and social networks	-2	-2
Social Impact 3: Influx of job seekers	-8	-8
Social Impact 4: Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	-1	-1
Social Impact 5: Increased risk of veld fires	-1	-1
Social Impact 6: Impact of construction activities and vehicles	-2	-1
Social Impact 7: Loss of farmland	-3	-1
Opportunity Loss State Owned Enterprise	108	-36
Operational Impacts		
Agricultural Impact 1: Soil Erosion	-8	1
Agricultural Impact 2: Soil Compaction	-2	1
Agricultural Impact 3: Potential Soil Contamination	-8	1
Agricultural Impact 4: Loss of Agricultural Land Capability	-4	1
Terrestrial (Floral) Impact 1: Habitat and Diversity	-12	1

Terrestrial (Floral) Impact 2 on Floral SCC	-12	1
Terrestrial (Fauna) Impact 1 Habitat and Diversity	-18	1
Terrestrial (Fauna) Impact 2 on Fauna SCC	-18	1
Avifaunal Impacts 1: Direct mortality through collision and electrocution	-12	1
Avifaunal Impacts 2: Attraction of birds	-6	1
Avifaunal Impact 3: Ecotoxicity	-6	1
Freshwater Impacts 1:Site Clearing	-9	1
Freshwater Impacts 2: Installation of Solar Panels	-9	1
Visual Impacts 1: Impact on the sense of Place	-16	1
Visual Impacts 2: Impact on Landscape Visual Intrusion and VAC Impacts	-27	1
Visual Impacts 3: Visual Exposure and Visibility Impacts	-18	1
Visual Impact 4: Impacts due to Night time Lighting	-12	1
Traffic Impact 1:Transportation activities during operations	-12	1
Noise Impact 1: Noise generated by the BESS.	4	-16
Noise Impact 2: Noise generated by the Central inverter.	4	-16
Noise Impact 3: Noise generated by the Sub-station.	8	-16
Noise Impact 4: Noise generated by the O&M Builiding	4	1
Noise Impact 5 Noise generated by the PV panels	4	-16
Noise Impact 6:Roads to and from site	4	-16
Noise Impact 7:Noise generated by the maintenance activities.	4	-16
Geotechnical Impact 1: Geological Impact – soil erosion	1	1
Climate Impact:1 Climate change impacts due to Project operations	-36	6
Climate Impact:2 Climate change impacts due to Project operations (positive)	72	-72
Social Impact 1: Promotion of renewable energy projects	108	-81
Social Impact 2: Creation of employment and business opportunities	18	-1
Social Impact 3: Establishment of Community Trust	48	-12

Social Impact 4: Generate income for affected landowner/s	12	-12
Social Impact 5: Impact on property values	-6	-2
Social Impact 6: Impact on tourism	-6	-1
Country Opportunity	108	-54
Opportunity Loss State Owned Enterprise	108	-36
Renewable Energy Impact	144	-27
TOTAL	221	**-432**

Based on the above, and the findings of this environmental assessment process, there is no reason to suggest that the Preferred Alternative cannot be authorised by the Competent Authority.

3 GENERAL PROJECT INFORMATION

3.1 OVERVIEW OF THE BASIC ASSESSMENT PROCESS

The **Basic Assessment process** can be broadly broken down into the key phases presented in the image below. The process proposed is in keeping with the requirements stipulated in the NEMA EIA Regulations (2014, as amended) (GN No. R. 326 refers):

The phases highlighted in grey above illustrate phases already completed. The phase highlighted in orange is currently underway and the phases highlighted in green are pending. The application requirements as set out in Notice Nos R. 326, R. 327, R. 325 and R. 324, promulgated in terms of Section 5 of the NEMA and the requirements of the Department of Environment, Forestry and Fisheries (DFFE) have been followed in the preparation of this BAR.

The Draft BAR is available for 30-day Public Participation Process (PPP). PPP commenced on **14 November 2022** and will conclude on **13 December 2022**. Once this commenting period has concluded, the final Basic Assessment report will be submitted for decision.

3.2 CONTENT OF THE BASIC ASSESSMENT REPORT

This Draft BAR for Public consultation contains all information which is necessary for an appropriate understanding of the project, describing all considered alternatives, the scope of the assessment, and the consultation process to be undertaken throughout the BAR Environmental Permitting Process. The summarised content of this BAR, as prescribed by NEMA EIA Regulations (2014, as amended) is presented in Table 3.2 below.

Appendix 1 Regulation 3 of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended) stipulates that a BAR must contain the information that is necessary for the Competent Authority to consider and come to a decision on the application, and must include the following:

Table 3.2: Requirements of the NEMA EIA Regulations (2014, as amended).

Regulation		Scope of Assessment and Content of Basic Assessment Report	Relevant Sections
A1 R3 (a)		**Details of:**	
	(i)	*The EAP who prepared the report; and*	Section 4.2
	(ii)	*The expertise of the EAP, including a curriculum vitae*	Section 4.2
A1 R3 (b)		***The location of the activity, including:***	
	(i)	*The 21 digit Surveyor General code of each cadastral land parcel;*	Section 4.3
	(ii)	*Where available, the physical address and farm name; and*	Section 4.3
	(iii)	*Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.*	Section 4.3
A1 R3 (c)		***A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is-***	
	(i)	*a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;*	Section 4.3
	(ii)	*on land where the property has not been defined, the coordinates within which the activity is to be undertaken;*	Section 4.3
A1 R3 (d)		***A description of the scope of the proposed activity, including:***	
	(i)	*All listed and specified activities triggered and being applied for; and*	Section 5.3
	(ii)	*A description of the associated structures and infrastructure related to the development*	Section 5.2
A1 R3 (e)		***A description of the policy and legislative context within which the development is proposed including:***	
	(i)	*An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and*	Section 6
	(ii)	*How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments*	Section 6
A1 R3 (f)		***A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location***	Section 7

A1 R3 (g)		***A motivation for the preferred development footprint within the approved site***	Section 9.2
A1 R3 (h)		***A full description of the process followed to reach the proposed development footprint within the approved site, including:***	
	(i)	*Details of the alternatives considered;*	Section 9.1
	(ii)	*Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;*	Section 14
	(iii)	*A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;*	N/A
	(iv)	*The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*	Section 8
	(v)	*The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-*	Section 12
		(aa) Can be reversed	Section 12
		(bb) May cause irreplaceable loss of resources; and	Section 12
		(cc) Can be avoided, managed or mitigated	Section 12
	(vi)	*The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks with the alternatives;*	Section 11
	(vii)	*Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*	Section 12
	(viii)	*The possible mitigation measures that could be applied and level of residual risk;*	Section 12
	(ix)	*The outcome of the site selection matrix;*	Section 10
	(x)	*if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and*	Section 9
	(xi)	*A concluding statement indicating the preferred alternative development location within the approved site;*	Section 9.2
A1 R3 (i)		***A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-***	
	(i)	*A description of all environmental issues and risks that were identified during the environmental impact assessment process; and*	Section 12
	(ii)	*An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;*	Section 12
A1 R3 (j)		***An assessment of each identified potentially significant impact and risk, including-***	
	(i)	*Cumulative impacts;*	Section 12
	(ii)	*The nature, significance and consequences of the impact and risk;*	Section 12
	(iii)	*The extent and duration of the impact and risk;*	Section 12
	(iv)	*The probability of the impact and risk occurring;*	Section 12
	(v)	*The degree to which the impact and risk can be reversed;*	Section 12

	(vi)	*The degree to which the impact and risk may cause irreplaceable loss of resources; and*	Section 12
	(vii)	*The degree to which the impact and risk can be mitigated;*	Section 12
A1 R3 (k)		***Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;***	Section 8
A1 R3 (l)		***An environmental impact statement which contains:***	
	(i)	*A summary of the key findings of the environmental impact assessment:*	Section 2
	(ii)	*Map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and*	Section 2
	(iii)	*A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;*	Section 2
A1 R3 (m)		***Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;***	Section 8
A1 R3 (n)		***Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation***	Not Applicable accommodated in the EMPr
A1 R3 (o)		***A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;***	Section 17
A1 R3 (p)		***A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;***	Section 18
A1 R3 (q)		***Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;***	Section 18 – Not Applicable
A1 R3 (r)		***An undertaking under oath or affirmation by the EAP in relation to:***	
	(i)	*The correctness of the information provided in the reports;*	Section 19
	(ii)	*The inclusion of comments and inputs from stakeholders and l&APs;*	Section 19
	(iii)	*The inclusion of inputs and recommendations from the specialist reports where* *relevant; and*	Section 19
	(iv)	*Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;*	Section 19
A1 R3 (s)		***Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts***	Not Applicable
A1 R3 (t)		***Any specific information that may be required by the Competent Authority***	Section 16
A1 R3 (u)		***Any other matters required in terms of Section 24(4)(a) and (b) of the Act***	This BAR has been written in accordance with Section

		24(4) (a) and (b) of the Act.

3.2.1 Receiving environment

3.3 OBJECTIVES OF THE BASIC ASSESSMENT PROCESS

In accordance with the **Appendix 1 Regulation 2 of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended)** the objective of the BAR is to, through a consultative process-

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
(b) identify the alternatives considered, including the activity, location, and technology alternatives;
(c) describe the need and desirability of the proposed alternatives;
(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine-
i. the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
ii. the degree to which these impacts-
(aa) can be reversed;
(bb) may cause irreplaceable loss of resources; and
(cc) can be avoided, managed or mitigated; and
(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to-
i. identify and motivate a preferred site, activity and technology alternative;
ii. identify suitable measures to avoid, manage or mitigate identified impacts; and
iii. identify residual risks that need to be managed and monitored

4 PROJECT DETAILS

4.1 ENTITY RESPONSIBLE FOR DEVELOPMENT OF THE PROJECT

Table 4.1: This table depicts the Project Administrative Details

PROJECT ADMINISTRATION DETAILS	
DEVELOPMENT ENTITY	
Applicant Name	Dominion 3 Solar Park (Pty) Ltd
Responsible Person	Mr Matteo Giulio Luigi Brambilla
Address	14th Floor Pier Place Heerengracht Street Foreshore Cape Town 8001
Contact Details	+27 (0)72 212 1531 (C) Email: m.logan@redrocket.energy

4.2 EAP DETAILS, EXPERTISE AND INDEPENDENCE

*In accordance with **Appendix 1 Regulation 3(a) of GN No. R.326 of the NEMA EIA Regulations (2014, as amended)**:*

Details of-

i. The EAP that prepared the report, and
ii. The expertise of the EAP, including curriculum vitae

Terramanzi Group (Pty) Ltd ("TMG"), is the consulting firm appointed to undertake this Application for Environmental Authorisation (EA) on behalf of the Applicant.

Roschel Maharaj is the independent EAP responsible for this report. Roschel was involved in the compilation and review of this draft report. Roschel is an environmental consultant with more than 5 years of experience. She is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (2019/824). Roschel holds a BSc (Hons) in Environmental Management from the University of South Africa (UNISA), and is a senior member of the Environmental Services Team at Terramanzi Group (Pty) Ltd.

Kristen Shaw is an environmental consultant and the Co-Author of this report. Kristen holds a Ba in Psychology, Geography and Environmental Management and a BSc (Hons) in Environmental Sciences, with Geography and Environmental Management from the North West University. She is a junior member of the Environmental Services Team at Terramanzi Group (Pty) Ltd and registered as a Candidate EAP with The Environmental Assessment Practitioners Association of South Africa (EAPASA) (2022/4741), waiting on approval of registration.

This report was reviewed by Fabio Venturi whose career spans over 20 years in the industry, across both the government and private sectors of the green economy. Fabio's entrepreneurial drive to innovate and influence has resulted in multiple industry firsts and awards. Fabio is an Accredited Professional with the GBCSA, a Certified Environmental Scientist, served on the South Africa Environmental Industry Body, that being the Western Cape Committee Branch of the South African Affiliate of the International Association for Impact Assessment (IAIAsa), and sat on the National Executive Committee (NEC) of IAIAsa, and is a Certified Carbon Footprint Analyst and Energy Efficiency Auditor.

TMG hereby declares that they have no conflicts of interest related to the work of this report. Specifically, TMG declares that they have no personal financial interests in the property and/or activity being assessed in this report, and that they have no personal or financial connections to the relevant property owners, developers, planners, financiers or consultants of the property or activity, other than fair remuneration for professional services rendered for this report to the Competent Authority. TMG declares that the opinions expressed in this report are independent and a true reflection of their professional expertise.

TMG is a **Level 4 Broad Based Black Economic Empowerment Company** and is **professionally accredited** with a number of relevant industry bodies, in line with the Preferential Procurement Policy Framework Act No. 5 of 2000 (PPPFA).

Please refer to Appendix G for the EAP's Curriculum Vitae

4.3 PROJECT LOCATION

*In accordance with **Appendix 1 Regulation 3(b) of GN No. R. 326 of the NEMA EIA Regulations (2017, as amended)**:*

***3(b):** The location of the activity, including:*

i. The 21-digit Surveyor General Code of each cadastral land parcel;
ii. Where available the physical address and farm name; and
iii. Where the required information in terms (i) and (ii) is not available, the coordinates of the boundary of the property or properties.

The site of the proposed Dominion 3 Solar Park is situated within the City of Matlosana Local Municipality, which is an administrative area of the Dr Kenneth Kaunda District Municipality, North West Province. An area of approximately 246ha, located approximately 13km West of the town of Klerksdorp and approximately 11km east of Dominionville.

The applicant intends to develop a Photovoltaic Solar Energy Facility (PVSEF) and associated infrastructure (also interchangeably referred to as the proposed development of Dominion 3 Solar Park and associated infrastructure – hereinafter referred to as Dominion 3 Solar Park of up to 100MW megawatts (million watts MW) portion 11, 31 and 32 of Remainder of Farm Wolverand 425, in the City of Matlosana Local Municipality, within the jurisdiction of the Dr. Kenneth Kaunda District Municipality. The project will have a generating capacity of no more than 100MW and Battery Energy Storage Systems ("BESS") of 500MWh. Tier 1 bi-facial, single axis trackers will be utilised for the panels. An on-site substation with a capacity of 140MVA, will enable the connection of a 132kV Overhead Powerline ("OHPL"). The final interconnection solution will be dependent on the requirements of Eskom, which are still to be defined and will be included in a separate Basic Assessment Process. The associated infrastructure will also include internal access roads, Back to Back Substation (Including facility substation, Eskom collector station with feeder bays (15000 m2)(140MVA) and a O&M Building.

These locations on-site, will be finalised and aligned to specialist findings with the aim of avoiding sensitive/ no-go areas. The access road would approximately be 8m and the 132kV powerline route, is anticipated to traverse the adjacent farms to the final interconnection solution dependent on the requirements of Eskom, which are still to be defined and will be assessed in a sperate Basic Assessment Report.

The cadastral unit making up the Dominion 3 Solar Park are given in **Table 4.2** below.

Table 4.2: Details of the land parcel(s) within the Dominion 3 Solar Park, where the proposed structures and Basic Assessment will be located.

CADASTRAL LAND PARCEL	SG21 DIGITAL CODE	GPS CO-ORDINATES
Farm Wolverand **• RE/11/425** **• RE/31/425** **• RE/32/425**	T0IP00000000042500011 T0IP00000000042500031 T0IP00000000042500032	North west corner: 26°52'47.84"S, 26°30'15.60"E
		North east corner: 26°52'28.19"S, 26°31'26.74"E
		Middle point: 26°53'6.38"S, 26°30'52.51"E
		South eastern corner: 26°53'17.06"S, 26°31'27.64"E
		South western corner: 26°53'33.98"S, 26°30'16.60"E

4.4 SITE LOCATION OF THE PROJECT

In accordance with ***Appendix 1 Regulation 3 (c) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended)****:*

3(c): *A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructures at an appropriate scale, or if it is-*

i. *A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken*
ii. *On land where the property has not been defined, the coordinates within which the activity is to be undertaken*

The proposed Dominion 3 Solar Park is located within the City of Matlosana Local Municipality which forms part of the Dr Kenneth Kaunda District Municipality. Dr Kenneth Kaunda District Municipality lies south east of the North West province of South Africa and covers an area of 14 671km². As of 2016, it had a population of 742 821. The Dr Kenneth Kaunda District Municipality is a Category C municipality in the North West Province. It is located 65km south-west of Johannesburg and borders the Gauteng Province on that side. The towns in the municipality are Hartbeesfontein, Klerksdorp, Leeudoringstad, Makwassie, Orkney, Potchefstroom, Stilfontein, Ventersdorp, Witpoort, Wolmaransstad The Dr Kenneth Kaunda District Municipality is comprised of three (03) Local Municipalities: JB Marks, City of Matlosana and Maquassi Hills. It is the smallest district in the province, making up 14% of its geographical area. It is a region with a rich and diverse natural and cultural heritage, with the potential for sustained economic growth. The region is home to some of the most prominent gold mines in the world and one of the oldest meteor impact sites in the world. The district is serviced by a number of primary roads, with the N12 Treasure Corridor forming the main development axis in the district and serving as a potential concentration point for future industrial, commercial and tourism development.

The site is located within the City of Matlosana Local Municipality. Located 15km to the north east of the site is the town of Klerksdorp. Located 21km to the south east of the site is the town of Orkney. Located 18km to the far north west of the site is the town of Hartbeesfontein, and located 12km to the west of the site is the settlement of Dominionville, that can be described as a mining village as the town was built around the Dominion Reefs uranium deposit. Please **refer to Figures 4.4.1, 4.4.2, 4.4.3** and **4.4.4** below, which depict the site location from a regional, location and detailed perspective.

The proposed Dominion 3 Solar Park is located within the gazetted **Klerksdorp Renewable Energy Development Zone 10** (REDz), as well as in the **Central Corridor** of the Strategic Transmission Corridor (EGI) (**refer to Figure 4.4.3**). The REDZ and EGI areas were established by the DFFE (refer to section 6.1.12) to prioritise renewable energy developments in certain areas over South Africa. This also means that various renewable energy projects are usually in close proximity to one another, however when referring to Figure 7.4.1 there can be seen the proposed Dominion 3 Solar Park development represent the only such development for a radius of 12 km and there are eight known PVSEFs within a 30 km radius. Given the low number of renewable energy facilities within a 30 km radius it is highly unlikely that any major cumulative impacts can be expected from such developments

The site extent showing the farm boundary and the Facility Layout 1 of Dominion 3 Solar Park **Farm Wolverand RE/11/425, RE/31/425, RE/32/425** is presented in **Figure 4.5**

Bend points of the proposed Dominion 3 Solar Park site perimeter (boundary):

1. North west corner: 26°52'47.84"S, 26°30'15.60"E
2. North east corner: 26°52'28.19"S, 26°31'26.74"E
3. Middle point: 26°53'6.38"S, 26°30'52.51"E
4. South eastern corner: 26°53'17.06"S, 26°31'27.64"E
5. South western corner: 26°53'33.98"S, 26°30'16.60"E

4.5 PROJECT DESIGN (SUMMARY OF THE ITERATIVE DESIGN PROCESS)

The affected property of this project was assessed by independent specialists upfront and development opportunities and constraints were identified in the form of ''developable'' and ''non-developable'' areas, which were then spatially represented. The Applicant then used this information to locate the proposed facility and associated infrastructure, in the form of an envelope design to algin the fluid nature of the REIPPP BID processes. Layout 1 (the preferred Dominion 3 Solar Park Layout of development areas of the PV modules and infrastructure area) was ultimately presented in this Report as the preferred site configuration to accommodate the most acceptable and implementable layout for Dominion 3 Solar Park and all associated infrastructure. Please refer to the ''Opportunities and Constraints Map'' (refer to **Figure 4.6**) for ease of reference.

Based on the above, Layout 1 (together with any associated mitigation measures, as described in the Alternatives Section 9 undercover) is presented as the ''Preferred Alternative'' and which has been assessed against the ''No-Go Alternative'' as no other feasible or reasonable alternative have been identified by the professional team using the iterative design process noted above.

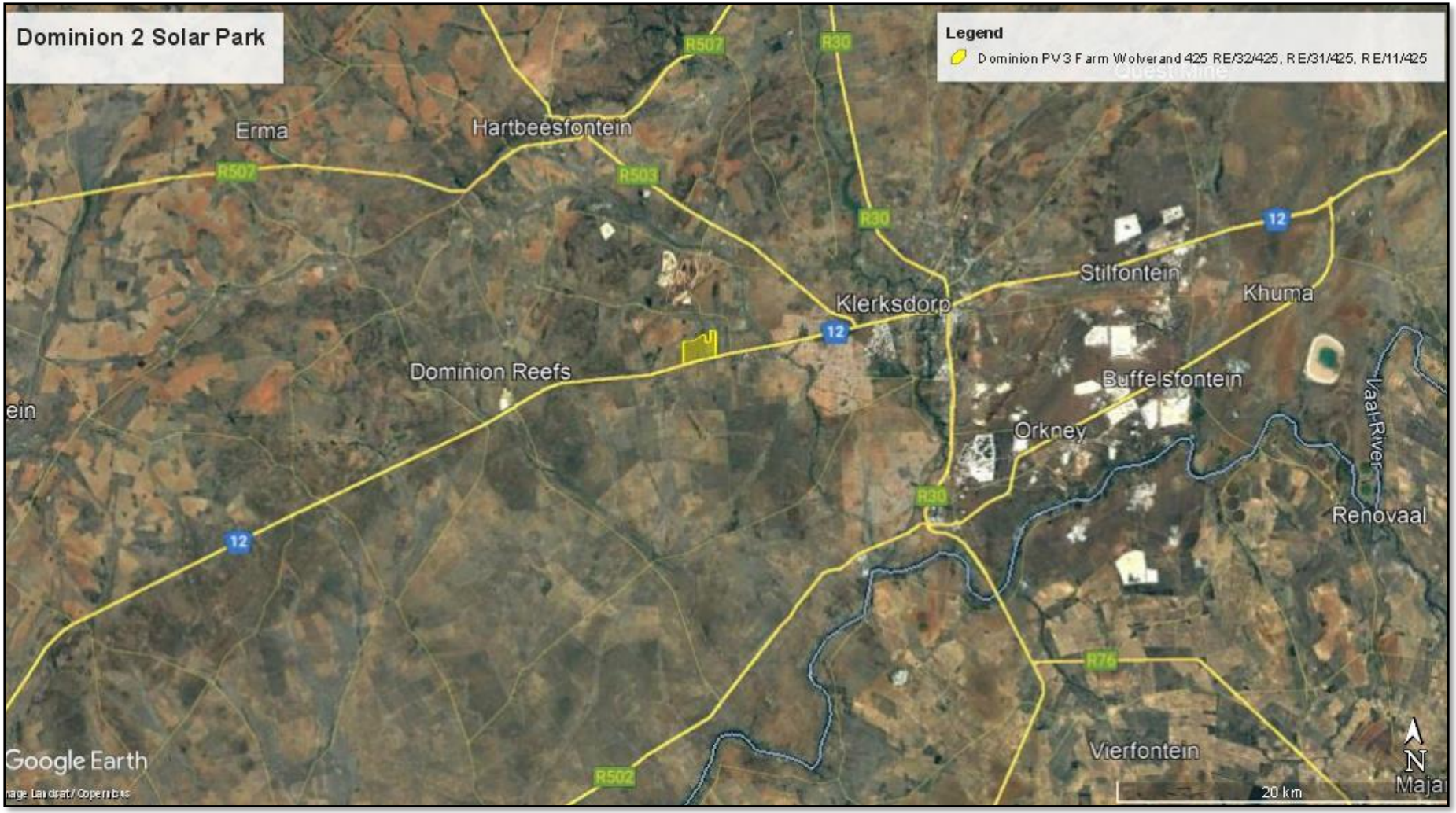

Figure 4.4.2 Site Locality Map – Broad Geographical Context – Dominion 3 Solar Park .

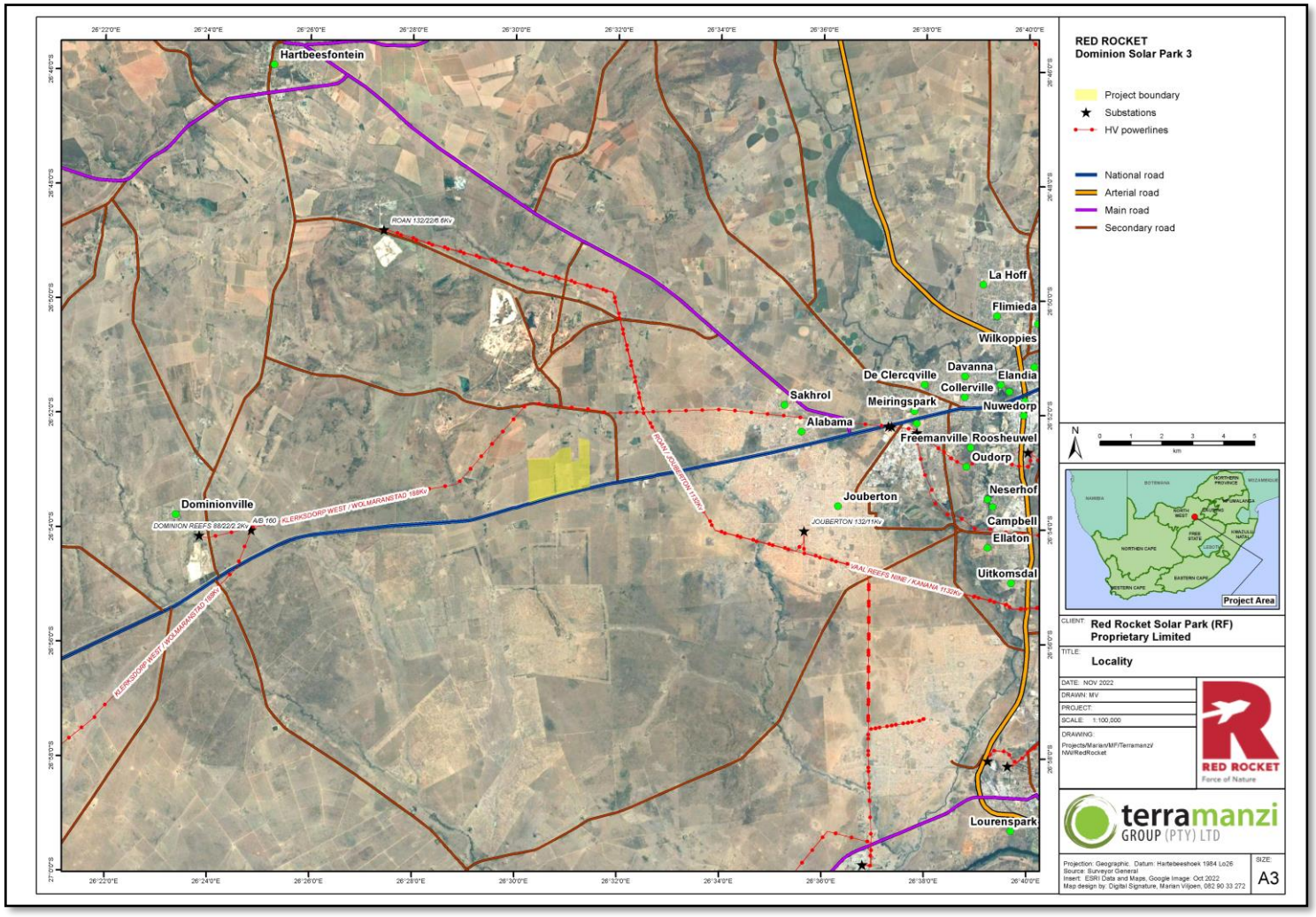

Figure 4.4.3: Site Locality Map – Local Context – Dominion 3 Solar Park .

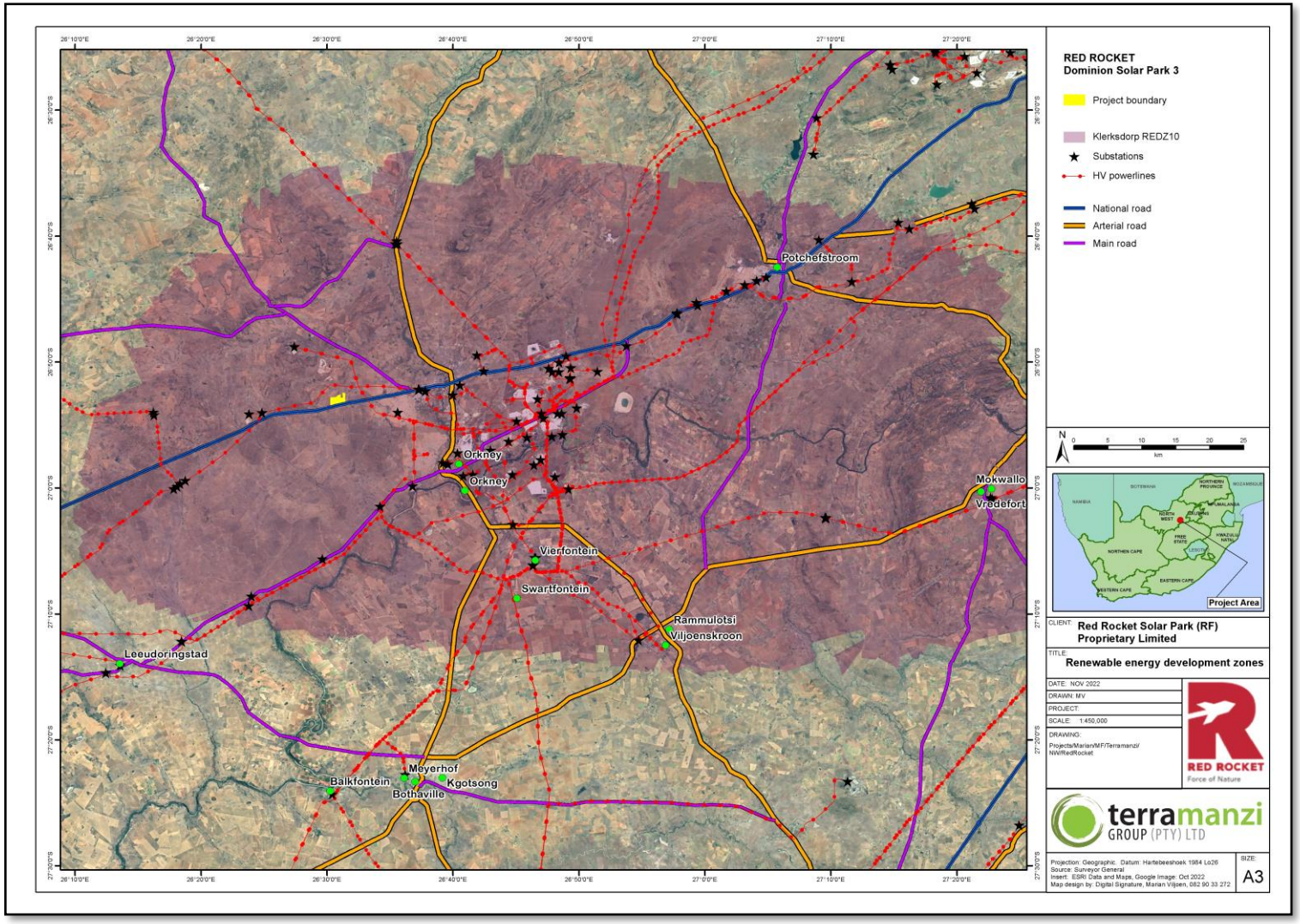

Figure 4.4.4: Site Locality Map – within the Klerksdorp REDZ areas – Dominion 3 Solar Park .

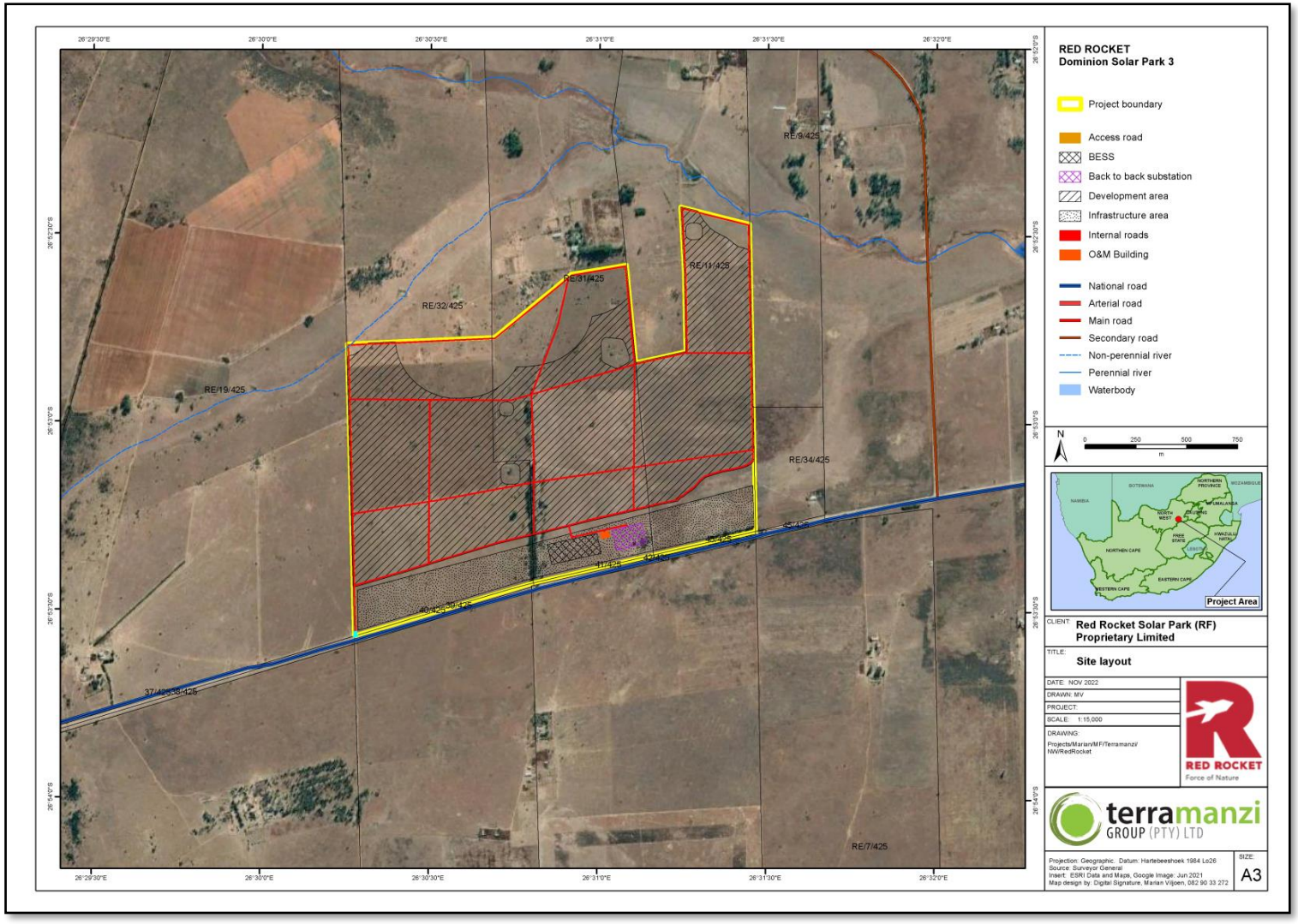

Figure 4.4.5: Facility Layout 1 Map for the Dominion 3 Solar Park

5 SCOPE OF THE PROPOSED ACTIVITY

*In accordance with **Appendix 1 Regulation 2(d) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended)**:*

i. All listed and specified activities triggered and being applied for;

ii. A description of the activities to be undertaken including associated structures and infrastructures.

5.1 DESCRIPTION OF PROPOSED ACTIVITIES AND DEFINING DEVELOPMENT ALTERNATIVES

5.1.1 Proposed Activities

5.2 DETAILED DESCRIPTION OF A PVSEF

Design of a photovoltaic (PV) solar park for the Dominion 3 Solar Park

The data below was utilized to inform the design of the proposed Dominion 3 Solar Park. Further this data sets out the framework within which the panels and related electrical infrastructure are required to be designed on the site.

	INFRASTRUCTURE	DETAILS
Dominion 3 Solar Park	Access Road	8m wide roads (20km)
	Back to Back Substation (Including facility substation, Eskom collector station with feeder bays	15000 m² 140MVA
	BESS	Storage Capacity (500MWh)
	Paved areas	2 200 m²
	O&M building	1 500 m²
	PV Modules	210Ha Tier 1 bi-facial, single axis Trackers Max Height: Up to 6m

The Project will have a contracted capacity of up to 100MWp and will make use of Photovoltaic (PV) technology. Solar energy facilities use energy from the sun to generate electricity through a process known as the Photovoltaic Effect. This effect refers to photons of light colliding with electrons, therefore placing the electrons into a higher state of energy to create electricity

PV Cells, Modules and Arrays:

A PV cell is made of silicone that acts as a semiconductor used to produce the photovoltaic effect. PV cells are arranged in multiples / arrays and placed behind a protective glass sheet to form a PV module (Solar Panel). Each PV cell is positively charged on one side and negatively charged on the opposite side, with electrical conductors attached to either side to form a circuit. This circuit captures the released electrons in the form of an electric current (i.e., Direct Current (DC)). A solar PV module is made up of individual solar PV cells connected together, whereas a solar PV array is a system made up of a group of individual solar PV modules electrically wired together to form a much larger PV

installation. PV modules are designed to operate continuously for more than 20 years, mostly unattended and with low maintenance.

Inverters

Inverters are used to convert the electricity produced by the PV cells from DC into Alternating Current (AC) to enable the distribution of the electricity generated to the private offtake's electricity point of interconnection. Numerous inverters will be arranged in several arrays to collect and convert power produced by the Solar PV Energy Facility.

Support Structures

The PV panels will be fixed to support structures to maximise exposure to the sun. They can either utilise fixed / static support structures or alternatively single or double axis tracking support structures. PV panels that utilise fixed / static support structures are set at an angle (fixed-tilt PV system), to optimise the amount of solar irradiation. With fixed / static support structures, the angle of the PV panel is dependent on the latitude of the proposed Project and may be adjusted to optimise for summer and winter solar radiation characteristics. PV panels that utilise tracking support structures track the movement of the sun throughout the day, to receive the maximum amount of solar irradiation

Bifacial Solar Panel Technology

Dominion 3 Solar Park (Pty) Ltd is considering the use of bifacial tracking technology. Bifacial ("two-faced") modules produce solar power from both sides of the panel. Traditional solar panels capture sunlight on one light-absorbing side. The light energy that cannot be captured is simply reflected away. Bifacial solar panels have solar cells on both sides, which enables the panels to absorb light from the back and the front. Practically speaking, this means that a bifacial solar panel can absorb light reflected off the ground or another material. In general, more power can be generated from bifacial modules for the same area, without having to increase the development footprint.

The optimum tilt for a bifacial module has to be designed so as to capture a big fraction of the reflected irradiation. Use of trackers is recommended so the modules can track the sun's movement across the sky, enabling them to stay directed to receive the maximum possible sunlight to generate power.

Battery Energy Storage System

The need for a BESS stem from the fact that electricity is only produced by the Solar PV Energy Facility while the solar resource is available, while the peak demand may not necessarily occur during the daytime or as the resource is available. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the facility is more efficient, reliable and electricity supply more constant. The BESS will:

- Store and integrate a greater amount of renewable energy from the Solar PV Energy Facility into the mine distribution system.
- This will assist with the objective to generate electricity by means of renewable energy to feed into the mine distribution system.
- Proposed footprint of battery storage area: up to 3ha.
- Proposed capacity of battery storage: 500MWh of usable energy at Beginning of Life.

The BESS is included as part of the Basic Assessment process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the off-taker are currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the off-taker. The BESS has been included in this Basic Assessment process in order to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorized. The type of battery storage will only be determined at a later stage and will be based solely on the technological advancements made in the battery technology field. The storage solution will remain a containerised solution.

The following 3D images (please refer to **Figure 5.2.1** below) show the single arrays in a MW block.

Single axis trackers may be used to enhance solar energy yield during the day. The necessary space has already been included into the calculations for the solar park.

Water requirements during the year for use in operations (pure water for cleaning the panels e.g.) and use for persons employed are estimated to be around $5m^3$ per day on average. Water for cleaning purposes will be delivered via trucks, whilst other water requirements will be met via borehole and rainwater collection from rooftops of houses and offices.

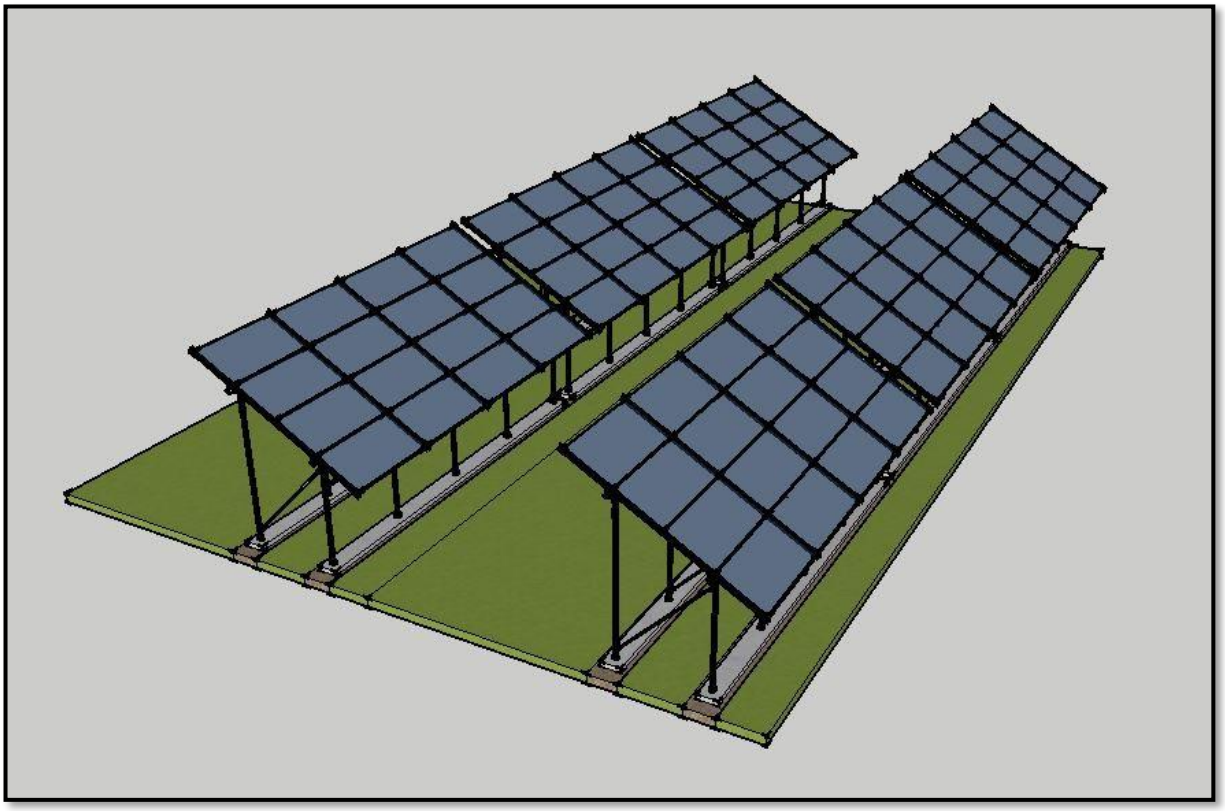

Figure 5.2.1: This Figure depicts a 3D image of a single array in a 1MW block.

Photographs 5.2.2 and 5.2.3: The photos above and to the right show a typical example of the mounting structure for a tracking PVSEF and an array of photovoltaic panels once mounted

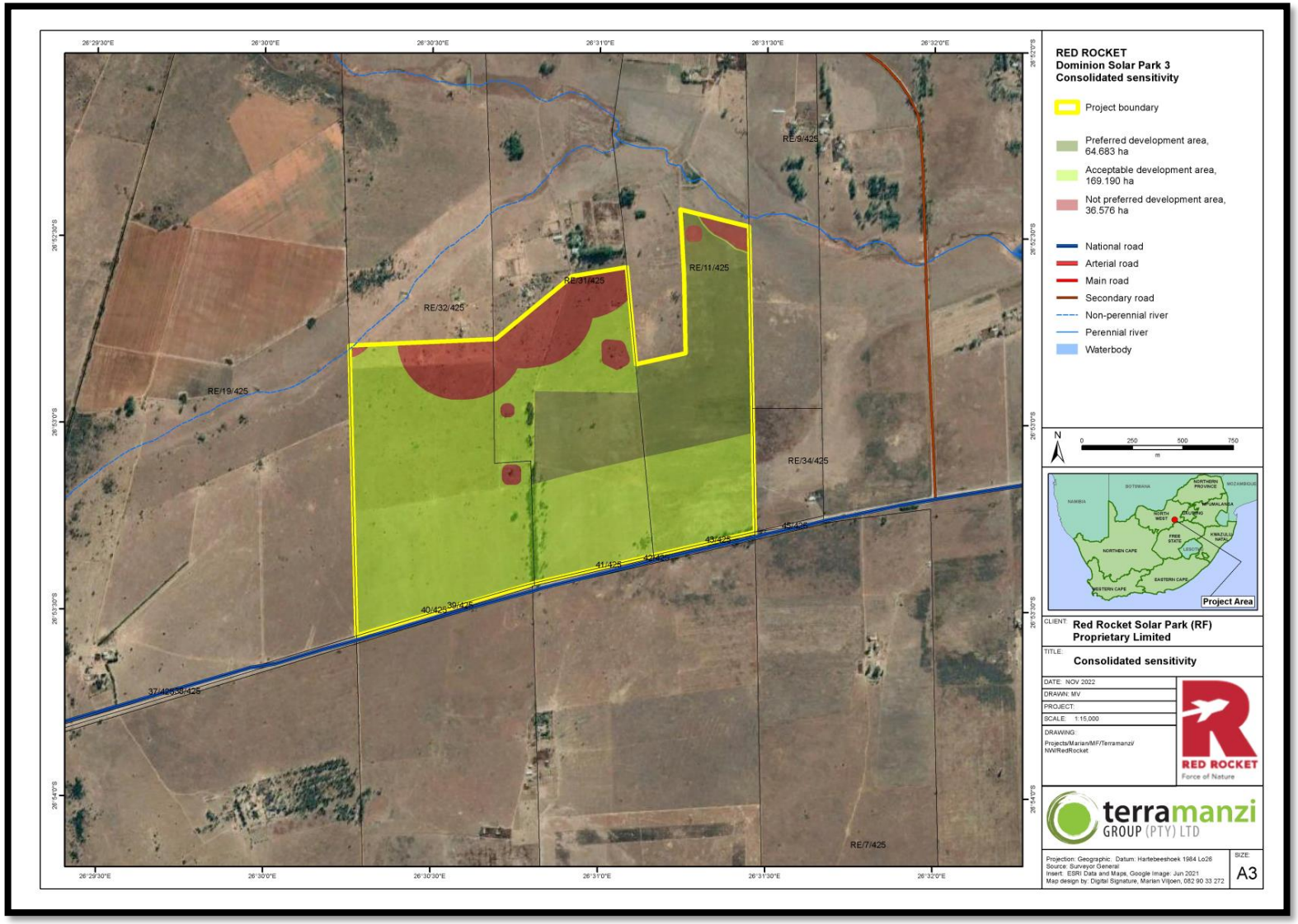

Figure 5.2.4: This figure depicts the Overall Sensitive areas (Preferred, Acceptable and not preferred development areas)

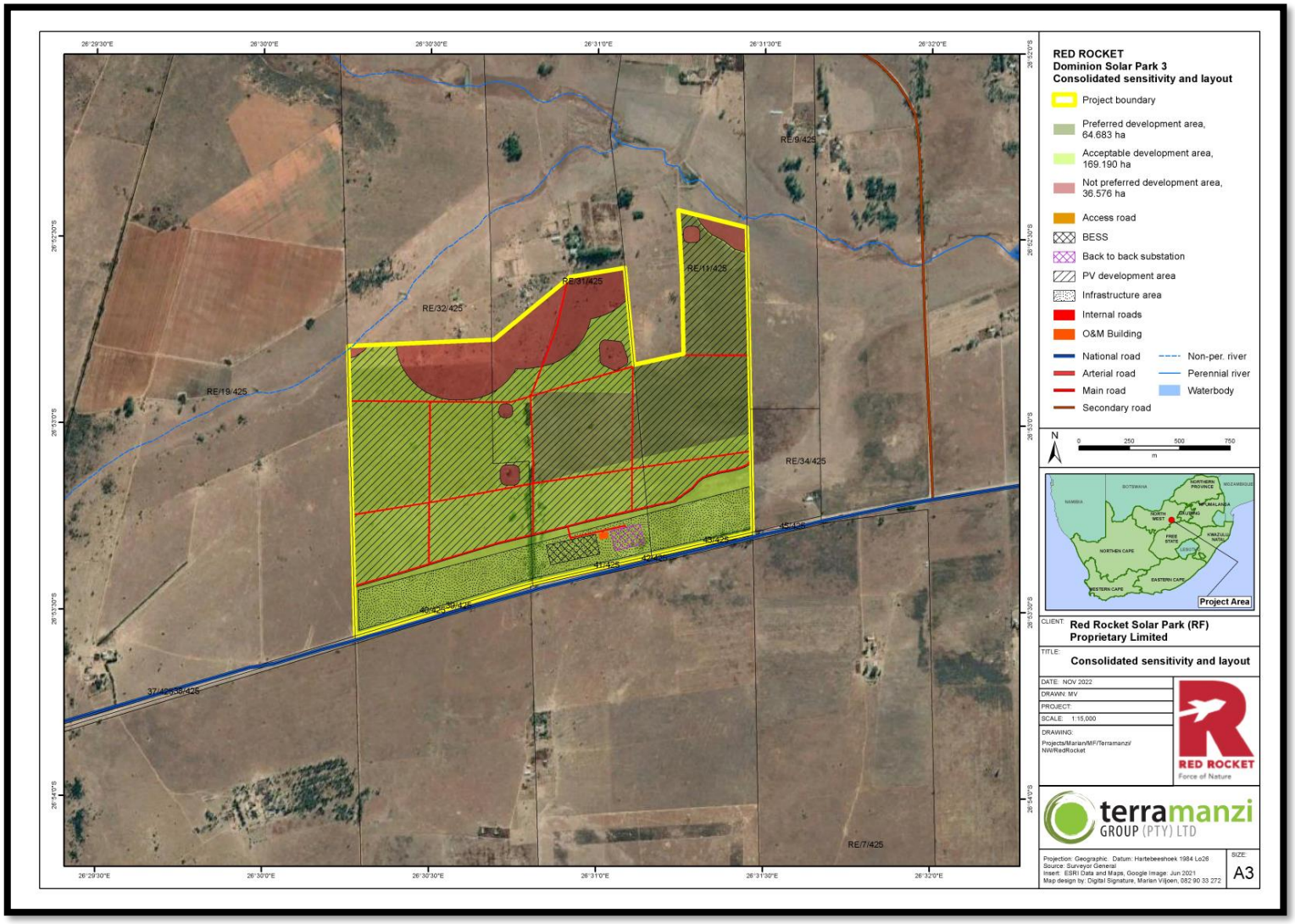

Figure 5.2.5: This figure depicts the Overall Sensitive areas and the proposed layout of the facility (Preferred, Acceptable and not preferred development areas)

5.3 LISTED ACTIVITIES TRIGGERED

The following approach to the Environmental Application and process for the proposed **Activity** is based on the provisions stipulated in section 24(5) of the National Environmental Management Act 2008 ("NEMA") No. 107 of 1998 (as amended) and the EIA Regulations (2014, as amended) contained in Government Notice (GN) R. 326, R. 327, and R. 324, which dictate that a Basic Assessment Environmental Application process be followed.

Section 24(1) of the NEMA states: "In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported to the competent authority charged by this Act with granting the relevant environmental authorization." The reference to "listed activities" in Section 24 of the NEMA relates to the regulations promulgated in GN R326, R327, R325 and R324, dated 7 April 2017. The relevant GN published in terms of the NEMA collectively comprise the NEMA EIA Regulations listed activities that require either a BA or Scoping and EIA be conducted. As noted previously, due to the project being proposed in the **Klerksdorp REDZ10,** the proposed project requires a BA Process. The Application for EA for this BA Process will be submitted to the DFFE together with this BA Report, which refers to all relevant listed activities forming part of the proposed development. A copy of the Application for EA will be included in the finalised BA Report, which will be submitted to the National DFFE for decision-making.

EIA Regulations – Listed Activities (as discussed and agreed with the Competent Authority)

Based on the information currently available on the proposed Project, it is anticipated that the following Listed Activities contained in **Listing Notice 1** would require a Basic Assessment process in terms of the NEMA:

GNR 327 - Listing Notice 1: 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; or*** *(ii)* ***inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.*** *Excluding where development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is –* *(a)* ***temporarily required to allow for maintenance of existing infrastructure;*** *(b)* ***2 kilometres or shorter in length;*** *(c)* ***Within an existing transmission line servitude; and*** *(d)* ***Will be removed within 18 months of the commencement of development.***
The Applicant proposed to establish a PVSEF which will use an existing substation to by-pass and convert the electricity produced by the PVSEF into an Overhead Powerline Route (OHPL). The proposed OHPL will be permitted by means of a separate environmental permitting process should this be required. **However, this activity is triggered as Back to Back Substation (Including facility substation, Eskom collector station with feeder bays (15000 m2)(140MVA) included in panel area 0,05 ha (per interconnection location) 210 ha enclosed by the fence will be erected on the site.**

GNR 327 - Listing Notice 1: Activity 12
The development of - *(i)* ***Dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or*** *(ii)* ***Infrastructure or structures with a physical footprint of 100 square metres or more;***

(a) within a watercourse; ***(b) in front of a development setback; or*** ***(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;*** ***excluding -*** ***(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;*** ***(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;*** ***(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;*** ***(dd) where such development occurs within an urban area;*** ***(ee) where such development occurs within existing roads, road reserves or railway line reserves; or*** ***(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.***
Dominion 3 Solar Park falls within the 500 m zone of regulation (Zor) of the delineated watercourse, authorisation in terms of GN509 of 2016 as it related to Sections 21(c) and (i) of the National Water Act, 1998 (Act No. 36 of 1998) will be required from the Department of Water and Sanitation (DWS). With guidance from the freshwater specialist and the relevant authorisation obtained from the competent authority, development within the ZoR in accordance with GN509 as it relates to the NWA is considered acceptable and possibly authorised by means of a General Authorisation (GA).

GNR 327 - Listing Notice 1: Activity 14
The development and related operation of facilities and infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.
The development of the Solar PV Energy Facility will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation and PV trackers where such storage will occur inside containers with a combined capacity exceeding 80 cubic meters but not exceeding 500 cubic meters.

GNR 327 - Listing Notice 1: Activity 19
The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving - ***(a) will occur behind a development setback;*** ***(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;*** ***(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;*** ***(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbor; or*** ***(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.***
Watercourses have been identified within the development area. The construction of the Dominion 3 Solar Park and associated infrastructure could require the removal of approximately 10 cubic metres of soil and rock from the wetlands.

GNR 327 - Listing Notice 1: Activity 19
The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for - **(i) the undertaking of a linear activity; or** **(ii) maintenance purposes undertaken in accordance with a maintenance management plan.**
The project requires removal of more 1ha of indigenous vegetation for the establishment of the solar arrays.

GNR 327 - Listing Notice 1: Activity 28
Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development ***(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or*** ***(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;*** *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*
Dominion 3 Solar Park will have a physical footprint exceeding 1ha and occurs outside an urban area and within an area currently zoned for agriculture.

Based on the information available on the proposed Project, it is anticipated that the following Listed Activities contained in **Listing Notice 2** require a Scoping and EIA Process in terms of the NEMA:

GNR 325 - Listing Notice 2: 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 facilities or infrastructure is for photovoltaic installations and occurs – **(a) within an urban area; or** **(b) on existing infrastructure.**
The Applicant has proposed to establish a PVSEF of up to 100MW, which will span over an area of approximately 210ha. **The project site is located within a REDz.**

GNR 325 - Listing Notice 2: Activity 4
The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.
The development of the Solar PV Energy Facility will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation and PV trackers where such storage will occur inside containers with a combined capacity exceeding 500 cubic meters. **The project site is located within a REDz.**

GNR 325 - Listing Notice 2: Activity 15
The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— **(i) the undertaking of a linear activity; or** **(ii) maintenance purposes undertaken in accordance with a maintenance management plan.**
The total maximum project footprint is 210 hectares including the PV facility and infrastructure such as roads for each PV facility. As a result, more than 20 ha of indigenous vegetation would be removed for the construction of the proposed Dominion 3 Solar Park. **The project site is located within a REDz**

Based on the information available on the proposed Project, it is anticipated that the following Listed Activities contained in **Listing Notice 3** require a Basic Assessment Process in terms of the NEMA:

GNR 324 - Listing Notice 3: Activity 4
The development of a road wider than 4 metres with a reserve less than 13.5 metres. **h. North West** **i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;** **ii. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;** **iii. Sites or areas identified in terms of an international convention;** **iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;** **v. Core areas in biosphere reserves;** **vi. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from a biosphere reserve;** **vii. Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; or** ***iv.*** **viii. All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999).**
An access road wider than 6m in some sections may be constructed for internal movement within the PV Facilities. According to the Freshwater Impact Assessment (Appendix B) of the BA Report, according to North West Biodiversity Sector Plan (2015), the proposed Solar PV project sites, A small southern portion of Dominion 3 Solar Park and features within the eastern and southern portions of the investigation area are defined as Category 1 and 2 ESAs. These features correspond to those features identified by the NBA (2018) database. ESAs are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play an important role in supporting the ecological functioning of Critical Biodiversity Areas (CBAs) and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

GNR 324 - Listing Notice 3: Activity 10
The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. **h. North West** **i. World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention;** **ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;** **iii. All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999);** **iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;** **v. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or** **vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.** ***iv.***
The development of the Solar PV Energy Facility will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation and PV trackers where such storage will occur inside containers with a combined capacity exceeding 500 cubic meters.

GNR 324 - Listing Notice 3: Activity 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. **h. North West** **i. World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention;** **ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;** **iii. All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999);** **iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;** **v. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or**

v. **vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.**
The development of the Solar PV Energy Facility will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation and PV trackers where such storage will occur inside containers with a combined capacity exceeding 500 cubic meters.
More than 300m2 of indigenous vegetation is expected to be cleared.

GNR 324 - Listing Notice 3: Activity 14
The development of— **(i) dams or weirs, where the dam or weir, including** **Infrastructure and water surface area exceeds 10** **Square metres; or** **(ii) infrastructure or structures with a physical footprint of 10 square metres or more;** **where such development occurs—** **(a) within a watercourse;** **(b) in front of a development setback; or** **(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will** **not increase the development footprint of the port or harbour.** **h. North West** **i. World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention;** **ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;** **iii. All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999);** **iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;** **v. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or** ***vi.*** **vi. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from the core areas of a Biosphere reserve.**
The physical footprint of the development will exceed 10m2. The development is located in close proximity to watercourses

GNR 324 - Listing Notice 3: Activity 18
The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. **h. North West** **i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;**

ii. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from a biosphere reserve; **iii. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;** **iv. Sites or areas identified in terms of an international convention;** **v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;** **vi. Core areas in biosphere reserves;** **vii. Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose;** **viii. All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999); or** ***iv.*** **x. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.**
The proposed development would potentially require the expansion of existing roads, Client to confirm specifications.

This Application for Environmental Authorisation will be submitted to and considered by the National Department of Forestry, Fisheries and the Environment (DFFE) as the appropriate Competent Authority for the Application.

Based on the above and in terms of GN R. 326 of the NEMA EIA Regulations (2014, as amended), a **BASIC ASSESSMENT PROCESS must be followed**.

6 LEGISLATIVE CONTEXT

In accordance with ***Appendix 1 Regulation 3(e) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended)****, the following information is presented in Section 5:*

i. An identification of all legislation, policies, plans and guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and have been considered in the preparation of the report

ii. How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks and instruments

6.1 SOUTH AFRICAN LEGISLATION (NATIONAL)

The national policy environment, clearly outlines the need, desire and intention to increase the reliance on renewable energy as a key source of power. These commitments are outlined in various Acts, White Papers, development plans and framework, specifically including:

- *National Energy Act (2008).*
- *White Paper on Energy Policy of the Republic of South Africa (December 1998).*
- *White Paper on Renewable Energy (November 2003).*
- *National Development Plan.*
- *National Integrated Resource Plan for Electricity (2010-2030).*
- *National Infrastructure Plan, 2010.*
- *Integrated Development Plans.*
- *Spatial Development Frameworks.*

The policy and planning frameworks regarding energy are all underpinned by the need for the delivery of electricity to all South Africans to support social and economic health and ongoing development. The construction and operation of the proposed Dominion 3 Solar Park *will enable the generation of additional power, which will be fed into the national grid and distributed throughout the country.*[1]*. Therefore, the policies that support renewable power generation also support the need for the Dominion 3 Solar Park and supporting infrastructure.*

[1] Distribution will be limited by the Eskom distribution infrastructure.

6.1.1 National Environmental Management Act (Act No. 107 of 1998)

In terms of NEMA, as amended and the NEMA EIA Regulations, 2014 as amended, an application for EA for certain listed activities is required to be submitted to either the Provincial Environmental Competent Authority, or the National Competent Authority (DFFE):

- The current NEMA EIA regulations, GN R.326, GN R.327, GN R.325 and GN R.324, promulgated in terms of Sections 24(5), 24M and 44 of the NEMA and subsequent Basic Assessment Reports, commenced on 08 December 2014 (and amended in April 2017).
- GN R.326 lists those activities for which a Basic Assessment is required.
- GN R.327 lists the activities requiring a full EIA (Scoping and Impact Assessment phases).
- GN R.325 lists certain activities and competent authorities in specific identified geographical areas.
- GN R.324 defines the EIA processes that must be undertaken to apply for EA.

6.1.2 National Water Act (Act No. 36 of 1998)

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) is the primary legislation regulating both the use of water and the pollution of water resources. It is applied and enforced by the Department of Water Affairs (DWA). Section 19 of NWA regulates pollution, which is defined as "the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it:

- less fit for any beneficial purpose for which it may reasonably be expected to be used; or
- harmful or potentially harmful to -
- the welfare, health or safety of human beings;
- any aquatic or non-aquatic organisms;
- the resource quality; or
- Property.

The persons held responsible for taking measures to prevent pollution from occurring, recurring or continuing include persons who own, control, occupy or use the land. This obligation or duty of care is initiated where there is any activity or process performed on the land (either presently or in the past) or any other situation which could lead or has led to the pollution of water.

The following measures are prescribed in the section 19(2) of the NWA to prevent pollution:

- cease, modify or control any act or process causing the pollution;
- comply with any prescribed standard or management practice;
- contain or prevent the movement of pollutants;
- eliminate any source of the pollution;
- remedy the effects of pollution; and
- remedy the effects of any disturbance to the bed or banks of a watercourse.

Section 21 of the NWA lists the water uses for which a water use licence (WUL) is required. In terms of the NWA, water uses include the following activities:

a) Taking water from a water resource;

b) Storing water;
c) Impeding or diverting the flow of water in a watercourse;
d) Engaging in a stream flow reduction activity contemplated in section 36;
e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea
g) outfall or other conduit;
h) Disposing of waste in a manner which may detrimentally impact on a water resource;
i) Disposing in any manner of water which contains waste from or which has been heated in, any industrial or power generation process;
j) Altering the bed, banks, course or characteristics of a watercourse:
k) Removing, discharging or disposing of water found underground if it is necessary for the efficient
l) continuation of an activity or for the safety of people; and
m) Using water for recreational purposes.

6.1.3 National Heritage Resource Act (Act No. 25 of 1999)

The National Heritage Resources Act (NHRA) governs the management of heritage resources which are of cultural significance. The South African Heritage Resources Agency (SAHRA) is the national body responsible for the protection of South Africa's cultural heritage resources.

Section 38(3) of the NHRA requires that all heritage resources are identified and assessed and that any comments and recommendations of the relevant heritage resources authority with regard to the proposed development have been taken into account prior to the granting of the consent.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (Section 2 (d) (xxi)).

6.1.4 Civil Aviation Act (Act No. 13 Of 2009)

The purpose of this act is to repeal, consolidate and amend the aviation laws giving effect to certain International Aviation Conventions; to provide for the control and regulation of aviation within the Republic; to provide for the establishment of a South African Civil Aviation Authority with safety and security oversight functions; to provide for the establishment of an independent Aviation Safety Investigation Board in compliance with Annexure 13 of the Chicago Convention; to give effect to certain provisions of the Convention on Offences and Certain other Acts Committed on Board Aircraft; to give effect to the Convention for the Suppression of Unlawful Seizure of Aircraft and the Convention

for the Suppression of Unlawful Acts against the Safety of Civil Aviation; to provide for the National Aviation Security Program; to provide for additional measures directed at more effective control of the safety and security of aircraft, airports and the like; and to provide for matters connected thereto.

6.1.5 National Energy Act (Act No 34 of 2008)

The National Energy Act was promulgated in 2008 (Act No 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including wind:

"To ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements (…); to provide for (…) increased generation and consumption of renewable energies…" (Preamble).

6.1.6 White Paper on the Energy Policy of the Republic of South Africa

The White Paper on Energy Policy of the Republic of South Africa (December 1998) states that "Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential". Furthermore, it recognizes that "Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future".

The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind and that renewable applications are in fact the least cost energy service in many cases; more so when social and environmental costs are taken into account.

Government policy on renewable energy is thus concerned with meeting the following challenges:

- *Ensuring that economically feasible technologies and applications are implemented;*
- *Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options; and,*
- *Addressing constraints on the development of the renewable industry.*

The White Paper also acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country's renewable energy resource base is extensive and many appropriate applications exist.

6.1.7 White Paper on Renewable Energy

This White Paper on Renewable Energy (November, 2003) (further referred to as the White Paper) supplements the White Paper on Energy Policy, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.

The White Paper notes that while South Africa is well-endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol[2], Government is determined to make good the country's commitment to reducing greenhouse gas emissions. To this purpose, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operate.

South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations Framework Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply (in this regard, also refer to the objectives of the National Energy Act).

Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidized alternative to fossil fuels. The medium-term (10-year) target set in the White Paper is:

10 000GWh renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667MW) of the projected electricity demand for 2013 (41539MW) (Executive Summary, ix).

6.1.8 National Integrated Resource Plan for Electricity (2010-2030)

The Integrated Resource Plan (IRP) outlined the preferred energy mix to meet electricity needs over a 20-year planning horizon from 2010 to 2030. In line with the national commitment to transition to a low carbon economy, 17,800MW of the 2030 target are expected to be from renewable energy sources, with 5,000 MW to be operational by 2019 and a further 2,000MW (i.e. combined 7,000MW) operational by 2020. The majority of the anticipated renewable energy is proposed to come from onshore wind and solar projects. In addition, through power generation, there are requirements to contribute towards socio-economic and environmentally sustainable growth. Social and local economic benefits are created via job creation and training programmes, community ownership schemes, improved quality of life and levels of sustainability.

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[2] The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting global warming. The UNFCCC is an international environmental treaty with the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified the protocol (Wikipedia)

6.1.9 National Development Plan

Key priority areas, with applicable targets and actions were identified by the planning commission in the National Development Plan's (NDP) vision for 2030. Of relevance, the plan prioritises 'improvements to infrastructure' to ensure increased access to electricity and a 'transition to a low-carbon economy'. The NDP identifies the need for South Africa to invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. A critical component is energy infrastructure, which underpins all economic activity and facilitates growth. The NDP requires the development of 10,000MWs of additional electricity capacity by 2025 (44,000MWs was being generated in 2013).

6.1.10 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs, and strengthen the delivery of basic services. The plan also supports the integration of African economies. The Minister of Finance, Mr Pravin Gordhan, announced in his 2013 Budget Speech that, in terms of the plan, Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure.

These investments will improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. On the other hand, investment in the construction of ports, roads, railway systems, ***electricity plants****, hospitals, schools and dams will contribute to faster economic growth.*

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee . The Committee has identified and developed 18 strategic integrated projects (SIPS). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and comprise:

- *Five geographically-focused SIPs*
- *Three spatial SIPs*
- *Three energy SIPs*
- *Three social infrastructure SIPs*
- *Two knowledge SIPs*
- *One regional integration SIP*
- *One water and sanitation SIP*

The Three Energy SIPS are SIP 8, 9 and 10.

SIP 8: Green energy in support of the South African economy

- *Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010).*
- *Support bio-fuel production facilities.*

SIP 9: Electricity generation to support socio-economic development

- *Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances.*
- *Monitor implementation of major projects such as new power stations: Medupi, Kusile and Ingula.*

SIP 10: Electricity transmission and distribution for all

- *Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.*
- *Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.*

6.1.11 Spatial Planning and Land Use Management Act

In 2013, land use planning was influenced by the promulgations of the Spatial Planning and Land Use Management Act (2013) (SPLUMA) which outlines a set of principles to influence spatial planning, land use management and land development. The general principles of SPLUMA are that spatial planning, land use management and land development must promote and enhance spatial justice, spatial sustainability; efficiency; spatial resilience, and good administration. (IDP) and SDF are the key planning instruments used by municipalities for new developments (whether residential or commercial). Across the country all municipal operations are governed by the Municipal Systems Act (Act No. 32 of 2000). This Act stipulates that all municipalities must prepare and implement an IDP for their area of jurisdiction, which should include an SDF. The IDP and SDF are reviewed annually to accommodate new priorities or to maintain existing ones.

The IDP is a tool for municipal planning and budgeting to enable them to deliberate on developmental issues identified by communities. Each IDP should have a five-year lifespan that is linked directly to the term of office for local councillors.

The purpose of the SDF as a land-use management tool is to plan, direct and control development but it does not provide land use rights. It provides the necessary guidance for land uses at local level in order to ensure the application of the development principles of sustainability, integration, equality, efficiency and fair and good governance in order to create quality of living, investor confidence and security of tenure.

6.1.12 Renewable Energy Development Zones and Power Corridors

The site **is** located within one of the gazetted Renewable Energy Development Zones (REDZ). The REDZ are zones that have been identified by the DFFE in consultation with an independent professional team, which comprised of Visual, Bird, Bat, Biodiversity, Socio-Economic, Archaeological, Palaeontological and Freshwater Consultants and whom provided inputs to identify these REDZs. Please refer to the **Figures 6.1.1** and **6.1.2** below, which shows the eight Phase 1 and three Phase 2 REDZs respectfully.

The following information has been extracted from the DFFE website, which depicts the actual statement which was issued to the Public on 17 February 2016.

Cabinet on Wednesday, 17 February 2016, approved the gazetting of 8 Renewable Energy Development Zones (REDZ) and 5 Power Corridors. (Note that an additional REDZ were gazetted on 26 February 2021)

These Renewable Energy Development Zones and Power Corridors are geographical areas where wind and solar Photovoltaic technologies can be incentivized and where 'deep' grid expansion can be directed and where regulatory processes will be streamlined.

The REDZs act as energy generation hubs and provide anchor points for grid expansion thereby allowing for strategic and proactive expansion of grid into these areas. This will ensure that the grid expansion does not hamper the progress of the renewable energy power purchase agreement process.

The REDZs and Power Corridors support 2 of the 18 SIPs which were identified in the Infrastructure Development Plan which is aimed at promoting catalytic infrastructure development to stimulate economic growth and job creation.

To ensure that when required, environmental authorisations are not a cause for delay, the DEA embarked on a program of Strategic Environmental Assessments (SEAs) for large-scale developments to support the SIPs. The intention of undertaking SEAs is to pre-assess environmental sensitivities within the proposed development areas at a regional scale to simplify the site-specific EIA when they are undertaken, and to focus the assessment requirements to addressing the specific sensitivity of the site.
The REDZs and Power Corridors were identified through the development of three SEAs as part of the Departments Strategic Environmental Assessment programme. The outputs of these three SEAs must now be gazetted to allow them to be implemented.

The outputs of the SEAs directly relate to several government priorities including:

- *Contributing to reducing present current energy constraints by facilitating renewable energy development in strategic areas in South Africa;*
- *Addressing the major objectives of the National Development Plan, namely transitioning to a low carbon economy, developing infrastructure to create jobs and reducing the regulatory burden and the cost of doing business;*
- *Contributing to achieving the renewable energy target identified in the Integrated Resource Plan and implementing the renewable energy independent power producers program (REI4P) implemented by the Department of Energy and National Treasury;*
- *Promoting the green economy and sustainable development; and*
- *Promoting intergovernmental coordination and integrated authorisations.*

The outcome of the gazetting process means that wind and solar PV activities within the eight [now eleven] *Renewable Development Zones and electricity grid expansion within the five Power Corridors will be subjected to a Basic Assessment and not a full EIA process.*

This reduces the review and decision-making time and the level of assessment required for each project based on the fact that scoping level pre-assessment was already undertaken in those areas. From an application for EA taking 300 days it will now be completed in 147 days.

REDZs[3] refer to geographical areas where wind and solar PV development can occur in concentrated zones, which will lead to:

- *a reduction of negative environmental consequences;*
- *alignment of authorisation and approval processes;*
- *attractive incentives; and*
- *focused expansion of the South African electricity grid.*

Cabinet further stated that the REDZs will, among others, accelerate infrastructure development and contribute in creating a "predictable regulatory framework that reduces bureaucracy related to the cost of compliance".

The DFFE media statement issued in respect of the approved gazetting of the REDZs provided that eight REDZs and five Power Corridors have been identified. The gazetting of these areas means that projects within these areas will now only be subject to a Basic Assessment and not a full EIA process. This change will accelerate the assessment process, as scoping level pre-assessments would have been undertaken. As such an application for an EA should be completed in 147 days, instead of 300 days.

Currently one of the greatest challenges of South African renewable energy development is constraints on grid infrastructure, and the resulting timelines for and costs of grid expansion. The REDZs are anticipated to aid the future bidding rounds of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and any renewable energy tenders in South Africa by allowing for

[3] *Information sourced from: https://www.cliffedekkerhofmeyr.com/en/news/publications/2016/projects/projects-and-infrastructure-alert-25-february-renewable-energy-development-zones.html*

focused grid development and an alignment of approval processes in the REDZs. To date the REIPPPP has led to the procurement of approximately 11 813 MW of power of renewable capacity across 10s of projects.

The eight Phase 1 REDZs were gazetted on 16 February 2018 (No. 41445, Notice 114, page 92-96) stating the following:

1. *The SEA for Wind and Solar Photovoltaic Energy in South Africa, 2015 has identified eight REDZs that are of strategic importance for large scale wind and solar photovoltaic energy development, including the rollout of its supporting transmission and distribution infrastructure, in terms of Strategic Integrated Project 8: Green Enemy in Support of the South African Economy.*
2. *On 17 February 2016, Cabinet approved, amongst others, the REDZs contained in this Notice, which are of strategic importance for large scale wind and/or solar photovoltaic energy development and an integrated decision-making process for applications for environmental authorisation in terms of NEMA.*
3. *Applications for EA for large scale wind or solar photovoltaic energy facilities, such facilities trigger activity I of EIA Regulations Listing Notice 2 of 2014 (as amended) and any other fisted and specified activities necessary for the realisation of such facilities, and where the entire proposed facility is to occur in such REDZs, must follow the basic assessment procedure contemplated in Regulation 19 and 20 of the Impact Assessment Regulations, 2014, in order to obtain EA as required in terms of the Act.*
4. *The timeframe for decision-making as contained in the EIA Regulations, 2014 (as amended) for purposes of the applications for environmental authorisation contemplated in this Notice is 57 days.*
5. *Applications for EA large scale wind or solar photovoltaic energy facilities, if being applied for outside of any REDZ, will be considered in line with the requirements as prescribed in terms of the EIA Regulations, 2014 (as amended).*
6. *If any part of the facilities contemplated in this Notice falls outside a REDZ contemplated in this Notice, the requirements as prescribed in terms of the EIA Regulations, 2014 (as amended) apply.*

7. REDZs compiled in terms of section 24(3) of NEMA and the applicability of each REDZ for purposes of this Notice, are as follows:

Renewable Energy Development Zone Number (Phase)	***Name***	***Applicability of REDZ***
Renewable energy development zone 1 (Phase 1)	*Overberg*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 2 (Phase 1)	*Komsberg*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 3 (Phase 1)	*Cookhouse*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 4 (Phase 1)	*Stormberg*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 5 (Phase 1)	*Kimberley*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 6 (Phase 1)	*Vryburg*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 7 (Phase 1)	*Upington*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 8 (Phase 1)	*Springbok*	*Large scale wind and solar photovoltaic energy facilities*

The three Phase 2 REDZs were gazetted on 26 February 2021 (Gazette No. 44191, Notice 142 pg. 65-68, Notice 144 pg. 72-74 and Notice 145 pg. 75-79, page 92-96)

Renewable energy development zone 9 (Phase 2)	Emalahleni	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 10 (Phase 2)	**Klerksdorp**	***Large scale wind and solar photovoltaic energy facilities***
Renewable energy development zone 11 (Phase 2)	Beaufort West	*Large scale wind and solar photovoltaic energy facilities*

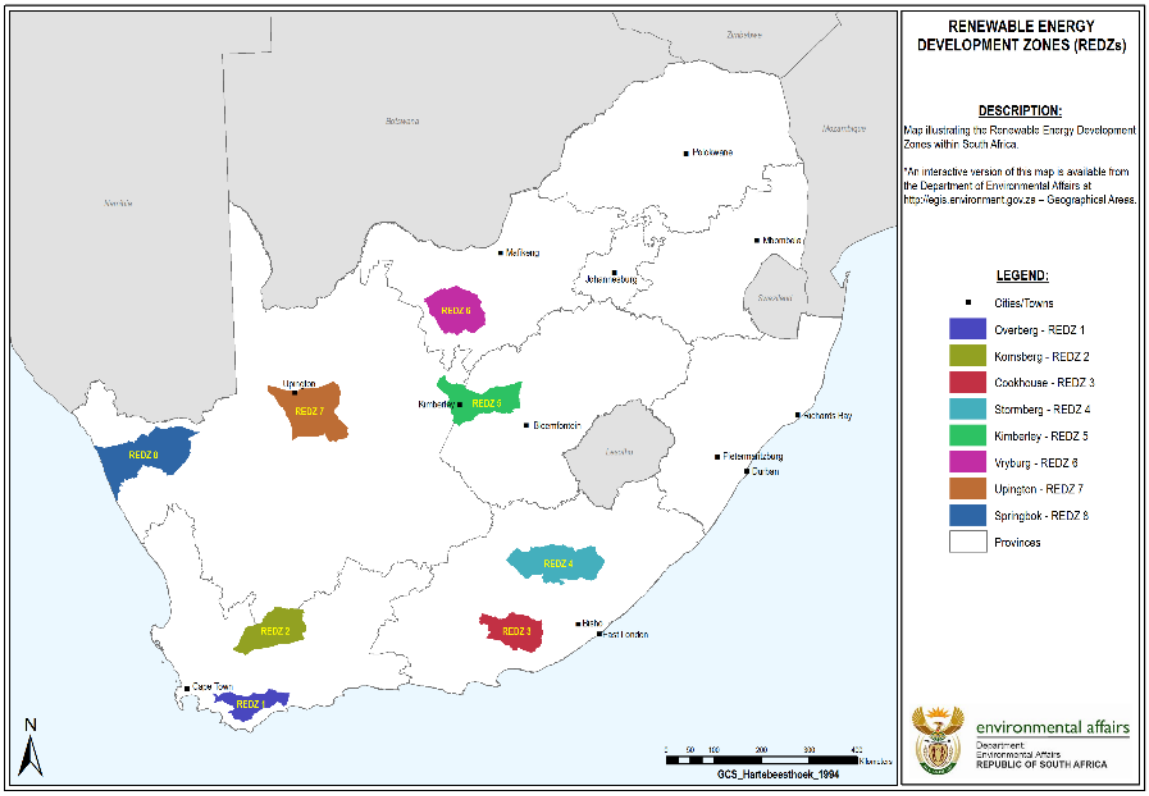


Figure 6.1.1: The figure above shows the Phase 1 Renewable Energy Development Zones and the Project falls outside of all the REDZs as gazetted February 2018.

6.2 PROVINCIAL AND MUNICIPAL LEVEL POLICY AND PLANNING

At the **Provincial Level**

North West Department of Agricultural and Rural Development (NWDARD)
NWDARD is the Commenting Authority for the project and is also responsible for issuing any biodiversity and conservation-related permits. The involvement relates specifically to sustainable resource management, conservation of protected
species, and land care.

North West Department of Public Works and Roads (NWDPWR)
NWDPWR is responsible for roads and the granting of exemption permits for the conveyance of abnormal loads on public roads.

North West Provincial Heritage Resources Agency (NWPHRA)
NWPHRA is responsible for the identification, conservation, and management of heritage resources, as well as commenting on heritage related issues within the province. North West Department of Community Safety and Transport Management (NWDCSTM) provides effective co-ordination of crime prevention initiatives, provincial police oversight, traffic management and road safety towards a more secure environment.

6.2.1 North West Province Spatial Development Framework (SDF) (2016) – Published 2017

The Spatial Development Framework (SDF) addresses the need for spatial planning, socio-economic development, infrastructure, and conservation of natural resources. Key socio-economic issues which would require strategic planning provision include employment (including youth and women); poverty eradication; attracting investment; economic growth; HIV / AIDS and other diseases; food security; physical infrastructure (including availability of industrial land); illiteracy; tourism development; population growth, urbanization, and migration. Natural resource issues include inadequate water resources for future development; bush encroachment and alien invasive species; land and soil degradation; and overgrazing. With regard to spatial planning, the legacies of the Apartheid-era policy are identified as a key issue and residents of the North West Province are consequently extremely underdeveloped. As per the North West Provincial Spatial Development Framework (PSDF) (2017), electricity within the province is primarily provided by Eskom to re-distributors – mainly municipalities (10%), commercial (5%), agriculture (5%), mining (30%), industrial (30%) and Residential (20%). According to the North West PSDF, the proposed project site is located within the Mahikeng Distribution Area, which is characterised by minor developments, including Commercial, Industrial, and Major Electrification; and has a projected growth of 125MW (Eskom, 2015). Eskom's Transmission Development Plan 2015 – 2024 represents the transmission network infrastructure investment requirements over the 10-year period between 2015 and 2024. Projects proposed for the North West Province for the next 10 years include the introduction of 400kV power lines and transformation to support or relieve the existing networks. Five transmission power corridors have been identified as critical to providing a flexible and robust network that could respond to meet the needs of future IPPs and IRP requirements. The development of the proposed Project will contribute to economic growth

and development, which will in turn help eradicate poverty through job creation and skills development in the region which will be in line with the North West PSDF.

6.2.2 North West Province Renewable Energy Strategy (2012)

In 2012, the North West Province's then Department of Economic Development, Environment, Conservation and Tourism (DEDECT) developed the Renewable Energy Strategy for the North West Province. The strategy was developed in response to the need of the North West Province to participate meaningfully within South Africa's renewable energy sector. The Renewable Energy Strategy aims to improve the North West Province's environment, reduce its contribution to climate change, and alleviate energy poverty, while promoting economic development and job creation whilst developing its green economy. According to the strategy, the North West Province consumes approximately 12% of South Africa's available electricity and is rated as the country's fourth largest electricity consuming province. This is mainly due to the high demand of the electrical energy-intensive mining and related industrial sector, with approximately 63% of the electricity supplied to the Province being consumed in its mining sector. While the strategy recognises that South Africa has an abundance of renewable energy resources available, it is cognisant of the fact that the applicability of these renewable energy resources depends on a number of factors, and as a result are not equally viable for the North West Province. The renewable energy sources that were identified to hold the most potential and a competitive strength for the North West Province are Solar Energy (photovoltaic as well as solar water heaters), Municipal Solid Waste, hydrogen and fuel cell technologies, biomass, and energy efficiency.

The advantages and benefits for the North West Province associated with the implementation and use of renewable energy technologies include: » Provision of energy for rural communities, schools and clinics that are far from the national electricity grid. » Creation of an environment where access to electricity provides rural communities with the opportunity to create an economic base via agricultural and home-based industries and Small, Medium and Micro Enterprises (SMMEs) in order to grow their income-generating potential. » The supply of water within rural communities. » It would result in less time taken for the collection of wood and water, thus improving the quality of life within communities and specifically for women. » Improved health through the reduced use of fuelwood as energy source for cooking and heating that causes respiratory and other hazards. » Solar water heating for households in urban and rural settings, reducing the need for either electricity (in urban settings) and fuelwood (in rural settings) to heat water, thus lowering our National peak demand and conservation of woodlands in a sustainable manner. » Large-scale utilisation of renewable energy will also reduce the emissions of carbon dioxide, thus contributing to an improved environment. » The fact that RE go hand-in-hand with energy efficiency, it will result in additional financial benefit and the need for smaller renewable energy systems. » The development of a strong localised renewable energy industry within the North West Province holds substantial potential for Black Economic Empowerment (BEE) and job creation within the Province. » The establishment of a strong renewable energy base in the North West Province, especially in the manufacturing of fuel cells could stimulate the market for Platinum Group Metals (PGM), which would in turn help the local mining sector. This is due to renewable energy sources having considerable potential for increasing security of supply by diversifying the energy supply portfolio and contributing towards a long-term sustainable energy future. In terms of environmental impacts, renewable energy results in the emission of less GHGs than fossil fuels, as well as fewer airborne particulates, and other pollutants. Furthermore, renewable

energy generation technologies save on water consumption in comparison with coal-fired power plants

6.2.3 North West Provincial Development Plan (PDP), 2013 (updated 2017/2022)

The North West Provincial Development Plan (PDP) 2013 (updated 2017/2022) states that the overarching objective of the Province is to overcome certain obstacles relating to the current infrastructure by introducing renewable energy, together with energy conservation and efficiency strategies. Furthermore, this will craft a better tomorrow and ensure that underdevelopment, poverty, and inequality is fully addressed in the North West Province. The overall energy objective for the Province also includes promoting the development of renewable energy supply schemes which are considered to be strategically important for increasing the diversity of domestic energy supply and avoiding energy imports, while also minimising the detrimental environmental impacts. The implementation of sustainable renewable energy is also to be promoted within the Province through appropriate financial and fiscal instruments.

6.2.4 North West Environmental Implementation plan (EIP)

The EIP describes Departmental policies, plans, and programmes that may impact on the environment and how these will comply with NEMA principles and national environmental norms and standards, with the aim of ensuring that government integrates environmental considerations into its core mandate, functions, and activities. Many of the activities undertaken by government departments, at the national, provincial, district and local level, have impacts on the environment. The EIP aims to co-ordinate and harmonize the environmental policies, plans, programmes and decisions of the various departments that exercise functions that may affect the environment or are entrusted with powers and duties aimed at the achievement, promotion, and protection of a sustainable environment and of provincial and local spheres of government, in order to minimize the duplication of procedures and functions; and to promote consistency in the exercise of functions that may affect the environment. The Province has championed and been in the forefront at national landscape with regard to promoting integrated planning and co-operative governance. Implementation of this plan will also help government to realize the objectives of the "Setsokotsane" which is an all-inclusive radical

At the **Municipal Level**

The local and district municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. Both the local and district municipalities play a role. The local municipality includes the City of Matlosana Local Municipality which forms part of the Dr Kenneth Kaunda District Municipality. In terms of the Municipal Systems Act (No. 32 of 2000), it is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their control.

6.2.5 Dr Kenneth Kaunda District Municipality Integrated Development Plan (IDP) (IDP 2017/18 - 2021/22)

The Vision of the district is, “Exploring prosperity through sustainable service delivery for all The Mission of the district is, “To provide an integrated district management framework in support of quality service delivery.”

Strategic Goals and Objectives

The Constitution of the Republic of South Africa, Act No. 108 of 1996, section 152(1) states that the objects of local government are.

(a) to provide a democratic and accountable government for local communities.

(b) to ensure the provision of services to the communities in a sustainable manner.

(c) to promote social and economic development.

(d) to promote a safe and healthy environment; and

(e) to encourage the involvement of communities and community organizations in the matters of local government.

The following are the key (general) strategic goals and objectives maintained:

- To promote physical infrastructure development and services
- To promote socio-economic development
- To provide environmental health services
- To ensure disaster risk management
- To promote integrated transport services
- To promote community safety
- To ensure internal municipal excellence

The above goals and objectives are guidelines to ensure that developments align with the plans and framework of Dr. Kenneth Kaunda District Municipality.

The following were identified as key strategic intervention areas to be prioritized from 2014 -2017:

- Promotion of Local Economic Development (Agriculture, Agri-Business, Land, and Rural Development)
- Service Delivery (Infrastructure Development and Transportation)

The attraction of major investments to the district remains a challenge because of the poor infrastructure conditions, more specifically roads, water networks or reticulation, communication, electricity, and transport networks. The critical importance of commitment to transforming the economy of the district, therefore, remains emphasised. This will ensure that job opportunities are increased for the unemployed masses (mainly the youth) of the Dr. Kenneth Kaunda District Municipality. The IDP aims at promoting local economic growth and social development in order to provide a better life for the communities. The Dominion 3 Solar Park will provide employment opportunities and contribute to assisting the district municipality in achieving local economic development and building a sustainable economy by introducing a relatively new sector into the local economy.

6.2.6 City of Matlosana Local Municipality Integrated Development Plan (IDP) (2019-2020)

One of the primary objectives of the IDP process for the City of Matlosana Local Municipality was to promote forthcoming initiatives from the N12 Treasure Corridor, to ensure local economic development and industrialisation for Klerksdorp. The Vision of the Local Municipality is, “A Proficient and Prosperous Municipality that delivers high-quality services to the citizens.” The Mission of the Local Municipality is, “To Render equitable, sustainable and High-Quality Basic Services to the city of Matlosana.” Based on the needs analysed in the IDP processes and the City of Matlosana Local Municipality Framework (SDF, 2013), the following key strategic interventions are proposed by the City of Matlosana Local Municipality:

- Strategic Intervention A: Transformed Municipality and Resilient Institution
- Strategic Intervention B: Efficient Basic Service Delivery and Transformed Inclusive
- Infrastructure
- Strategic Intervention C: Sustainable and Inclusive Local Economic Development
- Strategic Intervention D: Good Governance and Public Participation
- Strategic Intervention E: Financial Viability and Management

The proposed development falls in line with the Strategic Intervention B (Efficient Basic Service Delivery and Transformed Inclusive Infrastructure), and the development of the Dominion 3 Solar Park is required to connect the Dominion 3 Solar Park to the national grid. The development will contribute to employment creation and economic growth, which in turn will have a positive multiplier effect on the local area. The IDP 2015/2016 supports the investment of renewable energy developments in the City of Matlosana Local Municipality.

6.3 OTHER LEGISLATION AND POLICIES

Title of legislation, policy or guideline	Applicability to the project	Administering Authority	Date
NATIONAL LEVEL ENVIRONMENTAL LEGISLATION			
National Environmental Management Act (Act No. 107 of 1998)	An Application for Environmental Authorization has been submitted in terms of the NEMA EIA Regulations (2014) and the relevant provisions of these Regulations have been taken into account through the compilation of this Report and the assessment of the Application by the Independent EAP.	Department of Environment, Forestry and Fisheries (DFFE)	1998
Regulations in terms of Chapter 5 of the NEMA, 1998. (NEMA EIA Regulations 2014, as amended)	An Application for Environmental Authorization has been submitted in terms of the NEMA EIA Regulations (2014, as amended) and the relevant provisions of these Regulations have been considered through the compilation of this Report and the assessment of the Application by the Independent EAP.	DFFE	2014 (as amended in April 2017)
National Water Act (Act No. 36 of 1998)	A WULA will be submitted to the Department of Water and Sanitation (DWS) in terms of the NWA.	DWS	1998
National Heritage Resource Act (Act No. 25 of 1999) (NHRA)	A full Heritage Impact Assessment will be undertaken for the Project as per the requirements of Section 38 of the NHRA. The Heritage Impact Assessment will be made available in the EIA Phase. Should a heritage resource be impacted upon, a	SAHRA	1999

	permit may be required from SAHRA or NWPHRA in accordance with of Section 48 of the NHRA, and the SAHRA Permit Regulations (GN R668).		
Civil Aviation Act (Act No. 13 Of 2009)	Approval from the South African Civil Aviation Authority (SACAA) and the South African Air Force (SAAF) was obtained as the Project could potentially affect the operations of the above Authorities.	SACAA and SAAF	2009
NATIONAL LEVEL ENERGY POLICY AND LEGISLATION			
National Energy Act (Act No 34 of 2008)	Dominion 3 Solar Park is a renewable energy Project, which this Act makes direct reference to.	DoE	2008
White Paper on the Energy Policy of the Republic of South Africa	The proposed Project will facilitate the generation and use of electricity and therefore this Policy refers.	DoE	1998
White Paper on Renewable Energy	Dominion 3 Solar Park is a renewable energy Project, which this Act makes direct reference to.	DoE	2003
National Integrated Resource Plan for Electricity (2010-2030)	Dominion 3 Solar Park is a renewable energy Project, which this Act makes direct reference to. this will involve the generation and use of electricity in a sustainable manner	DoE	2011
National Development Plan (NDP)	The proposed Project aims at enhancing economic growth, which the NDP is striving towards.	DFFE	2013
National Infrastructure Plan	The proposed Project aims at enhancing economic growth, which the NIP is also striving towards.	DFFE	2012

Title of legislation, policy or guideline	Applicability to the project	Administering Authority	Date
PROVINCIAL LEVEL POLICY AND PLANNING			
Land Use Planning Ordinance, 1978	Consent use is required from the Landowners on which the PVSEF is proposed to be established.	Local Municipality	1978

Environmental Impact Assessment Guideline for Renewable Energy Projects	These guidelines have been considered to ensure that the environmental management legal framework applicable to renewable energy operations and all the role players in the sector have been appropriately actioned.	DFFE	2015
DFFE Guideline on Need and Desirability, April 2017	The approach to alternatives which has been adopted in this process is consistent with this guideline.	DFFE	2017

6.4 KEY AUTHORITIES FOR THIS ENVIRONMENTAL APPLICATION

Based on a review of the applicable statutory permitting requirements, the following Authorities will form the key decision makers for the Project:

- Birdlife SA
- Which is an administrative area of the Dr Kenneth Kaunda District Municipality
- Department of Economic Development and Tourism
- Department of Forestry, Fisheries and the Environment (DFFE)
- Department of Local Government & Housing: Provincial Disaster Management Centre
- Department of Water & Sanitation (DWS)
- National Department of Energy (DOE)
- Provincial Department of Agriculture ("DoA") - Agriculture
- Dept of Agriculture, Forestry and Fisheries
- ESKOM
- National Energy Regulator of South Africa (NERSA)
- SANPARKS
- SANRAL
- South African Civil Aviation Authority (CAA)
- South African Heritage Resource Agency (SAHRA)
- Telkom
- Wildlife and Environment Society of South Africa (WESSA)
- City of Matlosana Local Municipality

6.5 INTERNATIONAL STANDARDS

6.5.1 International Finance Corporation Performance Standards

The International Finance and Corporation (IFC) Environmental and Social Performance Standards outline the client's responsibilities for managing their environmental and social risks. They encourage sustainable business practices by promoting sound environmental and social practices, encouraging transparency and accountability, and contributing to positive development impacts. The Performance Standards are globally recognized as a benchmark for environmental and social risk management in the private sector.

The latest standards[4] were published in 2012 and reflect the recent evolution in good practice for sustainability and risk mitigation. They incorporate modifications on challenging issues that are increasingly important to sustainable businesses, including supply-chain management, resource efficiency, climate change, and business and human rights.

The overall objectives of the IFC Performance Standards are:

- To fight poverty;
- To do no harm to people or the environment;
- To fight climate change by promoting low carbon development;
- To respect human rights;
- To promote gender equity;
- To provide information prior to project development, free of charge and free of external manipulation;
- To collaborate with the project developer to achieve the PS;
- To provide advisory services; and
- To notify countries of any Transboundary impacts as a result of a Project.

The IFC Performance Standards are assessed in detail under the following 8 themes:

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and
- Impacts;
- Performance Standard 2: Labour and Working Conditions;
- Performance Standard 3: Resource Efficiency and Pollution Prevention;
- Performance Standard 4: Community Health, Safety and Security;
- Performance Standard 5: Land Acquisition and Involuntary Resettlement;
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- Performance Standard 7: Indigenous Peoples; and
- Performance Standard 8: Cultural Heritage.

According to the IFC Performance Standards on Social and Environmental Sustainability (January 2012), *"Performance Standard 1 establishes the importance of (i) integrated assessment to identify the environmental and social impacts, risks, and opportunities of projects; (ii) effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and (iii) the client's management of environmental and social performance throughout the life of the project. Performance Standards 2 through 8 establish objectives and requirements to avoid, minimize, and where residual impacts remain, to compensate/offset for risks and impacts to workers, Affected Communities, and the environment. While all relevant environmental and social risks and potential impacts should be considered as part of the assessment, Performance Standards 2 through 8 describe potential environmental and social risks*

[4] *IFC Performance Standards on Social and Environmental Sustainability, January 2012*

and impacts that require particular attention. Where environmental or social risks and impacts are identified the client is required to manage them through its Environmental and Social Management System (ESMS) consistent with Performance Standard 1.

Performance Standard 1 applies to all projects that have environmental and social risks and impacts. Depending on project circumstances, other Performance Standards may apply as well. The Performance Standards should be read together and cross-referenced as needed. The requirements section of each Performance Standard applies to all activities financed under the project, unless otherwise noted in the specific limitations described in each paragraph. Clients are encouraged to apply the ESMS developed under Performance Standard 1 to all their project activities, regardless of financing source. A number of cross-cutting topics such as climate change, gender, human rights, and water, are addressed across multiple Performance Standards.

In addition to meeting the requirements under the Performance Standards, clients must comply with applicable national law, including those laws implementing host country obligations under international law."

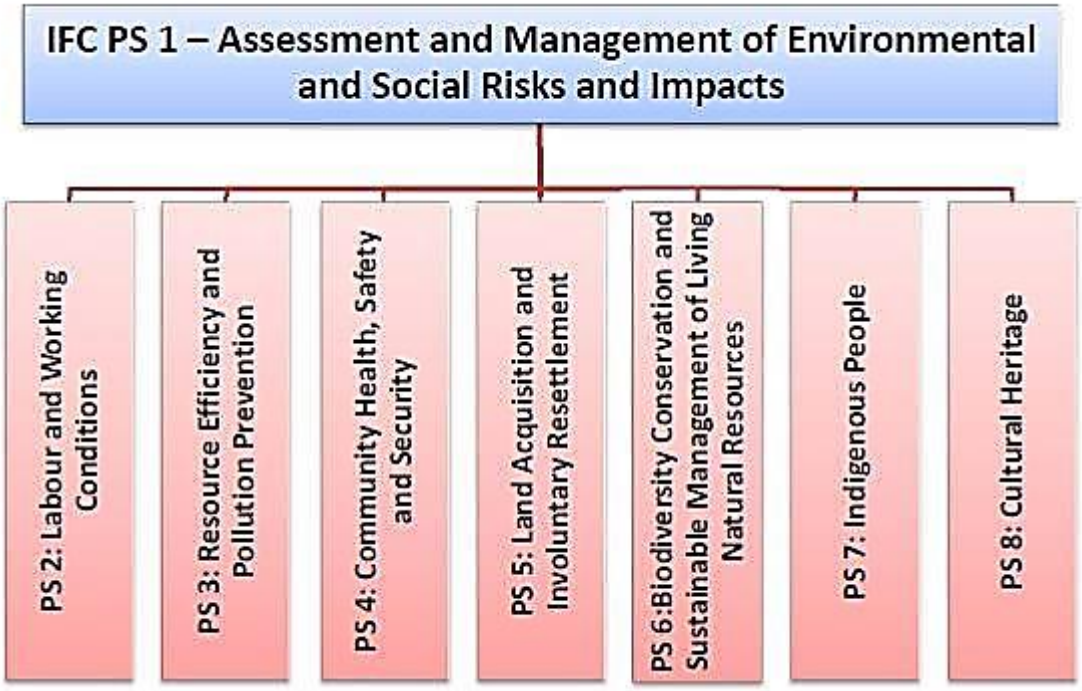


Figure 6.5.1: This Figure shows the PS Framework as extracted from the IFC PSs

6.5.2 Overview of IFC's Performance Standards

The Applicant is committed to complying with the International Finance Corporation (IFC) Performance Standards (PS) on social and environmental sustainability. As per the Applicant's Corporate ESMS Framework Document, the following can be noted in terms of compliance with IFC's Performance Standards.

<u>Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts</u>

The Applicant applies Performance Standard 1 to all projects with environmental and/or social risks and/or impacts. For the purposes of this Manual, the term "project" refers to a defined set of business activities, including those where specific physical elements, aspects, and facilities likely to generate risks and impacts, have yet to be identified. Where applicable, this could include aspects from the early developmental stages through the entire life cycle (design, construction, commissioning, operation, decommissioning, closure or, where applicable, post-closure) of a physical asset.

Performance Standard 2: Labour and Working Conditions

The Applicant recognizes that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers. For any business, the workforce is a valuable asset, and a sound worker-management relationship is a key ingredient in the sustainability of a company. Failure to establish and foster a sound worker-management relationship can undermine worker commitment and retention and can jeopardize a project. Conversely, through a constructive worker-management relationship, and by treating the workers fairly and providing them with safe and healthy working conditions, Projects may create tangible benefits, such as enhancement of the efficiency and productivity of their operations.

Performance Standard 3: Resource Efficiency and Pollution Prevention

The Applicant recognizes that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world. These are often implemented through continuous improvement methodologies similar to those used to enhance quality or productivity, which are generally well known to most industrial, agricultural, and service sector companies.

Performance Standard 4: Community Health, Safety, and Security

The Applicant recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, Performance Standard 4 addresses a Project's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups. In conflict and post-conflict areas, the level of risks and impacts may be greater. The risks that a project could exacerbate an already sensitive local situation and stress scarce local resources should not be overlooked as it may lead to further conflict.

Performance Standard 5: Land Acquisition and Involuntary Resettlement

The Applicant recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.

Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in physical or economic displacement. This occurs in cases of:

- *Lawful expropriation or temporary or permanent restrictions on land use.*
- *Negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fail.*

Unless properly managed, involuntary resettlement may result in long-term hardship and impoverishment for the Affected Communities and persons, as well as environmental damage and adverse socio-economic impacts in areas to which they have been displaced. For these reasons, involuntary resettlement should be avoided. However, where involuntary resettlement is unavoidable, it should be minimized and appropriate measures to mitigate adverse impacts on displaced persons and host communities should be carefully planned and implemented. The government often plays a central role in the land acquisition and resettlement process, including the determination of compensation, and is therefore an important third party in many situations. Experience demonstrates that the direct involvement of the client in resettlement activities can result in more cost-effective, efficient, and timely implementation of those activities, as well as in the introduction of innovative approaches to improving the livelihoods of those affected by resettlement.

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

The Applicant recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The requirements set out in this Performance Standard have been guided by the Convention on Biological Diversity, which defines biodiversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems."

Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organized into four types:

- *Provisioning services, which are the products people obtain from ecosystems.*
- *Regulating services, which are the benefits people obtain from the regulation of ecosystem processes.*
- *Cultural services, which are the nonmaterial benefits people obtain from ecosystems.*
- *Supporting services, which are the natural processes that maintain the other services.*

Ecosystem services valued by humans are often underpinned by biodiversity. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services. This Performance Standard addresses how clients can sustainably manage and mitigate impacts on biodiversity and ecosystem services throughout the project's lifecycle.

Performance Standard 7: Indigenous Peoples

The Applicant recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded. Their languages, cultures, religions, spiritual beliefs, and institutions may also come under threat. Consequently, Indigenous Peoples may be more vulnerable to the

adverse impacts associated with project development than non-indigenous communities. This vulnerability may include loss of identity, culture, and natural resource-based livelihoods, as well as exposure to impoverishment and diseases.

Private sector projects can create opportunities for Indigenous Peoples to participate in, and benefit from project-related activities that may help them fulfil their aspiration for economic and social development. Furthermore, Indigenous Peoples may play a role in sustainable development by promoting and managing activities and enterprises as partners in development. Government often plays a central role in the management of Indigenous Peoples' issues, and clients should collaborate with the responsible authorities in managing the risks and impacts of their activities.

Performance Standard 8: Cultural Heritage

The Applicant recognizes the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to ensure that clients protect cultural heritage in the course of their project activities. In addition, the requirements of this Performance Standard on a project's use of cultural heritage are based in part on standards set by the Convention on Biological Diversity.

The following sections detail the applicability of the above-mentioned performance standards within this Draft BA Process.

Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

- The EAP, Applicant and the Social Impact Assessment (SIA) accommodates the objectives of PS1 through this draft BAR.
- An SIA was undertaken by a suitably qualified specialist who has identified and assessed the risk the project development poses to the environment and the community.
- The SIA identifies relevant policies; identifies risks and proposes logical and practical mitigation measures accordingly.
- The proposed mitigation measures are included in the draft EMPr and must be strictly enforced once approved.
- The necessary and appropriate stakeholder engagement was undertaken by the appointed specialist.
- Sections 2 and 8 of this draft BAR details the key findings of the social study and further discusses the associated impacts and outcomes. While section 12 of this draft BAR is focused on quantifying the social risks that the project poses.
- The statutory 30-day Public Participation Process (PPP) is currently underway which encourages public involvement. Section 14 of the draft BAR details this process.
- The SIA is included under Appendix B for detailed review.

Based on the studies undertaken, the draft BAR and the draft EMPr, it is evident that PS 1 is complied with. No fatal flaws have been identified.

Performance Standard 2: Labour and Working Conditions

- The Social Impact Assessment (SIA) addresses necessary labour and working conditions during the construction and operational phases of the project.

- The project company ensures full compliance with the legislated labour laws and human resources management regulations.
- All employees during the lifecycle of the project are entitled to enforce their rights under the national labour and employment law.

- As per the EMPr, work must only be undertaken during stipulated working hours.
  - The SIA considers both the positive and negative risks associated with socio-economic management on site. As such, in light of creating more jobs, local labour will be sourced as first preference during the project construction and operational phases. Local businesses will also be supported as far as practicably possible. This is highlighted in the draft EMPr.
  - The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
  - Refer to section 4 of the EMPr for additional measures stipulated in terms of labour and working conditions.
  - Refer to Appendix B for the associated SIA.

Based on the studies undertaken, the draft BAR and the draft EMPr, it is evident that PS 2 is complied with. No fatal flaws have been identified.

Performance Standard 3: Resource and Efficiency and Pollution Prevention

- Performance Standard 3 is inclusive of various subcategories which will be discussed below.

a. <u>Greenhouse Gases and Climate Change:</u>
   - The Climate Change Assessment states *"A Climate Change Assessment (CCA) was conducted to determine the potential long term climate change impacts as a result of the Dominion Solar Park operations. Greenhouse Gas (GHG) emissions for the project were calculated based on the Department of Forestry, Fisheries and Environment (DFFE) 2017 and 2022 Technical guidelines which are based on the Intergovernmental Panel on Climate Change (IPCC) emission factors and country specific nett calorific value and density information. The CCA considered Scope 1 emissions, which are the emissions directly attributable to the project and Scope 2 emissions, which are the emissions associated with bought-in electricity. Only Scope 1 emissions need to be quantified to be in line with the DFFE guidelines; the addition of Scope 2 would place the assessment in line with the guidelines provided by the International Finance Corporation (IFC)."*
   - Refer to sections 2 and 8 of the BAR for detailed descriptions of the climate change assessment. Refer to section 12 of the BAR for a full impact assessment of risks posed. Refer to section 4 of the draft EMPr which contains mitigation measures that must be implemented.

b. <u>Water Consumption:</u>
   - It is not anticipated that the project would be a large consumer of water. In applying the resource efficiency requirements of this Performance Standard, the developer will adopt measures that avoid or reduce water usage so that

the project's water consumption does not have significant adverse impacts on others.

c. Pollution Prevention:
   - The release of pollutants has been avoided, or, when avoidance is not feasible, the release of pollutants is minimized and/or controlled by implementing the necessary and recommended mitigation measures. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts.
   - Pollution prevention is covered in section 4 of the draft EMPr.

d. Wastes:
   - The generation of hazardous and non-hazardous waste materials will be avoided as far as practicably possible. Where waste generation cannot be avoided, then waste must be recovered and reused in a manner that is safe for human health and the environment. Where waste cannot be recovered or reused, the waste material must be treated, destroyed, or disposed of it in an environmentally sound manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material.
   - Waste management during the different phases of development is covered in section 4 of the draft EMPr.

e. Hazardous Materials Management:
   - The generation of hazardous waste will be limited and controlled. Hazardous waste must be carefully managed, stored, transported and appropriately disposed of.
   - Hazardous waste management during the different phases of development is covered in section 4 of the draft EMPr.

f. Pesticide Use and Management:
   - The use of pesticide may not be applicable to the proposed development. However, if required chemical pesticides that are low in human toxicity are advisable, that are known to be effective against the target species, and that have minimal effects on non-target species and the environment.

Based on the studies undertaken, the draft BAR and the draft EMPr, it is evident that PS 3 is complied with. No fatal flaws have been identified.

Performance Standard 4: Community Health, Safety and Security

- Performance Standard 4 is inclusive of various subcategories which will be discussed below.

a. Community Health and Safety:
   - The SIA undertaken for the project assesses the risks associated with community health, safety and security and proposes mitigation measures that must be enforced.

- Section 12 of the draft BAR details all risks identified and quantifies these risks accordingly. Risks include social impacts to the community inclusive of health, safety and security. Appropriate mitigation measures are stipulated.
- These mitigation measures are further highlighted in the draft EMPr which must be strictly enforced once approved.
- The daft BAR and draft EMPr considers the risks associated with noise and dust pollution which could potentially have an impact on the health of surrounding communities.
- Furthermore, safety and security of community members as well as employees are considered. Safety and security on site will be maintained by implementing the measures detailed in the draft EMPr as well as the Occupational Health and Safety Act. While the safety and security of community members will be supervised by implementing site access control measures and limiting working hours to daytime only.

b. Hazardous Material Safety:
   - The client will avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project. Where there is a potential for the public (including workers and their families) to be exposed to hazards, particularly those that may be life-threatening, the client will exercise special care to avoid or minimize their exposure by modifying, substituting, or eliminating the condition or material causing the potential hazards.
   - Details of safe handling of hazardous material are included in section 4 of the draft EMPr and section 12 of the BAR.

c. Ecosystem Services:
   - A ***floral assessment*** was undertaken by Scientific Terrestrial Services, dated October 2022. The study has identified the risks and potential impacts on priority ecosystem services and impact to floral habitats, species diversity and species of conservation concern.
   - Adverse impacts have been avoided, and where unavoidable, appropriate mitigation measures have been proposed.
   - Refer to sections 2 and 8 of the draft BAR for detailed descriptions of the ecosystem habitats considered. Refer to section 12 of the draft BAR for a full impact assessment of risks posed. Refer to the draft EMPr which contains mitigation measures that must be implemented.
   - A ***faunal assessment*** was undertaken by Scientific Terrestrial Services, dated October 2022. The study has identified the risks and potential impacts on priority ecosystem services and impact to faunal habitats, species diversity and species of conservation concern.
   - Adverse impacts have been avoided, and where unavoidable, appropriate mitigation measures have been proposed.
   - Refer to sections 2 and 8 of the draft BAR for detailed descriptions of the ecosystem habitats considered. Refer to section 12 of the draft BAR for a full impact assessment of risks posed. Refer to the draft EMPr which contains mitigation measures that must be implemented.
   - A freshwater assessment was undertaken by Scientific Aquatic Services, dated October 2022. The study has identified the risks and potential impacts

on priority ecosystem services and impact to faunal habitats, species diversity and species of conservation concern.
- Adverse impacts have been avoided, and where unavoidable, appropriate mitigation measures have been proposed.
- Refer to sections 2 and 8 of the draft BAR for detailed descriptions of the ecosystem habitats considered. Refer to section 12 of the draft BAR for a full impact assessment of risks posed. Refer to the draft EMPr which contains mitigation measures that must be implemented.

d. Community Exposure to Disease:
- Community exposure to disease has been avoided by ensuring , for example, non-contamination of water resources to prevent water borne diseases.
- The ECO, once appointed to the project, must run awareness programs regarding the spread of disease.
- Refer to Annexure E of the draft EMPr which details the role of the ECO.

e. Emergency Preparedness and Response:
- Although the draft EMPr does not include an emergency response program, the draft EMPr does recommend and emergency response plan to be drawn up and implemented in conjunction with local emergency services prior to construction activities being undertaken.

f. Security Personnel:
- The SIA undertaken for the project assesses the risks associated with community health, safety and security and proposes mitigation measures that must be enforced.
- Section 12 of the draft BAR details all risks identified and quantifies these risks accordingly. Risks include social impacts to the community inclusive of health, safety and security. Appropriate mitigation measures are stipulated.
- These mitigation measures are further highlighted in the draft EMPr which must be strictly enforced once approved.

Based on the studies undertaken, the draft BAR and the draft EMPr, it is evident that PS 4 is complied with. No fatal flaws have been identified.

Performance Standard 5: Land Acquisition and Involuntary Resettlement

- Performance Standard 5 is not applicable to the current project.
- The development has received signed consent forms from the various farm owners accordingly.
- The landowners have not raised any objection to the proposed development.
- Informal settlements will not be affected in any way by the proposed development.

PS 5 is not applicable to the current project development plans

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

- Performance Standard 6 is inclusive of various subcategories which will be discussed below.

a. Protection and Conservation of Biodiversity:
   - Various competent professionals were sourced to assist in conducting the risks and impacts identification process and to assist in the development of a mitigation hierarchy.
   - The risks and impacts identification process as set out in Performance Standard 1 have considered direct and indirect project-related impacts on biodiversity and ecosystem services and have identified any significant residual impacts. This process has considered relevant threats to biodiversity and ecosystem services, especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution. It has also taken into account the differing values attached to biodiversity and ecosystem services by Affected Communities and, where appropriate, other stakeholders.
   - As a matter of priority, impacts on biodiversity and ecosystem services has been avoided as far as practicably possible. When avoidance of impacts is not possible, measures to minimize impacts and restore biodiversity and ecosystem services have been implemented.

b. Habitat – Modified, Natural and Critical
   - A ***floral assessment*** was undertaken by Scientific Terrestrial Services, dated October 2022. The study has categorised the identified habitats as per IFC guidance.
   - The ***floral assessment*** states "Loss of *"Natural Habitat" as per the IFC definition will not entirely be avoided for the Rocky Grassland but will effectively be avoided for the Wetland Habitat"*
   - Adverse impacts have been avoided, and where unavoidable, appropriate mitigation measures have been proposed.
   - Refer to sections 2 and 8 of the draft BAR for detailed descriptions of the ecosystem habitats considered. Refer to section 12 of the draft BAR for a full impact assessment of risks posed. Refer to the daft EMPr which contains mitigation measures that must be implemented.
   - A ***faunal assessment*** was undertaken by Scientific Terrestrial Services, dated October 2022. The study has identified the risks and potential impacts on priority ecosystem services and impact to faunal habitats, species diversity and species of conservation concern.
   - Adverse impacts have been avoided, and where unavoidable, appropriate mitigation measures have been proposed.
   - Refer to sections 2 and 8 of the draft BAR for detailed descriptions of the ecosystem habitats considered. Refer to section 12 of the draft BAR for a full impact assessment of risks posed. Refer to the draft EMPr which contains mitigation measures that must be implemented.
   - A ***freshwater assessment*** was undertaken by Scientific Aquatic Services, dated October 2022. The study has categorised the identified habitats as per IFC guidance.
   - The freshwater assessment states *"The freshwater ecosystems fall within the natural habitat category of the IFC as the freshwater ecosystems are*

"composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition". The client will not significantly convert or degrade the natural habitats as the freshwater ecosystems have been avoided, as per the mitigation hierarchy, and effective mitigation measures to prevent direct or indirect impacts have been set to ensure ***no net loss of aquatic biodiversity****."*

- Adverse impacts have been avoided, and where unavoidable, appropriate mitigation measures have been proposed.
- Refer to sections 2 and 8 of the draft BAR for detailed descriptions of the ecosystem habitats considered. Refer to section 12 of the draft BAR for a full impact assessment of risks posed. Refer to the draft EMPr which contains mitigation measures that must be implemented.
- All specialist studies listed above can be reviewed under Appendix B

c. Legally Protected and Internationally Recognised Areas:
   - The necessary professionals have been appointed to the project to undertaken various studies as required. Team members considered local and international best practice guidelines where applicable.
   - The EAP demonstrates through this draft BAR that the proposed development in such areas is legally permitted. Refer to section 6 of the draft BAR which discusses the identified Renewable Energy Development Zones (REDz).

d. Invasive Alien Species:
   - Where alien species are already established in the country or region of the proposed project, the project team must exercise diligence in not spreading them into areas in which they have not already been established. As practicable, measures to eradicate such species from the natural habitats have been considered.
   - As such an Alien Vegetation Control Plan has been compiled by NCC Environmental Services dated April 2022. This management plan has been appended to the draft EMPr and must be implemented on site once approved.

e. Management of Ecosystem Services:
   - When Affected Communities are likely to be impacted, they have participated in the determination of priority ecosystem services in accordance with the stakeholder engagement process as defined in Performance Standard 1.
   - Impacts on priority ecosystem services on which the project depends have been minimized and mitigation measures have been implemented to increase resource efficiency of their project operations, as described in Performance Standard 3.
   - Refer to section 14 of the draft BAR for the detailed public participation process that is currently being undertaken for this project.
   - Further, refer to the section 4 of the draft EMPr for detailed mitigation measures that must be implemented accordingly.

f. Supply Chain:
   - As standard practice all requirements associated with the project needs and requirements must be approved by the developer.
   - No action will be undertaken without the developer's knowledge.

Based on the studies undertaken, the draft BAR and the draft EMPr, it is evident that PS 6 is complied with. No fatal flaws have been identified.

Performance Standard 7: Indigenous Peoples

- Performance Standard 7 is not applicable to the current project.
- The client has identified, through an environmental and social risks and impacts assessment process, all communities of Indigenous Peoples within the project area of influence who may be affected by the project.
- The development has received signed consent forms from the various farm owners accordingly. The landowners have not raised any objection to the proposed development.
- The EIA process allows for public involvement through the mandatory 30-day public consultation period. Refer to section 14 which details the PPP that is currently being undertaken for the project.

PS 7 is not applicable to the current project development plans

Performance Standard 8: Cultural Heritage

- A suitably qualified heritage specialist has been appointed to the project.
- In addition to complying with applicable law on the protection of cultural heritage, including national law implementing the host country's obligations under the Convention Concerning the Protection of the World Cultural and Natural Heritage, the relevant specialist has identified and protected cultural heritage by ensuring that internationally recognized practices for the protection, field-based study, and documentation of cultural heritage have been undertaken and implemented.
- The Heritage Impact Assessment (HIA) can be reviewed under Appendix B The HIA details areas of heritage significance, suitable buffer requirements, and states appropriate mitigation measures which have been further incorporated into section 4 of the draft EMPr. The draft EMPr also details the necessary protocols and procedures for fossil chance finds during the construction phase of development.
- Annexure H of the draft EMPr includes a Heritage Management Plan as advised by the relevant specialist. This plan includes monitoring frequencies which must be adhered to by the appointed ECO.
- Refer to sections 2 and 8 of the draft BAR for detailed descriptions of the ecosystem habitats considered. Refer to section 12 of the draft BAR for a full impact assessment of risks posed.

Based on the studies undertaken, the draft BAR and the draft EMPr, it is evident that PS 8 is complied with. No fatal flaws have been identified.

6.5.3 Equator Principles

The Equator Principles (EPs) is a credit risk management framework for determining, assessing and managing environmental and social risk in Project Finance transactions. Project Finance is often used to fund the development and construction of major infrastructure and industrial projects. The EPs are adopted by financial institutions and are applied where total project capital costs exceed US$10 million. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.

The EPs are based on the IFC PS 2012 and on the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines).

The Equator Principles Financial Institutions (EPFIs) have consequently adopted these Principles in order to ensure that the projects they finance are developed in a manner that is socially responsible and reflect sound environmental management practices.

EPFIs will only provide loans to projects that conform to the following principles:

- Principle 1: Review and Categorisation;
- Principle 2: Social and Environmental Assessment;
- Principle 3: Applicable Social and Environmental Standards;
- Principle 4: Action plan and Management;
- Principle 5: Consultation and Disclosure;
- Principle 6: Grievance Mechanism;
- Principle 7: Independent review;
- Principle 8: Covenants;
- Principle 9: Independent Monitoring and Reporting; and
- Principle 10: EPFI Reporting

6.5.4 The World Bank Group Environmental Health and Safety (EHS) Guidelines

The EHS Guidelines (World Bank Group, 2007) are technical reference documents with general and industry specific (i.e. mining) examples of Good International Industry Practice (GIIP). Reference to the EHS guidelines is required under IFC PS 3.

The EHS Guidelines contain the performance levels and measures normally acceptable to the IFC and are generally considered to be achievable in new facilities at reasonable cost. When host country regulations differ from the levels and measures presented in the EHS Guidelines, Projects are expected to achieve whichever standard is more stringent.

This BAR is broadly aligned with the various Standards discussed above.

7 MOTIVATION FOR NEED AND DESIRABILITY FOR THE PROPOSED ACTIVITY

In accordance with ***Appendix 1 Regulation 3(f) of GN No. R.326 of the NEMA EIA Regulations (2014, as amended)****: the following information is presented in Section 6*

- *A motivation for the need and desirability for the proposed development including the need and desirability of the activity in context of the preferred location.*

This section outlines the purpose of considering the activity "need" and "desirability" in accordance with the National Environmental Management Principles in terms of NEMA which serve as a guide for the interpretation, administration and implementation of NEMA and the NEMA EIA regulations (2014, as amended).

7.1 LEGISLATIVE FRAMEWORK

The National Environmental Management Principles specifically require, *inter alia,* the following:

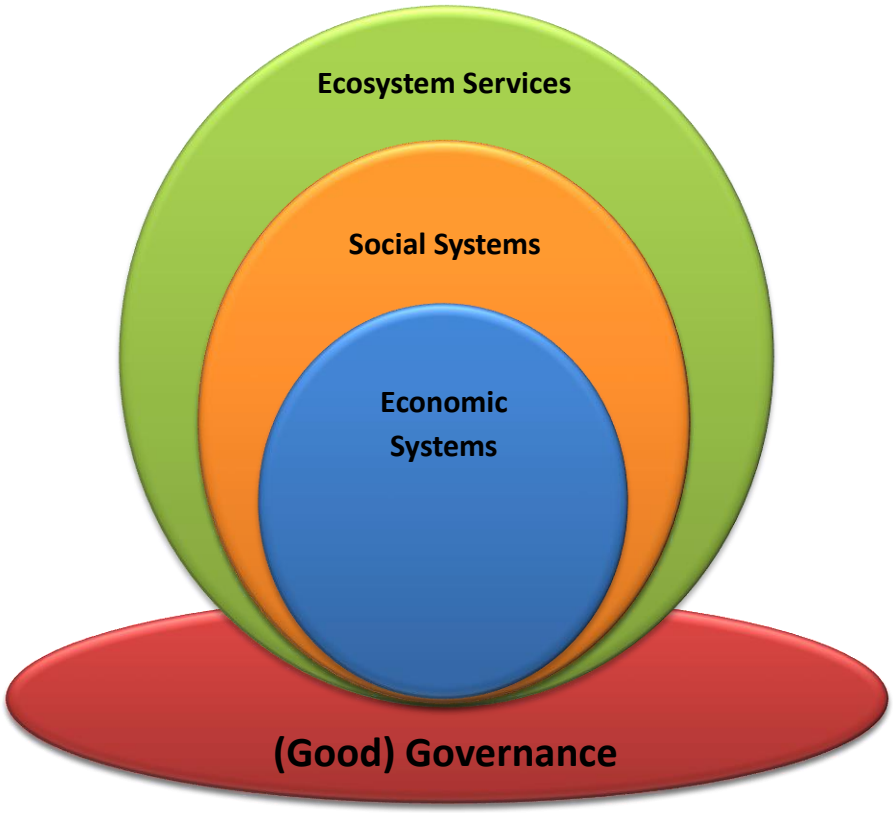
- *"Environmental Management must place people and their needs at the forefront of its concern and equitably serve their interests;*
- *"Environmental Management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option;*
- *"Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person; and*
- *"Decisions must take into account the interests, needs and values of all interested and affected parties;*
- *"The Environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage."*

Need and Desirability must thus be considered in the context of **sustainable development** which is underpinned by social, economic and environmental considerations and takes a long-term strategic view to environmental management.

7.2 SUSTAINABLE DEVELOPMENT

Sustainable development is best summarised by an extract from the United Nations World Commission on Environment and Development (WCED) and reads as follows:

"*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs… As such it requires the promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all could reasonably aspire.*" (Our Common Future, WCED, 1987).[5]



The widely accepted inter-dependence model of sustainability recognises that social and economic systems **have never been and can never be independent of the natural system**.

This model further supports the belief that **interactions** between and within component systems will result in **feedback** throughout the system.

Endorsed by the National DFFE

(Mebratu, 1998)

It is thus important that the BAR carefully considers and assesses the broad principles of sustainable development in order to clearly demonstrate the need and desirability of the proposed activity in the context of NEMA.

[5] *United Nations. 1987."Report of the World Commission on Environment and Development." General Assembly Resolution 42/187, 11 December 1987*

7.3 NATIONAL NEED AND DESIRABILITY OF PROPOSED DOMINION 3 SOLAR PARK

The National Development Plan (NDP) (see section 6.1.8) recognises that the South African economy is "electricity intensive" and is in need of greater power generation capacity in order to avoid energy crises such as the one experienced in 2008 and to ensure long-term economic growth and development. It therefore promotes the development of additional energy facilities to ensure that sufficient electricity is supplied to the national grid to meet the country's demand.

Coupled with the need for a greater energy supply is the exigency to rely on cleaner energy resources. Eskom's *Coal Report* makes the following observation: "Air pollution caused by Eskom's coal power stations in two provinces is killing at least 20 people a year and could jump to 617, with 25 000 people hospitalised, once all its stations are up and running. These would include the giant Medupi and Kusile power stations in Mpumalanga and Limpopo."[6]

In an increasingly carbon constrained world already facing climate change impacts, South Africa has to reduce greenhouse gas emission intensity decidedly and soon.[7] To this end, managing the transition towards a low carbon national economy is identified as one of the nine key national challenges in the NDP. Furthermore, with imminent carbon fines and ever decreasing coal reserves, the economic risk of relying on fossil fuels continues to rise. Investment in renewable energy and energy efficiency is therefore paramount in reducing the negative economic, social and environmental impacts of energy production and consumption in South Africa.[8]

Readily available renewable energy sources are thus a viable solution to reconcile essential economic development with the need to keep carbon emissions in check.[9] Solar energy is a feasible and practical solution in South Africa as most areas in the country experience more than 2 500 hours of sunshine per year, and average solar-radiation levels range between 4.5 and 6.5kWh/m2 in one day. The southern African region, and in fact the whole of Africa, receives sunshine all year round. The annual 24-hour global solar radiation average is about 220 W/m2 for South Africa, compared with about 150 W/m2 for parts of the USA, and about 100 W/m2 for Europe and the United Kingdom. South Africa's solar power resource is thus one of the highest in the world and, as a result, the country's solar-equipment industry is developing fast. [10]

South Africa has considerable solar potential in the Western Cape, especially along the West Coast where Direct Normal Irradiation (DNI) and Global Horizontal Irradiation (GHI) levels are high. [11] The Dominion 3 Solar Park PVSEF proposed location is within this area of high solar energy potential.

The NDP recognises that "emissions of carbon dioxide and other greenhouse gases are changing the earth's climate, potentially imposing a significant global cost that will fall disproportionately on the

[6] http://mg.co.za/article/2014-06-19-power-stations-are-deadly-internal-report-reveals
http://www.iol.co.za/business/companies/eskom-pollution-is-now-major-issue-1.1814603
http://earthlife.org.za/2015/02/joint-media-release-another-five-years-of-toxic-pollution-by-eskom/
http://www.news24.com/Green/News/Eskom-coal-is-a-killer-new-study-says-20140702
[7] Pegels, A (2010) *Renewable Energy in South Africa: Potentials, barriers and options for support*
[8] Winkler, H (2005) *Renewable Energy Policy in South Africa: Policy options for renewable electricity*
[9] Deichamnn et al. (2011) *The economics of renewable energy expansion in rural Sub-saharan Africa*
[10] Deaprtment of Energy (http://www.energy.gov.za/files/esources/renewables/r_solar.html)
[11] http://www.energy.org.za/news/158-new-solar-resource-maps-for-south-africa

poor." As such, it calls for the production of sufficient energy to support industry at competitive prices, ensuring access for poor households, while reducing carbon emissions per unit of power by about one-

The National Infrastructure Plan (2012) (NIP) intends to transform South Africa's economic landscape and strengthen the delivery of basic services, while simultaneously creating significant numbers of new jobs. Eighteen Strategic Integrated Projects (SIPs) have been developed and approved in terms of the NIP to support these goals. SIP 8 supports sustainable green energy initiatives on a national scale through the generation of clean energy and the construction of renewable energy facilities. SIP 9 looks to enhance socio-economic development through the construction of greater electricity generation capacity.

The Integrated Resource Plan for Electricity (2010) (IRP) foresees a near-doubling of electricity capacity by 2030, with 33% of new generation coming from renewable sources. The *New Growth Path* recognises that this sectoral growth can translate into job creation opportunities in the green economy.

The National Energy Regulator of Souths Africa[12] ("NERSA") established the Renewable Energy Feed-in Tariff[13] ("REFIT") programme to ensure that South Africa could establish an ongoing, ever-increasing deployment of renewable energy resources for the country and safeguard the sustained growth of the renewable sector for the country and internationally. The Feed-in-Tariff (FIT) ensures that definite prices for electricity supply are implemented instead of the conventional consumer tariffs. The main reason why the REFIT programme was implemented is due to the fact that capital cost related with construction and development of renewable energy facilities is much larger than the equivalent costs related to the expansion and/or continued use of plants that use fossil fuels for energy production. The REFIT, one single tariff had been discussed to introducing during 2009 – 2011, but then the DoE / the government switched to the auction model whereas the developers have to compete with their projects for an amount of Renewable Energy they may deliver to the grid, based on kWh – price, local content of project, social and community involvement etc.

The establishment of the REFIT tariff aimed at ensuring that this tariff would be able to ensure the costs of the renewable energy facilities as well as the Developer could potentially receive a net gain and reasonable return from establishing such facility within South Africa. This encourages Developers to rather invest and establish renewable energy facilities as opposed to "common" fossil fuel type energy facilities.

In conclusion, the establishment and use of renewable energy facilities ensures that the categories of energy producing sources are diversified within the country and improve the overall energy production efficiency. The establishment of such renewable energy facilities will decrease the use and quantities of fossil fuels which are burned to produce electricity and further will decrease air pollution emissions being released into the atmosphere and contribute to the overall decrease of Green House Gas Emissions being released into the atmospheres by South African "common" energy producers.

[12] http://www.nersa.org.za/
[13] http://www.nersa.org.za/Admin/Document/Editor/file/Electricity/REFIT%20Phase%20II%20150709.pdf

7.4 REGIONAL NEED AND DESIRABILITY MOTIVATION FOR THE PVSEF

On 09 October 2009, the Department of Energy (DoE) signed a Memorandum of Understanding (MoU) with the Clinton Climate Initiative (CCI) to compile a pre-feasibility study, which would assess the potential of developing one or more Solar Parks in South Africa. The collaboration produced a Solar Park Pre-feasibility study report which was later approved by the Department of Energy in May 2010 and later endorsed in South Africa through Cabinet Approval. In conclusion, the Report stated that solar power could be deployed in South Africa in large quantities over the next ten (10) years at costs that would be competitive [14]with coal-fired power and which would provide the country with clean and secure energy to ensure the ever-increasing demand on energy[15].

Based on numerous resources, solar photovoltaic energy generation has the potential to increase electrification rates and ease strains on the national grid in South Africa. South Africa has one of the highest global rates of annual solar radiation, averaging approximately 220 watts per square meter (W/m^2), compared with about 150 W/m^2 for parts of the United States. Within South Africa, the Western Cape Government has been a national leader in implementing energy efficiency strategies and renewable power generation projects such as this will substantially advance these goals[16].

In furtherance to the above, South Africa has rolled out numerous Solar Energy Facilities throughout the country, as seen in **Figure 7.4.1** the surrounding environment where the Dominion 3 Solar Park is proposed to be three combined proposed PVSEF developments represents the only such development for a radius of 12 km and there are eight known PVSEFs within a 30 km radius. Given the low number of renewable energy facilities within a 30 km radius it is highly unlikely that any major cumulative impacts to be expected from such developments

In light of the above information, it is reasonable to suggest that the establishment of the PVSEF, will be beneficial to the greater society as clean energy will be produced and connected into the National Grid.

Based on the information presented above and the map below, depicting the solar radiation for the South Africa, the PVSEF will be located in an area which experiences between 1750 to 2050kWh/m^2, of solar radiation per year[17]. kWh/m^2 refers to kilowatt per hours per meter squared. This is the calculation of the average amount of radiation (in kilowatts per hour) an area would receiver per 1 meter squared.

The Global Horizontal Irradiation map shows the solar radiation which is experienced in South Africa per annum. The relevance of this map to this Project is the fact that the PVSEF utilizes the sun's radiation to produce energy, which is fed into the Eskom Grid.

Further, Global Horizontal Irradiation is *"The radiation reaching the earth's surface can be represented in a number of different ways. Global Horizontal Irradiance (GHI) is the total amount of shortwave*

[14] *Articles stating competiveness of Renewable Energy: http://www.biznews.com/energy/2015/10/06/german-energy-minister-baake-tells-sa-build-your-renewables-dump-nuclear/ and http://www.treehugger.com/renewable-energy/death-capacity-factor-how-wind-solar-ultimately-win-game.html*

[15] *This information has been sources from: http://www.cefgroup.co.za/home-solar-park/*

[16] *This information has been sources from https://www.devex.com/projects/tenders/south-africa-feasibility-study-for-the-western-cape-government-solar-pv-project/136643*

[17] *This information has been sources from http://solargis.info/doc/free-solar-radiation-maps-GHI*

radiation received from above by a surface horizontal to the ground. This value is of particular interest to photovoltaic installations and includes both Direct Normal Irradiance (DNI) and Diffuse Horizontal Irradiance (DIF). DNI is solar radiation that comes in a straight line from the direction of the sun at its current position in the sky. DIF is solar radiation that does not arrive on a direct path from the sun, but has been scattered by molecules and particles in the atmosphere and comes equally form all directions".

Please further refer to the publication[18] below on how the Global Horizontal Irradiation has relevance to this Project:

What Is Solar Irradiation and How Does It Make South Africa An Excellent Location For Solar Facilities?

The sun emits radiation that travels to the earth, this radiation we call solar energy. The solar energy is transmitted as electromagnetic radiation of various wavelengths. Before the solar energy reaches the earth, it has to travel through the earth's atmosphere. According to Paschal Phelan, Chairman of Solar Capital, during this time the energy transmitted is reduced by, for example, absorption, scattering and reflection mechanisms due to the content of the earth's atmosphere, pollution, cloud cover, etc.

Phelan explains that the term irradiance is the measurement of solar power; it is the rate at which solar energy connects with a surface e.g. the earth. The unit of power in which it is measured is a Watt (W). With solar irradiance, the general measurement is as the power per unit area i.e. Watts per square meter. Irradiance is therefore recorded as W/m². It should be noted that the actual irradiance connecting with a surface constantly varies. Therefore, irradiance is a measure of power – the rate at which energy falls – not the overall amount of energy.

Phelan says that Direct Normal Irradiance (DNI) is defined as the amount of solar radiation which is received per unit area by a surface that is perpendicular to the sun's current position in the sky. The amount of irradiance can be increased by keeping the surface perpendicular to the incoming radiation. DNI is important to concentrated solar thermal installations and other installations that follow the position of the sun.

"Global Horizontal Irradiance (GHI) is the total amount of shortwave radiation received by a surface horizontal to the ground. This measurement is of particular interest to photovoltaic installations", says Phelan.

Phelan says that, as solar panels produce electricity through the reception of photons of sunlight, it makes sense that these panels be located in areas with the highest irradiation levels.

"The amount of irradiation at any one point on the earth will depend on the latitude, the local climate and the season," Phelan adds.

According to the South African Department of Energy, the whole of Africa has sunshine all year round. "The annual 24-hour global solar radiation average is about 220 W/m² for South Africa, compared with

[18] *http://www.solarcapital.co.za/blog/2016/09/05/what-is-solar-irradiation-and-how-does-it-make-south-africa-an-excellent-location-for-solar-facilities/*

about 150 W/m² for parts of the USA, and about 100 W/m² for Europe and the United Kingdom. This makes South Africa's local resource one of the highest in the world," says Phelan.

Stellenbosch University, in cooperation with GeoSUN Africa and GeoModel Solar, on 24 August 2016 released updated solar maps for South Africa (http://energy.org.za/news/158-new-solar-resource-maps-for-south-africa). Two maps were released showing the DNI and GHI which will be of significant interest to concentrating solar power (CSP) and concentrating photovoltaic (CPV) power facilities in establishing the best areas for implementing their facilities.

According to Phelan, 3 200 kWh/m² per annum is the highest DNI predicted in the Northern Cape, this shows an increase of 10% in some areas compared with past released statistics. The latest GHI figures show an increase of about 3% per annum which means huge potential for photovoltaic (PV) power.

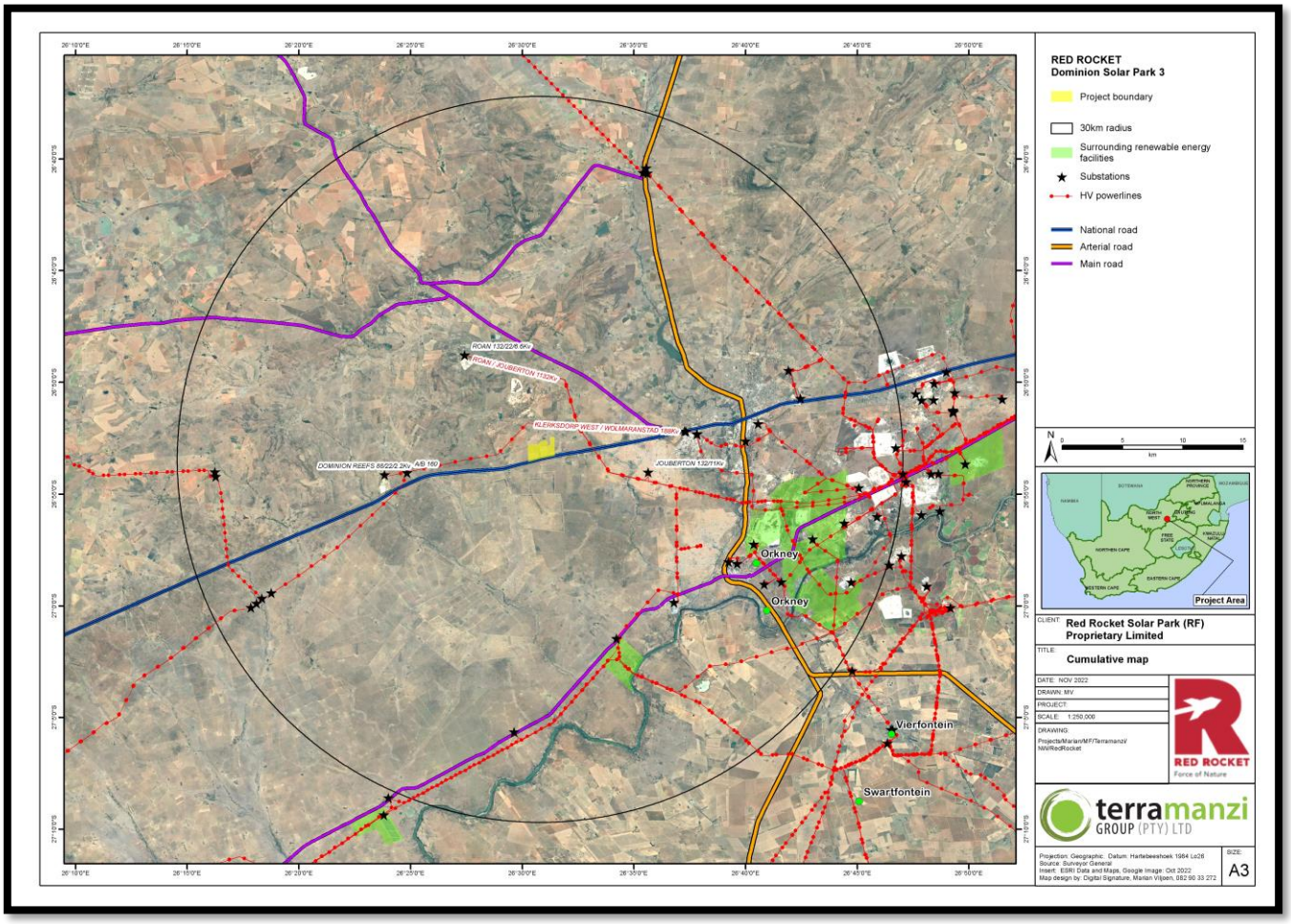


Figure 7.4.1: Cumulative Map showing the surrounding renewable energy facilities in the surrounding area of the proposed Dominion 3 Solar Park

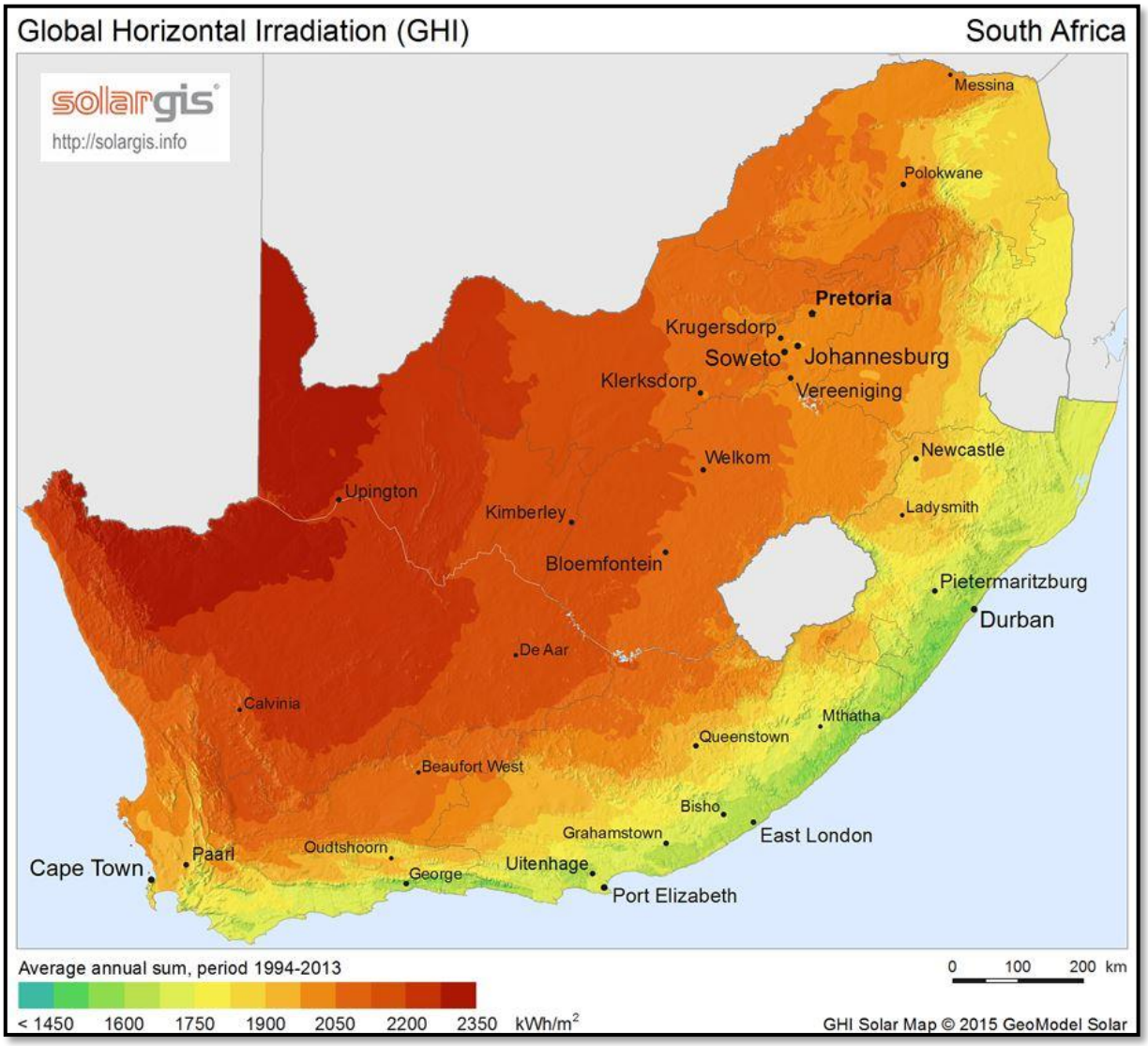


Figure 7.4.2: Solar Radiation Map: Global Horizontal Irradiation Map of South Africa, SolarGIS. (Diagram courtesy of SolarGIS © 2015 GeoModel Solar)[19]

[19] *This information has been sources from http://solargis.info/doc/free-solar-radiation-maps-GHI*

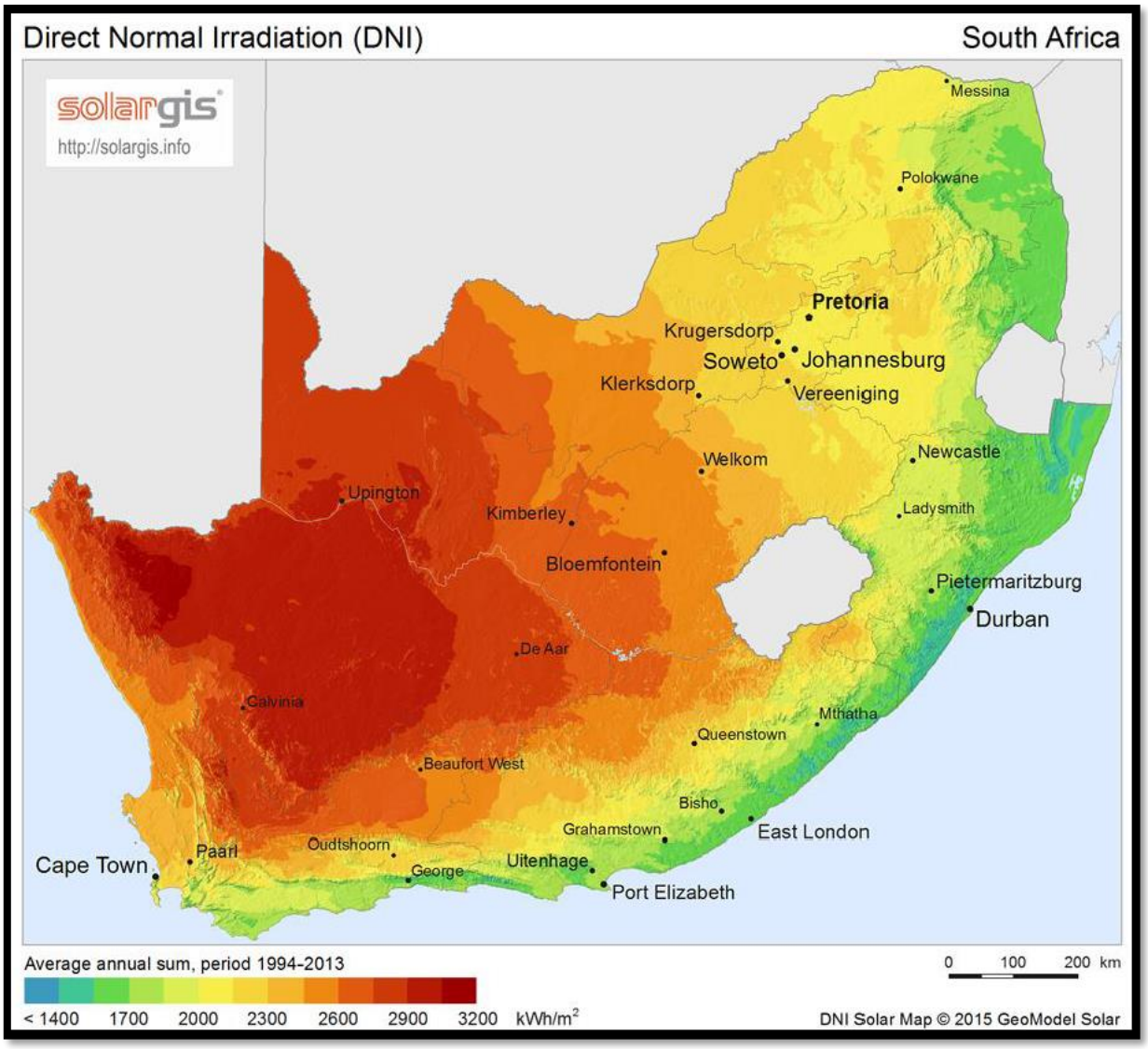


Figure 7.4.3: This figure shows the Direct Normal Irradiation (DNI) of South Africa. SolarGIS. (Diagram courtesy of SolarGIS © 2015 GeoModel Solar

7.5 GUIDELINES ON "NEED AND DESIRABILITY"

This Basic Assessment Report has carefully considered and applied the DFFE (2017), Guideline on Need and Desirability, Department of Environmental Affairs (DFFE), Pretoria, South Africa.

Based on the information presented within this guideline, we believe that the proposed PVSEF is aligned with the requirements of the Guidelines.

In summary, the footprint of the PVSEF has been placed in the most preferred and acceptable areas on the site, which have been informed by the Professional Team and is summarised in Sections 8 and 10 in this Report. The Professional Team's assessments and the EAPs overall opinion is that the proposed PVSEF will "secure ecological sustainable development and use of natural resources."

Further, based on the Professional Team's assessments and providing that the Applicant adheres to all the mitigation measures prescribed by the Professional Team, the proposed PVSEF will "promote justifiable economic and social development."

Please refer to the questions below based on the Need and Desirability Guidelines, which demonstrate that the proposed PVSEF is underpinned by the principles therein.

7.5.1 Need ('timing')

1. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved spatial development framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the Projects and Programmes identified as priorities within the credible IDP).

The existing Dr Kenneth Kaunda District Municipality's Final SDF was approved in (IDP 2017/18 - 2021/22). The land use that will be applied for will be included/addressed specifically with the next review of the SDF. This will be done within the land use application process. The Dr Kenneth Kaunda District Municipality Integrated Development Plan (2017/18- 2021/22) identifies the comparative advantage of electricity provision and production that the region has in the provincial context. The proposed project can accentuate the comparative advantage of the region and aligns with one (1) of the key strategic goals which are that the district is to promote physical infrastructure development and services. The proposed Dominion 3 Solar Park thus accentuate the comparative advantage of the region

2. Should the development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occurs here at this point in time?

Yes, this development should occur at this specific time, as we are 08 years away from 2030. Forward planning has to be implemented to be able to reach the target set in the SDF.

Based on the feedback provided by the Town Planner, we are of the opinion that based on the goals as set out in the District and Local SDF's the project should be implemented as it is compliant with the requirements of the SDFs and proactively fulfills their requirements and goals.

3. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This referred to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate).

The community is specifically in need of renewable energy activities like this project. The local area will benefit from this activity. This is a national priority for the local need.

The strategic objective of North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) is to facilitate and promote local economic development in the district through existing and shared partnerships. The district is an agricultural hub within the province and as a result, special attention is given to promoting agricultural initiatives and ensuring value chain benefits from the sector. While it is acknowledged that agriculture is one of the main sectors contributing effectively to the Province's GDP, the district needs to ensure an equitable focus on other sectors of the economy.

The IDP aims at promoting local economic growth and social development in order to provide a better life for the communities. The Orkney Solar Farm Grid Connection infrastructure will provide employment opportunities and contribute to assisting the district municipality in achieving local economic development and building a sustainable economy by introducing a relatively new sector into the local economy. Further, based on the national level requirements regarding renewable energy and the involvement of local communities in such project, we are of the opinion that this project could benefit both the renewable energy sector in South Africa as well as benefit the community by means of additional employment.

4. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?

The services are at an adequate capacity, if additional services are needed it will be adequately addressed in the land use application process.

Please refer to section 13 of this Report for service capacity.

5. Is the development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?

This development will not influence the infrastructure planning of the municipality, if additional infrastructure is needed it will be adequately addressed in the land use application process.

Based on the feedback provided by the Town Planner, we are of the opinion that the development will not influence the infrastructure planning of the municipality. The roads leading to the Project site have recently been upgraded and are in good working order. However, the proposed project will provide additional renewable energy to the national grid, which in turn could influence the infrastructure planning of the municipality, should they tap into the energy source.

6. Is the project part of a national programme to address an issue of national concern or importance?

This development promotes the Vision 2030 (South Africa's National Development Plan) by enhancing the following key drivers of change, Economic growth and employment opportunities, Social equity and environmental sustainability. In chapter 4 of the National development plan there is an entire section on the energy sector, where south Africa is in need for alternative energy supplies. One of the long-term phasing plans for 2030 is "By 2030, more than 20 000mw of renewable energy will be contracted" NDP (150: 2011). To accomplish this target, we have to start with projects like this.

Based on the information provided by the Town Planner, the Specialist Assessments undertaken as part of this proposed project, we are of the opinion that the project could form part of a national

programme to address issues of national concern and importance, and these would be regarded as but not limited to renewable energy and infrastructure development.

7.5.2 Desirability ('placing')

1. Is the development the best practicable environmental option for this land/site?

Yes, this project is proposed on only a portion of the property. Identified through various factors like available space, existing servitudes and services, environmental factors, elevation and accessibility.

Based on the information provided by the Specialist Assessments and the Basic Assessment undertaken as part of this proposed project, we are of the opinion that the development is the best practicable environmental option of the site. However, all the Specialist recommendations and mitigation measures must be adhered to and further the PVSEF footprint should be refined to ensure that the least Red Data Species will be impacted upon as a result of the establishment of the PVSEF.

2. Would the approval of this application compromise the integrity of the existing approved and credible municipal IPD and SDF as agreed to by the relevant authorities?

No, it will not compromise the integrity of the existing IDP and SDF of the Dr Kenneth Kaunda and City of Matlosana Local Municipality.

Based on the available information provided by the Specialists, we are of the opinion that the approval of this application would not compromise the integrity of the existing approved credible municipal IDP and SDF. However, all the Specialists' recommendations and mitigation measures must be adhered to accordingly.

3. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in the EMFs), and if so, can it be justified in terms of sustainability considerations?

This is a renewable energy application; the main purpose of the application is to provide the area with sustainable electricity. According to our knowledge there is no EMF for this specific project area. Therefore, if all recommendations are followed from the different department in this Basic assessment process it can be justified that all environmental sustainability were considered. We enquire from City of Matlosana Local Municipality how they address these issues and if we will be able to obtain an answer before Land use application submission.

Based on the feedback provided by the Town Planner, there is not available EMF for the area. However, providing that all the Specialists' recommendations and mitigation measures are adhered to then it is unlikely that the approval of this application would compromise the integrity of the existing environmental management priorities for the area. This Basic Assessment Report and accompanying EMPr aim to promote sustainable development as far as possible.

4. Do location factors favour this land use (associated with the activity applied for) at this place? (this relates to the contextualisation of the proposed land use on this site within its boarder context).

Yes, the location is favorable, because the position is not within the urban edge. But in close proximity to Klerksdorp and Dominionville with an existing electrical servitude crossing the property.

Based on the available information presented by the Specialist Team, we are of the opinion that the location does favour this land use. The site is well suited for the proposed project due to its close proximity to the Eskom Grid as well as due to the opportunities been identified on the site by the Specialist Team. However, all the Specialists' recommendations and mitigation measures must be adhered to accordingly.

5. How will the activity or land use associated with the activity applied for, impact on sensitive natural and cultural areas (Built and rural/natural environment)

Based on the available information, the Specialist Impact Assessments undertaken by the Professional Team and site assessments undertaken by the EAP and the Professional Team, it is reasonable to suggest that the establishment of the PVSEF will have minimal impacts on the built and natural environment. Any impacts that the PVSEF is anticipated to have, will be able to be mitigated to an acceptable level. In furtherance to the above the Professional Team did not identify any fatal flaws during their Impact Assessments. However, all the Specialists' recommendations and mitigation measures must be adhered to accordingly and the PVSEF should be reworked to ensure that minimal Red Data Species are impacted during the construction and operation of the PVSEF.

6. How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.)?

Based on the available information, the Specialist Impact Assessments undertaken by the Professional Team and the site assessments undertaken the EAP and Professional Team, it is reasonable to suggest that the establishment of the PVSEF is unlikely to have an impact of people's health and wellbeing. However, the PVSEF will have potential visual impacts in certain sensitive areas, however mitigation measures have been investigated and discussed as part of this Basic Assessment Report in order to mitigate the visual impacts to an acceptable level. The impacts and mitigation measures for all impacts pertaining to the PVSEF have been investigated in this Basic Assessment Report. However, all the Specialists' recommendations and mitigation measures must be adhered to accordingly and the PVSEF should be reworked to ensure that minimal Red Data Species are impacted during the construction and operation of the PVSEF.

7. Will the proposed activity or the land use associated with the activity applied for result in unacceptable opportunity costs?

Based on the available information, the Specialist Impact Assessments undertaken by the Professional Team and the site assessments undertaken by the EAP and the Professional Team, it is reasonable to

suggest that the establishment of the PVSEF will not result in unacceptable opportunity costs, but in actual fact will reap benefits in terms of generation of green energy and possible employment and upliftment of the existing communities in the area.

8. Will the proposed land use result in unacceptable cumulative impacts?

Based on the available information, the Specialist Impact Assessments undertaken by the Professional Team and the site assessments undertaken by the EAP and the Professional Team, it is reasonable to suggest that the establishment of the PVSEF is not likely to result in unacceptable cumulative impacts as there are limited PVSEF established in the surrounding area and further most of the impacts associated with the PVSEF are mitigated on the site to acceptable levels and therefore would result in having acceptable cumulative impacts.

Based on the above, and the available information, it is evident, through the findings of the Professional Team and this Basic Assessment Report that the proposed development broadly meets the DFFE "need and desirability" criteria, and the development proposal is therefore considered, for the purposes of this application, to be acceptable in terms of these criteria.

8 SPECIALIST STUDY FINDINGS AND SUMMARY OF ENVIRONMENTAL ATTRIBUTES

In accordance with ***Appendix 1 Regulation 3(h)(iv), (m) and (k) of GN No. R. 326 of the NEMA EIA*** *Regulations (2014, as amended):*

> ***3(h) (iv)*** *– The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*
>
> ***3(m)*** *- Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;*
>
> ***3(k)*** *- Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;*

The following specialist assessments were undertaken for the BAR, as determined by the EAP, the Client and in consultation with the Competent Authority:

- Avifaunal Impact – Enviro – Insight (C/O Luke Verburgt)
- Heritage Impact– PGS Heritage (C/O Wouter Fourie)
- Noise Impact – dBAcoustics (C/O Barend van der Merwe)
- Visual Impact – SAS Environmental Services (C/O K. Nienaber & S. van Staden
- Freshwater Impact - SAS Environmental Services (C/O S.van Staden)
- Terrestrial Biodiversity - SAS Environmental Services (C/O C. Steyn, D. van der Merwe & S.van Staden)
- Climate Impact – Airshed (C/O Hanlie Libernberg-Enslin)
- Agricultural Impact – SAS Environmental Services (C/O T. Setsipane, S. van Staden & B Mzila)
- Town Planning Impact - Warren Petterson Planning (WPP) (C/O Mr Corné Briedenhann)
- Traffic Impact Assessment – Innovative Transport Solutions (ITS) (C/O Nico Jonker)
- Geotechnical Impact – GEOSS (C/O Shane Teek & Michael Baleta)
- Social Impact – Tony Barbour Environmental Consulting (C/O Tony Barbour)

Please note that all potential impacts have been summarised in this Section and a full Impact Assessment is depicted in Section 12 of this Report. Please note that all Specialist Reports and statements for this draft BAR are attached in Appendix B and form part of the Basic Assessment Report for a 30-day PPP.

8.1 TOWN PLANNING ASSESSMENT

TMG, on behalf of the Applicant appointed Warren Petterson Planning (C/O Mr Corné Briedenhann) (hereinafter referred to as the "Town Planning Specialist") to undertake a town planning report for the Dominion 3 Solar Park.

8.1.1 Receiving Environment

The proposed Dominion 3 Solar Park is situated approximately 11km east of Klerksdorp in the City of Matlosana Local Municipality, North West Province on the following land portion/s:

- *Wolverand 425 RE/11/425*
- *Wolverand 425 RE/32/425*
- *Wolverand 425 RE/31/425*

Klerksdorp Land use Scheme

The subject farms are zoned Agricultural Zone in terms of the Klerksdorp Land Use Management Scheme, 2005. According to the scheme regulations, no provision is made for renewable energy facilities on land zoned Agricultural.

As stated above, no provision is made for renewable energy facilities in the Klerksdorp Land Use Management Scheme, 2005. The footprints of the proposed Dominion 3 Solar Park will have to be rezoned to 'Special', under which specific development controls will be imposed pertaining to the solar energy facilities. A land use application will therefore be required in terms of Section 54 (3) (g) of the City of Matlosana Spatial Planning and Land Use Management By-Law, 2016

The following should be noted in terms of the envisaged rezoning application. Section 62 of the relevant SPLUMA By-Law states that:

1. An applicant, who wishes to rezone land, must apply to the Municipality for the rezoning of the land in the manner provided for in Chapter 6 of the SPLUMA By-Law.

2. A rezoning approval lapses after a period of five years, or a shorter period as the Municipality may determine, from the date of approval or the date that the approval comes into operation if, within that five-year period or shorter period —

(a) the conditions of approval have not been met.

(b) the development charges referred to in Chapter 7 have not been paid or paid in the agreed instalments.

(c) the zoning is not utilized in accordance with the approval thereof; or

(d) the following requirements are not met:

(i) the approval by the Municipality of a building plan envisaged for the utilization of the approved use right; and

(ii) commencement with the construction of the building contemplated in subparagraph (i).

3. The Municipality may grant one extension to the period contemplated in subsection (2) and the granting of an extension may not be unreasonable withheld, which period together with any extension that the Municipality grants, may not exceed 10 years.

If a rezoning approval lapses, the zoning applicable to the land prior to the approval of the rezoning applies, or where no zoning existed prior to the approval of the rezoning, the Municipality must determine a zoning as contemplated in Section 174.

Land Use Application Process and Requirements

The change of land use rights process comprises of the following phases:

- A Title Deed of each property in question needs to be obtained and analyzed by a conveyancer to determine any development restrictions related to the property (conveyancer certificate). If any restrictions are found, an additional application needs to be submitted to remove/ amend these conditions.
- Once all the above-mentioned information is in hand, a pre-consultation meeting needs to be scheduled to discuss particulars of the application with the relevant council officials.
- An application may then be prepared by the applicant and submitted to the City of Matlosana Local Municipality in which alignment / compliance with various policies and guidelines are assessed and proven. These policies and guidelines include, but are not limited to:
    - NDP (National Development Plan)
    - SPLUMA (Spatial Planning and Land Use Management Act)
    - LUPA (Land Use Planning Act)
    - IDP (Integrated Development Plan)
    - SDF (Spatial Development Framework)
    - SAREM (South African Renewable Energy Masterplan)
- After submission, the application is circulated to all relevant departments for comments. Additional information regarding the application may be requested at this stage. Previous approvals from various departmental organizations are usually a requirement upon submission of such a SPLUMA application. These departments include, but are not limited to:
- DALRRD (Department of Agriculture, Land Reform and Rural Development)
    - SALA CONSENT (Subdivision of Agricultural Land Act Consent for the transformation of the agricultural land for the use of renewable energy) Obtained at DALRRD
    - DMR (Department of Mineral Resources)
    - DoE (Department of Energy)
    - Land Claims Commissioner
    - Eskom
    - DoT (Department of Transport)
    - DWS (Department of Water & Sanitation)
    - SLA (Service Level Agreement of relevant parties / authorities)
- An advertisement indicating the particulars of the application is placed in the local and regional newspaper, simultaneously notices will be served by means of registered mail to surrounding neighbours for comments. This is to fulfil the public participation process. The period for comments is usually 30 days.
- After this period, the applicant has a limited period in which response to comments can be made.

- Council Officials then must make a final decision regarding the outcome of the application and / or Municipal Planning Tribunal. Any decision taken by Council may be appealed, in which case the processes is prolonged, and a final decision will be determined by a Municipal Planning Tribunal (MPT).

Based on the findings of the Town Planning report before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the proposed Dominion 3 Solar Park is acceptable from a Town Planning perspective.

8.2 AGRICULTURAL IMPACT ASSESSMENT

8.2.1 Receiving environment

Current Land Use

According to observations made during the site assessment the study area is dominated by open veld (often utilised for grazing). However, during the time of assessment no cultivation of crops was observed.

Dominant Soil Forms

The identified soil forms within the study area include the soils of Bainsvlei, Nkonkoni, Arcadia, Cartref, Rensburg and Mispah/Glenrosa formations. Mispah/Glenrosa were the dominant soil forms within the investigated footprint area followed by Bainsvlei and Nkonkoni soil forms, (refer to **Figure 8.2.1**) and the inherent soil characteristics will be discussed in detail below.

Mispah/Glenrosa and rock outcrops are lithic based soils and are typically shallow in nature. The shallow depth can be attributed to limited rock weathering and convex topographical conditions at the crest or scarp of a hillslope resulting in removal of soil and in some instance leaving rocky outcrops behind. Based on the degree of weathering some lithic material of varying sizes can be mixed intimately with soil material. These types of soils are usually avoided for intensive use and thus left for grazing, forestry, and wildlife land uses..

The Bainsvlei soil form characterised by the presence of a water table below the 1200 mm depth, facilitating the storage and release of water. The weak apedal structure of the red apedal horizon and the loamy texture allows for deep root penetration and thus favourable for the majority of cultivated crops.

The Nkonkoni soil form is characterised by development in well-drained oxidising environmental conditions (warm and moist) which allows for iron oxide (hematite) coating on soil particles thus resulting in the dominating red colours of the soils. In some instances, the red colour can be as a result of the iron-rich parent material. Besides depth limitations these soils can be considered marginally suitable for cultivation due their well-drained conditions, good aeration and loam textural class.

The Cartref soils tend to have a low nutrient status and this can be attributed to the susceptibility of the albic horizon to leach nutrients (Bleached appearance). These soils are also prone to waterlogging conditions due to relatively impermeable layer below the albic horizon thus resulting in anaerobic conditions not favourable for most cultivated crops. These soils function as seep wetlands in most cases, as the albic horizon indicates lateral movement of water in the landscape.

The Rensburg soil form is characterised by strongly structured, dark clay horizons, with swell-shrink processes due to the high smectitic clay content. Signs of hydromorphy below the vertic A horizon are present in the form of gleyed morphology indicating seasonal to permanent wetland conditions. These soils are not suitable for crop cultivation due to the high clay content, strong structure and are prone to waterlogging conditions (highly impermeable when wet).

Land Capability Classification

Agricultural land capability in South Africa is generally restricted by climatic conditions, with specific mention to water availability (rainfall). Even within similar climatic zones, different soil types typically have different land use capabilities attributed to their inherent characteristics. High potential agricultural land is defined as having the soil and terrain quality, growing season and adequate available moisture supply needed to produce sustained economically high crop yields when treated and managed according to best possible farming practices (Scotney et al., 1987).

For this assessment, land capability was inferred in consideration of observed limitations to land use due to physical soil properties and prevailing climatic conditions. Climate Capability (measured on a scale of 1 to 8) was therefore considered in the agricultural potential classification. The study area falls into Climate Capability Class 4 due a good yield potential for a moderate range of adapted crops but planting date options more limited than C3.

The identified soils were classified into land capability and land potential classes using the Camp et. al, and Guy and Smith Classification system (Camp et al., 1987; Guy and Smith, 1998), The identified land capability limitations for the identified soils are discussed in comprehensive “dashboard style” summary tables presented in the specialist report Appendix B. Table 8.8.2 below presents the dominant soil forms and their respective land capability, agricultural potential as well as areal extent expressed as hectares as well as percentages

Table 8.2.2 Land capability associated with the soils occurring within the study area.

Soil Form	Diagnostic Horizons	Land Capability	Land Potential	Area (ha)	Percentage (%)
Bainsvlei	Orthic A/Red Apedal/Soft Plinthic	Arable (Class II)	Good Potential (L3)	9.3	3.5
Nkonkoni	Orthic A/Red Apedal/ Lithic	Arable (Class VI)	Moderate Potential (L5)	46.1	17.1
Cartref	Orthic A/Albic/Lithic	Wetland (Class V)	Restricted Potential (L5)	10.2	3.8

Rensburg	Vertic A/Gley	Wetland (Class V)	Restricted Potential (L5)	0.2	0.1
Mispah/Glenrosa	Orthic/ Lithic or Hard Rock	Grazing (Class VI)	Restricted Potential (L5)	203.7	75.6
Total Enclosed				*269.5*	*100*

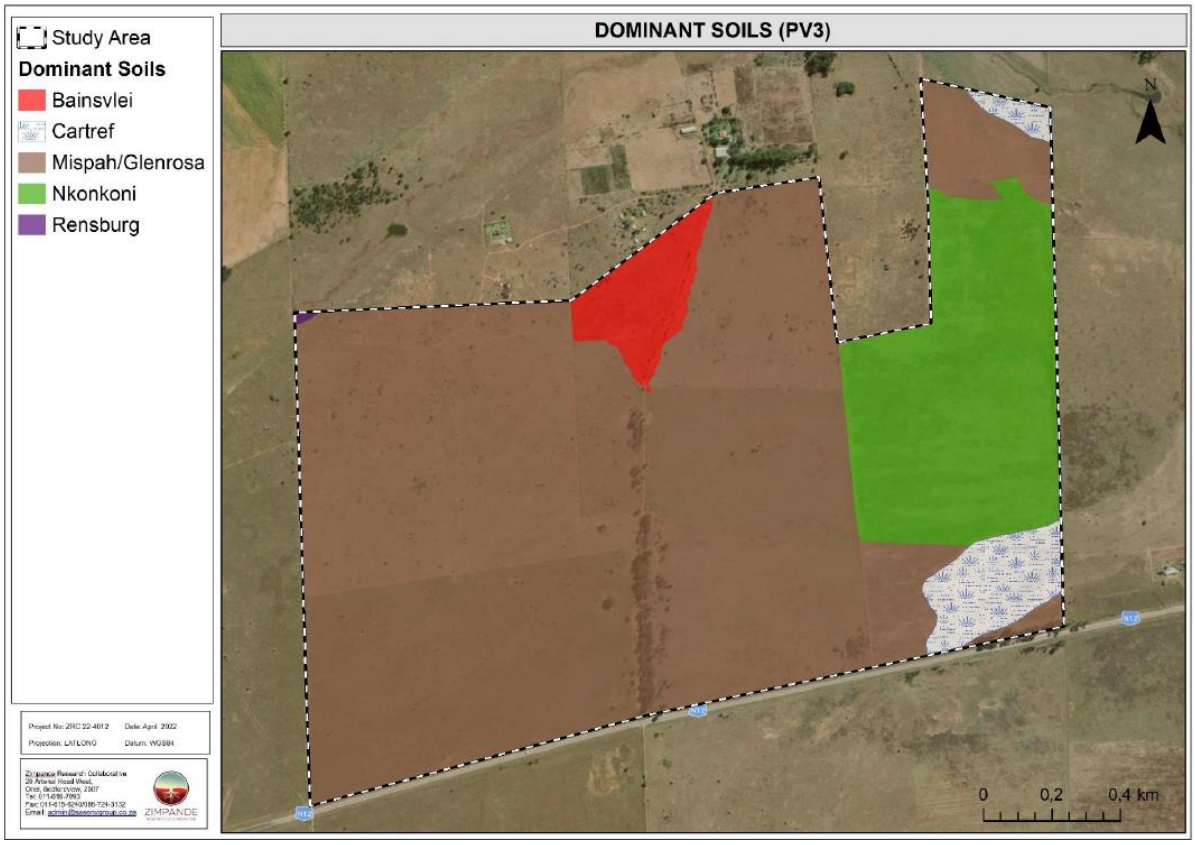


Figure 8.2.1 Dominant Soil forms associated with the study area

8.2.2 Potential Impacts identified

Soil Erosion

Soil erosion is largely dependent on land use and soil management and is generally accelerated by anthropogenic activities. In the absence of detailed South African guidelines on erosion classification, the erosion potential and interpretation are based on field observations as well as observed soil profile characteristics. In general, soils with high clay content have a high-water retention capacity, thus less prone to erosion in comparison to sandy textured soils, which in contrast are more susceptible to erosion.

The proposed development footprint is located on a moderately sloping terrain, which increases the erosion hazard. While the identified soils display a moderate susceptibility to erosion under current conditions, their susceptibility to erosion is likely to increase once the land is cleared for construction activities, and the soils will inevitably be exposed to wind and stormwater.

Soil Compaction

Heavy equipment traffic during construction and activities is anticipated to cause soil compaction. The severity of this impact is anticipated to be moderately high for most soils under cultivation and moderately low for soils characterised by the presence of rocky outcrops Soil compaction will potentially lead to:

- Increased bulk density and soil strength reduced aeration and lower infiltration rate;
- Consequently, it lowers crop performance via stunted aboveground growth coupled with reduced root growth;
- Destroyed soil structure, causing it to become more massive with fewer natural voids with a high possibility of soil crusting. This situation can lead to stunted, drought-stressed plants as a result of restricted water and nutrient uptake, which results in reduced crop yields; and
- Soil biodiversity is also influenced by reduced soil aeration. Severe soil compaction may cause reduced microbial biomass. Soil compaction may not influence the quantity, but the distribution of macro fauna that is vital for soil structure including earthworms due to reduction in large pores.

Potential Soil Contamination

Contamination sources are mostly unpredictable and often occur as incidental spills or leaks during both the construction and operational phase. Thus, all the identified soils are considered equally predisposed to potential contamination. The significance of soil contamination is considered to be medium for all identified soils without mitigation, largely depending on the nature, volume and/or concentration of the contaminant of concern as well as the rate at which contaminants are transported by water in the soil. Therefore, strict waste management protocols as well as product stockpile management and activity specific Environmental Management Programme (EMP) and monitoring guidelines should be adhered to during the construction and operational activities. the management protocols are not well managed this will more likely lead to:

- Contaminants leaching into the soil and thus potentially rendering the soil sterile. reducing the yield potential of soils.
- Potential reduction of water quality used for irrigation and for livestock use.

Loss of Agricultural Land Capability

The study area is largely characterised by soils of restricted potential due to the shallow nature of the soils mixed intimately with rocky material and the high clay content. Also, considering the climatic conditions of the area with limited rainfall and the absence of any irrigation scheme this renders the study area not suitable for any large-scale agricultural cultivation and have little bearing on agricultural productivity, with limited contribution to the regional and provincial as well as national food production.

Conclusion

The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study

area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.

From a soil, land use and land capability point of view, this project regarded as being of low impact significance due to the inherent soil constraints of the area to support crop agriculture. However, mitigation measures and recommendations outlined in this document need to be strongly considered and implemented accordingly in efforts to conserve soil resources in the post development landscape.

Hydropedological Opinion

A Hydropedological Opinion Report is attached under Appendix B of this Basic Assessment report.

In line with the new Department of Water and Sanitation (DWS) guidelines for hydropedological studies, this study was done at a high level (level 1 and 2) since solar cluster projects are generally not significant land use changing developments and have a limited impact on the hydropedological processes.

Findings of the Hydropedological Opinion Report :

Both transects are dominated by shallow responsive soils. The soils are characterised by a sharp transition to the underlying lithic material which controls the hydropedological response of both transects. During the rainy season the small water holding capacity of the soil fills up and induces overland flow. The dark (non-bleached) appearance of the surface horizons indicates that the soils are in a drier hydraulic regime. These soils contribute to the nearby water sources for short periods after rainfall events. Groundwater or regional water table recharge is typically localised to fractures in the underlying rock. Thus, the impact of the proposed solar pv plant on the hydropedologically important soils as well as the functionality of the wetland is considered negligible. The buffer areas defined as "no go areas" in the freshwater assessment (refer to section 8.6) should be taken into consideration during the construction and operational phase of the development since an edge effect management buffer is required while a hydropedological zone of exclusion is not deemed necessary. Overall, the proposed development is unlikely to lead to a change in the PES and functionality of the freshwater systems in the study area. The proposed solar PV plant is not anticipated to cause a significant impact or loss of hillslope processes driving the adjacent wetland on both the local and catchment scale due to the nature of development. This development is regarded ***acceptable*** *from a hydropedological process management point of view, provided that the recommendations provided in the Hydropedological Opinion Report attached as Appendix B are implemented*.

8.3 TERRESTRIAL BIODIVERSITY (FLORAL) IMPACT ASSESSMENT

8.3.1 Receiving environment

Broad-scale vegetation characteristics

Dominion 3 Solar Park is situated within the Vaal-Vet Sandy Grassland vegetation type and was considered as the reference vegetation type for the floral assessment. This vegetation type has an EN threat status according to both Mucina and Rutherford (2006) and the 2018 Final Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2006-2018).

Mucina and Rutherford (2006) describe the Vaal-Vet Sandy Grassland landscape as a "Plains-dominated landscape with some scattered, slightly irregular undulating plains and hills. Mainly low-tussock grasslands with an abundant karroid element. Dominance of Themeda triandra is an important feature of this vegetation unit. Locally low cover of T. triandra and the associated increase in Elionurus muticus, Cymbopogon pospischilii and Aristida congesta is attributed to heavy grazing and/or erratic rainfall". The Vaal-Vet Sandy Grassland is further listed as a threatened ecosystem in the 2011 National Threatened Ecosystems database2, where the ecosystem retains its EN threat status.

Ground-truthed vegetation characteristics

A total of 112 plant taxa were recorded across Dominion 3 Solar Park, 23% of which were represented by woody species, 46% by forbs, 4% by succulents, and 28% by graminoid species. Species from the Asteraceae (e.g., Helichrysum spp.), Iridaceae (specifically Gladiolus spp.), Orchidaceae, and Poaceae families are likely to be under-represented in the floral inventories for this study due to the assessment taking place towards the end of the flowering season for these species (i.e., species lacked the necessary diagnostic characteristic for confident identification).

Three broad habitat units were distinguished for Dominion 3 Solar Park and these were subdivided into five sub-units:

- Dry Highveld Grassland Habitat Unit – habitat characterised by a grass-dominated landscape that has been exposed to varying levels of disturbances. The type and extent of disturbance contributed to grasslands fluctuating in structure, species composition, and habitat integrity. Three sub-units were defined:
    - Degraded Grassland (7 hectares (ha));
    - Secondary Grassland3 (94 ha); and
    - Vachellia erioloba Veld (146 ha).
- Transformed Habitat, comprising one unit:
    - Anthropogenic Landscapes (4 ha) – areas that include farmsteads, built-up areas, structures and/or stands or alien trees.
- Moist Grassland Habitat Unit – two units were distinguished for Dominion 3 Solar Park. The vegetation associated with the Moist Grassland Habitat Unit groups together floral communities with a similar species composition and does not necessarily indicate the presence of a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998)

(NWA)4. To distinguish between true watercourses and those that are not true watercourses, the unit was split into two sub-units:

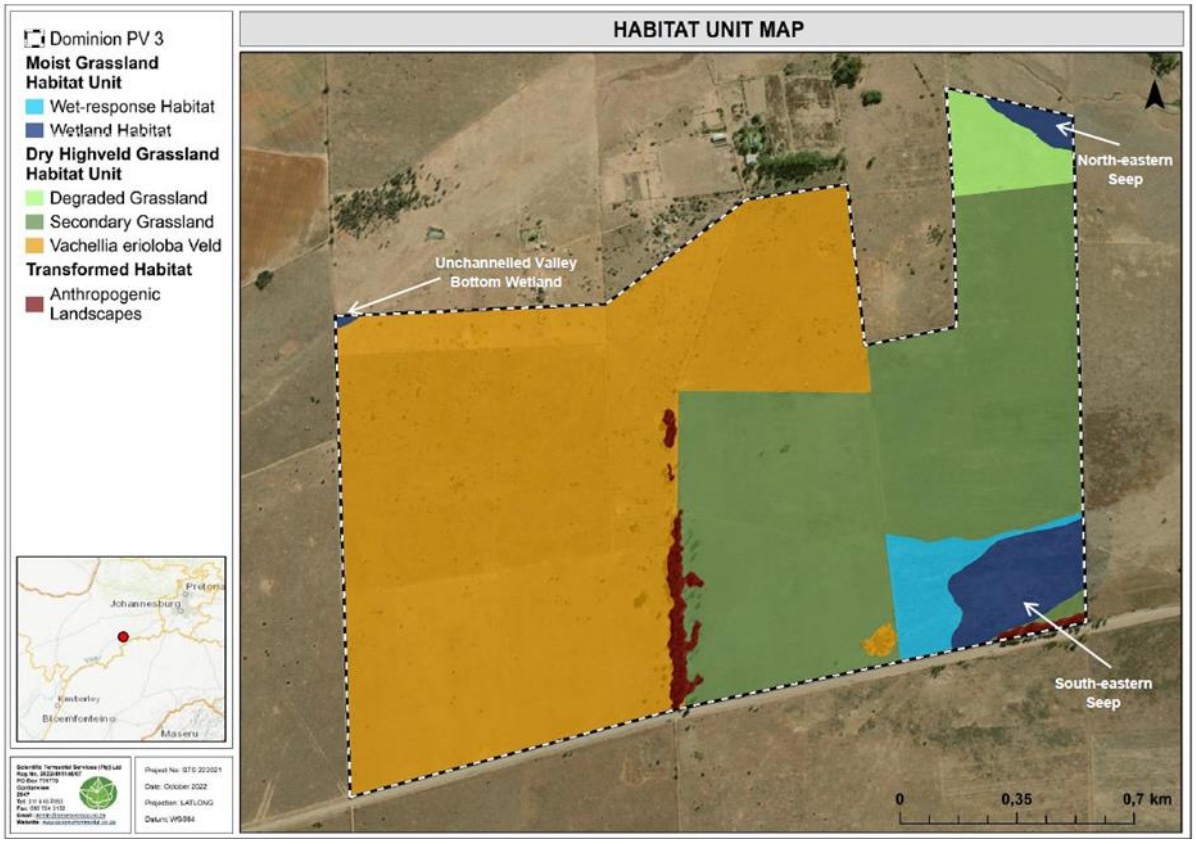
- Wet-response Habitat (7 ha). This sub-unit is not considered a true watercourse as not all the relevant criteria were met5; and
- Wetland Habitat (11 ha). These are true watercourses (as per the NWA) and follows the delineations of the freshwater ecologist SAS 221060 (2022).

The floral communities in Dominion 3 Solar Park include distinctly different communities, but each very predictable in its response to historic and current pressures (in terms of species composition), e.g., the homogenous vegetation associated with the Secondary Grassland comprised of communities that are typically associated with historically cultivated fields. Similarly, the Wet-response Habitat was dominated by Sorghum species, which is expected for areas of increasingly saturated soils and where historic cultivation occurred. For a breakdown of the floral communities, habitat characteristics, and conservation sensitivities associated with the above-mentioned habitat units,

Alien and Invasive Plant (AIP) Species

A minimum of 18 AIP species were recorded within Dominion 3 Solar Park. Of the 18 AIPs recorded during the field assessment, most species are not listed as invasive under the GN number 1003: Alien and Invasive Species Lists, 2020. Many of the species that are not listed are, however, considered to be problem plants11 and are deemed to have a negative impact on indigenous floral communities within Dominion 3 Solar Park. E.g., species like Bidens pilosa, Schkuhria pinnata, Tagetes minuta are not currently listed but have become so abundant in disturbed sections, that native species have been entirely displaced. Four (4) species are listed under NEMBA Category 1b, and one (1) under NEMBA Category 2.

The Vachellia erioloba Veld and the Wetland Habitat (particularly the north-eastern seep and north-western UCVB) were associated with low diversity and abundance of AIPs, whereas the Wet-response Habitat and Transformed Habitat were associated with higher diversities. The Degraded Grassland and Secondary Grassland typically were not associated with a prominent AIP presence. An AIP Control and Management Plan is recommended for Dominion 3 Solar Park if the project will be authorised. AIP control measures should regularly be updated for Dominion 3 Solar Park and must adhere to the new AIP regulations12 to ensure no further loss of indigenous floral communities occurs. Refer to Table 1 below for more information on the AIPs recorded on site.



8.3.2 Potential Impacts identified

Impact on Floral Habitat and Diversity

The various aspects of this project will impact differently on the habitat identified within the Dominion 3 Solar Park. Direct impacts through clearance of vegetation will result in the loss of approximately 239 ha of vegetation. Of this, approximately 112 ha will be clearance of moderately low (Degraded, Secondary Grassland, and Wet-response Habitat) and low sensitivity habitat (Transformed Habitat), and 114 ha of intermediate sensitivity habitat (Vachellia erioloba Veld). No direct loss of Wetland Habitat (of moderately high sensitivity) will take place with the proposed layout.

Given the above, the proposed activities will avoid loss of significant and high residual negative impacts to floral ecology, and all impacts are anticipated to be restricted to local-scale loss of habitat only. Loss of "Natural Habitat" as per the IFC definition will not entirely be avoided for the Vachellia erioloba Veld but will effectively be avoided for the Wetland Habitat. Minimisation of direct impacts to these habitat units is limited in its potential to reduce impacts to biodiversity as the proposed layout will utilise most of the Dominion 3 Solar Park property (apart from the Wetland Habitat and approximately 31 ha of the Vachellia erioloba Veld). Minimisation of indirect impacts to surrounding natural habitat is possible through erosion control, stormwater management, AIP management, and monitoring of footprints (especially during the operational and maintenance phase). No indication was given that rehabilitation is planned post-operation of the Dominion 3 Solar Park project (i.e., 25–30-year lifespan) and, as such, it is assumed that the loss of affected habitat will be permanent.

The direct impact of the Dominion 3 Solar Park's activities on the floral ecology is not anticipated to result in significant or residual impacts to floral ecology. Without mitigation measures implemented, the impact significance varies from low (planning and operational and maintenance phases) to medium-low (construction phase) for the Degraded Grassland and the Secondary Grassland. For the Vachellia erioloba Veld, the impact significance varies from low (planning phase) to medium-high (construction phase) and medium-low (operational and maintenance phases). For the Transformed Habitat, Wet-response Habitat and south-eastern Wetland Habitat, the impact significance remains low for all phases. For the Wetland Habitat (north-western UCVB and north-eastern seep), the impact significance varies from low (planning phase), to medium-low (edge effect impacts during construction and operation and maintenance phases).

With mitigation measures adequately implemented, impact significance can be reduced for all habitat units. The impact significance can be reduced to very low (planning phase), medium-low (construction phase), and low (operational and maintenance phase) levels for the Degraded Grassland. The impact significance can be reduced to very low (planning phase), medium-low (construction phase), and very low (operational and maintenance phase) levels for the Secondary Grassland, whereas for the Transformed Habitat, the impact significance can be reduced to very low levels for all phases of the project. For the Vachellia erioloba Veld, the impact significance can be reduced to very low (planning phase), medium-low (construction phase), and low (operational and maintenance phase) levels. Impact significance for the Wet-response Habitat and south-eastern Wetland Habitat can be reduced to very low (planning and operational and maintenance phases) and low (construction phase) levels with mitigation measures implemented. For the Wetland Habitat (north-western UCVB and north-eastern seep), the impact significance can be reduced to very low (planning phase phase), and low levels (edge effect impacts anticipated during the construction and operational and maintenance phases).

Impacts on Floral SCC

The exact impact on floral SCC will only be determined after the floral walkdown of the authorised footprints have been undertaken. However, given the current site data and position of the proposed activities, no significant loss of protected flora is anticipated, i.e., no TNCO-species were recorded on site and those anticipated to be present are common and widespread species. Moreover, NFA-tree species were present in low abundances and seedlings and/or propagules should be harvested to attempt replacement within the section of Vachellia erioloba Veld where no development is planned. Potentially occurring VU species should be confirmed with a floral walkdown prior to the project kicking-off. The proposed activities can attempt to avoid destruction of floral SCC through footprint walkdowns and planning of a rescue and relocation plan (where feasible).

The NFA-protected trees (Vachellia erioloba –present on site), the TNCO-protected species (Ammocharis coranica, Brachystelma spp., Gladiolus cf. crassifolius, Habenaria sp. – medium POC for Dominion 3 Solar Park), and sensitive species 1261 (VU) should be targeted during the floral walkdown within the Vachellia erioloba Veld and Degraded Grassland. Floral SCCs are not anticipated to occur in the Transformed Habitat, Secondary Grassland, or Wet-response Habitat.

To compensate for potential impacts to floral SCC in the final footprints, the VU, and TNCO-protected species can be rescued and relocated, and the NFA-tree seedlings and/or propagules can be harvested

for propagation in nurseries. These species can be planted in rehabilitated open space around the PV facility, and/or utilised in potentially planned landscaping (space for relocation is available in the northern sections of the Vachellia erioloba Veld. Permit application and guidance with regards to rescue and relocation, or destruction, of floral SCC will be required from the DFFE and the North West DEDECT.

The direct impact of the Dominion 3 Solar Park's activities on the floral SCCs is not anticipated to result in the loss of significant SCCs, given that a walkdown of the site takes place and measures taken to rescue potentially occurring VU species (nationally and provincially protected species are not likely to result in significant loss to population dynamics).

Without mitigation measures implemented, the impact significance varies from medium-low (planning phase) to low (construction phase and operational and maintenance phase) for the Degraded Grassland. Impact significance varies between medium-low (planning and operational and maintenance phases) to low (construction phase) for the Vachellia erioloba Veld and the Wetland Habitat (north-western UCVB and north-eastern seep). For the Transformed Habitat, Wet-response Habitat and south-eastern Wetland Habitat, the impact significance remains very low throughout all phases. For the Secondary Grassland, impact significance remains low throughout all project phases.

With mitigation measures adequately implemented, impact significance can be reduced for all habitat units. The impact significance can be reduced to low (planning phase) and very low (construction and operational and maintenance phases) levels for the Degraded Grassland. For the Vachellia erioloba Veld and and the Wetland Habitat (north-western UCVB and north-eastern seep), the impact significance can be reduced to low (planning and operational and maintenance phases), and very low levels (construction phase). For the Secondary Grassland, Transformed Habitat, Wet-response Habitat and south-eastern Wetland Habitat, impact significance can be reduced to very low levels for all project phases.

Impact on CBAs, ESAs, Threatened Vegetation and Protected Areas

No CBAs, ESAs, or Threatened Ecosystems will be impacted by the proposed activities.

Probable Residual Impacts

Even with extensive mitigation, residual impacts on the receiving floral ecological environment are deemed likely. The following points highlight the key residual impacts that have been identified:

- Degradation of ecologically intact habitat outside of the authorised footprint due to edge effects;
- Permanent loss of and altered floral species diversity outside of the footprint area, including loss of favourable habitat for protected species, mainly resulting from a fragmented landscape and modified ecological corridors;
- Permanent loss of and altered floral species diversity outside of the footprint area, including loss of favourable habitat for protected species, mainly resulting from a fragmented landscape and modified ecological corridors;
- Permanent loss of floral habitat and diversity due to poorly executed rehabilitation efforts, AIP control, and lack of monitoring during operational and maintenance of the project;
- Loss of SCC resulting from increased harvesting in the region; and
- Ongoing AIP proliferation and potential native bush encroaching (Seriphium plumosum and Gomphocarpus fruticosus) in the adjacent natural vegetation communities

Conclusion

Based on species composition, vegetation structure, ecological function, biophysical environment, and habitat condition, three broad habitat units and six sub-units could be distinguished for Dominion 3 Solar Park. The sensitivity of these habitat units was determined based on the presence or potential for floral SCC, habitat integrity and levels of disturbance, threat status of the habitat type, the presence of unique landscapes and overall levels of diversity (compared to a reference type). The floral communities in Dominion 3 Solar Park include distinctly different communities, but each very predictable in its response to historic and current pressures (in terms of species composition), e.g., the homogenous vegetation associated with the Secondary Grassland comprised of communities that are typically associated with historically cultivated fields. Similarly, the Wet-response Habitat was dominated by Sorghum species, which is expected for areas of increasingly saturated soils and where historic cultivation occurred. The habitat units are broken down below::

- Habitat of **low sensitivity** included the Transformed Habitat. This habitat unit was not associated with floral SCCs and can be classified as "Modified Habitat" as per the IFC definition. The Screening Tool's indicated sensitivities of medium for the plant species theme and very high for the terrestrial biodiversity theme is not supported for this habitat unit;
- Habitat of **moderately low sensitivity** sensitivity included the Degraded Grassland, Secondary Grassland, and Wet-response Habitat. No floral SCC were recorded in these sub-units, although it is anticipated that TNCO-protected flora may be present within the Degraded Grassland (albeit in low abundances). These sub-units can be classified as "Modified Habitat" as per the IFC definition. The Screening Tool's indicated sensitivities of medium for the plant species theme and very high for the terrestrial biodiversity theme is not supported for these habitat sub-units;
- Habitat of **intermediate sensitivity** included the Vachellia erioloba Veld sub-unit, and the south-eastern Wetland Habitat. These habitats were not associated with RDL species, but the Vachellia erioloba Veld has suitable habitat for a VU species (to be confirmed during floral walkdowns). The medium sensitivity of the Screening Tool for the plant species theme is disputed only for the Wetland Habitat. Both habitats provide suitable conditions for TNCO-protected species, with the Vachellia erioloba Veld associated with scattered individuals of the NFA-protected tree (Vachellia erioloba). Apart from the Wetland Habitat (a "Modified Habitat" given its historic transformation for agricultural activities), the Vachellia erioloba Veld can be classified as "Natural Habitat" per the IFC definition. No significant biodiversity features (CBAs, ESAs, threatened ecosystems) were confirmed for these habitats and thus the very high sensitivity for the terrestrial biodiversity theme from the Screening Tool report is not supported; and

- Habitat of **moderately-high sensitivity** included the Wetland Habitat (north-western UCVB and north-eastern seep). These features are excluded from the proposed layouts and will not directly be affected by the proposed activities.

Impact summary

The various aspects of this project will impact differently on the habitat identified within the The various aspects of this project will impact differently on the habitat identified within the Dominion 3 Solar Park. Direct impacts through clearance of vegetation will result in the loss of approximately 239 ha of vegetation. Of this, approximately 112 ha will be clearance of moderately low (Degraded,

Secondary Grassland, and Wet-response Habitat) and low sensitivity habitat (Transformed Habitat), and 114 ha of intermediate sensitivity habitat (Vachellia erioloba Veld). No direct loss of Wetland Habitat (of moderately high sensitivity) will take place with the proposed layout. Considering this, the proposed activities will avoid loss of significant and high residual negative impacts to floral ecology, and all impacts are anticipated to be restricted to local-scale loss of habitat only. Loss of "Natural Habitat" as per the IFC definition will not entirely be avoided for the Vachellia erioloba Veld but will effectively be avoided for the Wetland Habitat.

The exact impact on floral SCC will only be determined after the floral walkdown of the authorised footprints have been undertaken. The direct impact of the Dominion 3 Solar Park's activities on the floral SCCs is not anticipated to result in the loss of significant SCCs, given that a walkdown of the site takes place and measures taken to rescue potentially occurring VU species (nationally and provincially protected species are not likely to result in significant loss to population dynamics). The NFA-protected trees (Vachellia erioloba –present on site),

the TNCO-protected species (Ammocharis coranica, Brachystelma spp., Gladiolus cf. crassifolius, Habenaria sp. – medium POC for Dominion 3 Solar Park), and sensitive species 1261 (VU) should be targeted during the floral walkdown within the Vachellia erioloba Veld and Degraded Grassland. Floral SCCs are not anticipated to occur in the Transformed Habitat, Secondary Grassland, or Wet-response Habitat. Permit application and guidance with regards to rescue and relocation, or destruction, of floral SCC will be required from the DFFE and the North West DEDECT.

It is the opinion of the ecologists that this study provides the relevant information required in order to implement Integrated Environmental Management (IEM) and to ensure that the best long-term use of the ecological resources in the Dominion 3 Solar Park will be made in support of the principle of sustainable development

8.4 TERRESTRIAL BIODIVERSITY (FAUNA) IMPACT ASSESSMENT

8.4.1 Receiving environment

Faunal Habitat

Overall, the habitat within Dominion 3 Solar Park ranged from well-vegetated areas to transformed areas in which indigenous vegetation1 was scarce. The biodiversity of the Dominion 3 Solar Park can thus be defined under three broad habitat units and six vegetation units as described below (**Figures 8.4.1**). These habitat units were distinguished based on species composition, vegetation structure, ecological function, physical nature of the environment and habitat condition. For a more detailed description and discussion of these habitat units please refer to the Part B: Floral Report attached under Appendix B of the Specialist reports.

The 6 broad habitat units associated with the larger study area include:

- **Dry Highveld Grassland Habitat unit - Vachellia erioloba Veld:** This unit is the largest habitat within Dominion 3 Solar Park. Overall, this habitat unit supports a moderate-to-moderately high floral species richness. Currently, this Habitat Unit is utilised for grazing purposes and as

such, areas throughout the Habitat Unit are heavily grazed, reducing resources for many faunal species. A more heterogenous floral community compositions is supported within the habitat unit providing the best habitat for fauna within Dominion 3 Solar Park. This unit was sparsely overlayed with trees providing a more complex vegetation structure where larger fauna could find shelter while also providing arboreal fauna with opportunities. Despite its grazed condition, habitat remains that will support an intermediate diversity of common vertebrates and invertebrates (mostly smaller species).

- **Dry Highveld Grassland Habitat unit - Secondary Grassland Habitat**: This habitat unit comprises of short grassland at various stages of recovery from historical cultivation or disturbances from historic agriculture. The unit is largely absent of any unique landscape features limiting habitat heterogeneity. Some more rocky sections did provide habitat for arachnids and reptiles though these were rare within the landscape. Nevertheless, forage resources are provided within the unit, yet a high diversity of species was not observed and nor is it expected as a result of the historic disturbances. High competition for resources with domestic cattle is likely within this unit.
- **Dry Highveld Grassland Habitat unit - Degraded Grassland Habitat:** The Habitat comprises of a small portion in the northeast of Dominion 3 Solar Park. The vegetation associated with the Degraded Habitat was more diverse than the Secondary Grassland as no historic cultivation occurred here, however, the unit is grazed. The unit offered intermediate habitat for most fauna. This habitat is considered to be in a relatively good ecological condition, with very few alien species observed. Suitable resources for the extant faunal community were observed, yet, competition from cattle will reduce forage within this unit.
- **Moist Grassland Habitat: The Moist Grassland Habitat** comprises of two subunits, the Wetland Habitat and the Wet-response Habitat. These locations are associated with saturated soils providing water dependant species with opportunities. The southern portions of this unit have historically been cultivated which has severely degraded the faunal community. The northern section of Wetland Habitat, although impacted does provide habitat for more niche specific faunal species. Amphibians and invertebrates are likely to thrive within this northern portion of the Moist Grassland Habitat, yet, the observed assemblage, which did not appear much higher than in the adjacent vegetation units, reduces the sensitivity of the unit. These habitats provide suitable grazing for herbivores and serves as an important corridors for movement of fauna within the largely modified locality. Some extensive grazing within portions of this unit has drastically reduced the species richness of this unit, providing limited habitat for diverse flora and subsequently niche habitats for many small faunal species. The Wet-response unit is only expected to remain saturated during times of high rainfall when is will sustain suitable habitat to supporting water dependant amphibian or insect species. Within this unit the structure and composition of vegetation often did not vary from adjacent grassland units. The Wetland habitat though was often denser and taller than the adjacent units capable of supporting a more diverse assemblage of fauna as greater forage and shelter was available.
- **Transformed Landscapes - Anthropogenic Landscape Habitat**: This habitat unit included areas associated with AIP (Alien and Invasive Plants) where the vegetation community has been transformed. This habitat unit is not considered intact and is of low sensitivity and conservation significance from a faunal and resource management perspective due to the disturbed nature of these localities and the lowered species richness observed. The stands of invasive trees do allow for more structural diversity which may be utilized by several fauna yet limits opportunity for foraging.

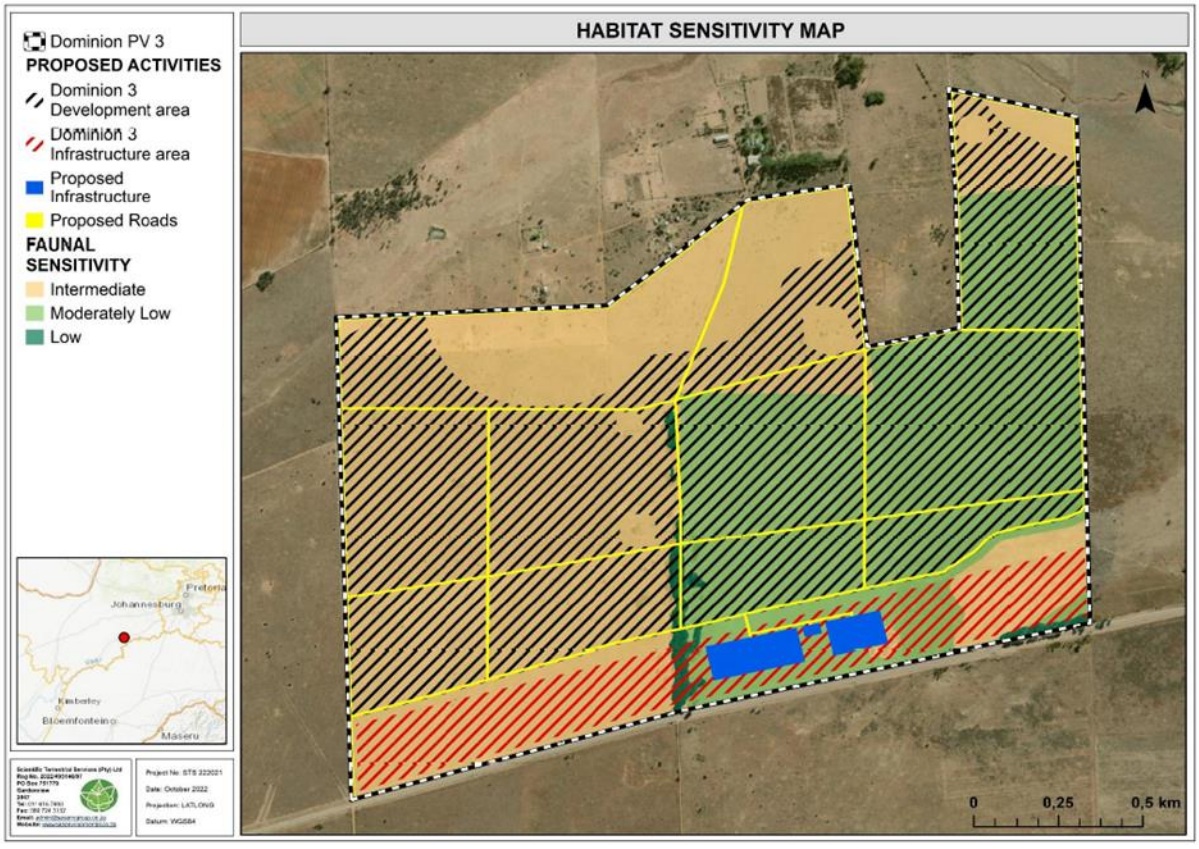


Figure 8.4.1 Dominant habitat units associated with the study area

8.4.2 Potential Impacts identified

The perceived impact significance of the development of the Dominion 3 PV facility (without mitigation) on faunal habitat, diversity and SCC range from Medium High (Secondary Grassland and Vachellia erioloba Veld), Medium Low (Degraded Grassland) and Low (Moist Grassland Habitat and Anthropogenic Landscape Habitat). Following mitigation, impacts may be reduced to lower impact scores (Medium-Low to insignificant) for all habitat units. Medium-High impacts will occur within the Vachellia erioloba Veld should no mitigation occur considering the more unique and bushy nature of this unit with greater faunal opportunities perceived without consideration of corridors or any habitat retention.

Impact on Faunal Habitat and Diversity

Medium high impacts to the Vachellia erioloba Veld and Secondary Grassland habitat are anticipated without mitigation as a result of the scale of vegetation that will be removed and the resultant loss of faunal habitat. Leading to a reduction in faunal opportunities for shelter and forage and higher competition for resources within the remaining assemblage of fauna. Currently the project areas supports a modest variety of faunal classes, and although mostly common herbivorous species are anticipated to utilise the project boundary on a permanent basis, 5 SCC do occur within the project boundary and habitat for these species will be reduced. Large predators are absent while mesopredators will intermittently pass through while foraging.

The proposed development activities within the project areas will reduce the current levels of diversity within the faunal community and will lead to the local reductions in faunal abundances, especially for faunal classes with poor dispersal abilities, such as terrestrial invertebrates and herpetofauna. Impacts to the more sensitive Vachellia erioloba Veld Habitat will likely be responsible for a reduction in diversity within the project areas as this provides the highest diversity of flora and opportunities for faunal species with a unique rockier nature.

Impacts on Faunal SCC

All habitat units, except the Anthropogenic Habitat, have the potential to be utilised from a faunal SCC perspective, however, for the most part the habitats are not considered ideal habitat for Orycteropus afer (Aardvark) and Pyxicephalus adspersus (Giant African Bullfrog). Opistophthalmus pugnax (Pugnacious Burrower), Harpactira hamiltoni and Opistophthalmus carinatus (Radiant Burrower) do potentially have habitat suitable for breeding within the Grassland Habitats, notably the Vachellia erioloba Veld. Medium high impacts from the proposed development are therefore anticipated for this unit. As the proposed PV footprint encroaches on habitats known to support faunal SCC impacts are unavoidable. Species with reduced mobility such as arachnids and amphibians are at increased risk of mortality and habitat loss resulting in fragmentation in the landscape. As such, a faunal corridor should be planned within the designs of Dominion 3 Solar Park between freshwater features.

Prior to vegetation clearing activities, the site should be inspected for the presence of SCC, including burrowing scorpion and baboon spider burrows as well as the burrows of Orycteropus afer (Aardvark). If located, these species should be carefully rescued and relocated as per an approved rescue and relocation plan that must be developed. Permits are to be obtained from DFFE and North West Department: Economic Development, Environment, Conservation and Tourism (NWDEDECT) prior to the relocation of any faunal SCC

Probable Residual Impacts

Even with extensive mitigation, residual impacts on the receiving faunal ecological environment are likely. The following points highlight the key residual impacts that have been identified.

- Continued, long-term decline of faunal species diversity;
- Long-term loss of faunal SCC abundance in the local area;
- Further habitat fragmentation and AIP proliferation; and
- Disturbed areas are highly unlikely to be rehabilitated to baseline levels of ecological functioning and as such loss of faunal habitat, species diversity and faunal SCC will most likely be long term (life of operation).

Conclusion

Following the field assessment, five broad faunal habitats were noted, namely the Degraded Grassland, Vachellia erioloba Veld, Secondary Grassland, Wetland Habitat and Anthropogenic Landscape Habitat). These habitat units have all been subjected to varying degrees of impacts from the high human presence, from grazing and from cultivation and as a result support a reduced diversity of faunal species. The Vachellia erioloba Veld and Moist Grassland are considered the most important

habitat unit, as the Moist Grassland functions as an irreplaceable ecological system while the Vachellia erioloba Veld includes niche habitat for fauna. These largely intact units with higher floral richness increases habitat for many fauna and the rocky and bushy nature of the Vachellia erioloba Veld provides valuable opportunities for fauna. Due to existing and past disturbances within the Degraded Grassland and Secondary Grassland these units are of reduced sensitivity from a faunal perspective, although there is potential for increased diversity of common, or resilient and small bodied invertebrate and vertebrate mammal fauna.

There is a reasonable possibility that 5 SCC may utilise Dominion 3 Solar Park to breed in, forage or utilise the focus areas as a movement corridor. Faunal SCC include: Orycteropus afer (Aardvark) and Pyxicephalus adspersus (Giant African Bullfrog). Opistophthalmus pugnax (Pugnacious Burrower), Harpactira hamiltoni and Opistophthalmus carinatus (Radiant Burrower). Of these species the invertebrate SCC are anticipated to utilise Dominion 3 Solar Park for breeding while Orycteropus afer (Aardvark) and Pyxicephalus adspersus (Giant African Bullfrog) may utilise the study area on an intermittent basis. Herpetofaunal and arachnid SCC face an increased mortality risk during construction due to their habits and poor dispersal abilities. As such, a search and rescue plan in the event of encountering these SCC should be developed and implemented prior to development.

The perceived impact significance of the proposed infrastructure development (prior to mitigation) on faunal habitat and diversity range from high to low. Following mitigation, it is anticipated to that most impacts will be reduced to lower levels. Impact scores remain medium high in the Vachellia erioloba Veld with mitigation fully implemented as the scale of development within this natural unit is large. In order to reduce the impact score some habitat for fauna should be left natural within the Vachellia erioloba Veld. The large scale clearing of vegetation and the long term nature of the project impacts habitat and concurrently diversity while the increased human presence may lead to higher potential for direct and indirect persecution of fauna. Also of concern, are unmanaged AIP proliferation and increased erosion which may potentially reduce faunal habitat suitability both within and on adjacent habitat. However, mitigation does occur for these and all other associated trigger activities from development, that will impact SCC and common fauna during the construction and operational phases. Should all mitigatory measures stipulated in section 19 be sufficiently implemented, significance of development risks and impacts can be considerably reduced.

8.5 AVIFAUNAL IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed Enviro-Insight cc (hereinafter referred to as the “Avifaunal Specialist”) to undertake an Avifauna Assessment for the Dominion 3 Solar Park.

Literature Review

A desktop study and literature review was undertaken to evaluate all bird species which could potentially occur in the vicinity of the Dominion PVSEF Cluster, referred to as the “Project Area” (refer to B) predominantly using data from the second South African Bird Atlas Project (SABAP 2 ; [SABAP2, 2020]) but cross-referencing with Hockey et al. (2005) and Sinclair & Ryan (2010). SABAP 2 data are collected as records per pentad (i.e., 5’ X 5’ or roughly 9 x 9 km). A list of species potentially occurring

within and adjacent to the Combined Project Area was therefore developed from SABAP 2 data for the four pentads in close proximity to the Combined Project Area (2650_2625, 2650_2630, 2655_2625 and 2655_2630; Figure 8.5.1). The expected species list is therefore based on an area much larger than the actual Combined Project Area and was subsequently refined. This approach was adopted to ensure that all species potentially occurring within the Combined Project Area, whether resident, nomadic, or migratory, were included.

Species were considered as sensitive to the proposed development based on their abundance, flight characteristics, ecological role, population trend and conservation status.

The following main literature sources were consulted for the study:

- Information relating to avifauna species of conservation concern (SCC) was obtained from Taylor et al. (2015) and the IUCN Red List of threatened species (IUCN 2022);
- del Hoyo et al. (1992) and Hockey et al. (2005) were consulted for general information on the life history attributes of relevant bird species;
- Distributional data was sourced from the Southern Africa Bird Atlas Project (SABAP 2 2022), Hockey et al. (2005), del Hoyo et al. (1992) and Sinclair & Ryan (2010);
- iNaturalist records within 5 km of the Combined Project Area were also consulted;
- Nomenclature and taxonomy followed the IOC World Bird Names unless otherwise specified (see www.worldbirdnames.org; Gill & Donsker 2012).

The Red List of threatened species generated by the IUCN (http://www.iucnredlist.org/) provided the global conservation status of avifauna. However, Taylor et al. (2015) produced a regional conservation status assessment following the IUCN criteria which takes precedent for this assessment, but only in cases where the current global status is not of a higher risk. The first three categories i.e. Critically Endangered, Endangered and Vulnerable, are collectively referred to as 'threatened' species.

The extinction risk status categories defined by the IUCN, which are considered here to represent species of conservation concern (SCC), are defined as follows:

- Critically Endangered (CR) - Critically Endangered refers to species facing immediate threat of extinction in the wild.
- Endangered (EN) - Endangered species are those facing a very high risk of extinction in the wild within the foreseeable future.
- Vulnerable (VU) - Vulnerable species are those facing a high risk of extinction in the wild in the medium-term.
- Near Threatened (NT) - any indigenous species which does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

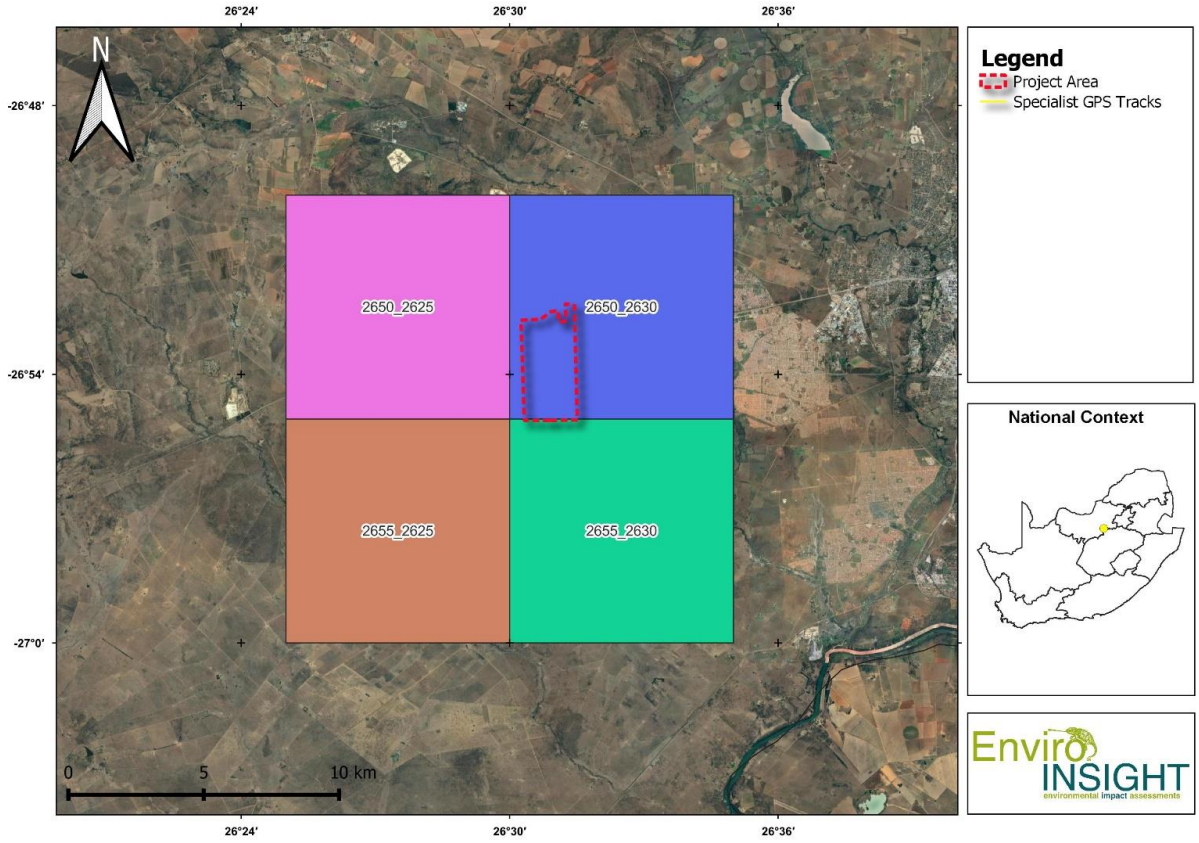


Figure 8.5.1. The proposed Dominion PVSEF Cluster Combined Project Area in relation to the SABAP2 pentads.

Survey Description

Two site visits were conducted with the timing of fieldwork as follows:

- Late Summer: 5–7 April 2022 (Solar Parks 1,2 & 3 surveyed for a full day each)
- Winter: 5-6 July 2022 (Solar Park 1 surveyed for a full day, portions of Solar Parks 2 & 3 surveyed for a half day each)
- Winter: 1 August 2022 (Remaining portions of Solar Parks 2 & 3 surveyed for a half day each)
  Sampling was performed by means of combined walking and driving transects in and around the Combined Project Area. Driving was done at very low speeds, with frequent stoppages to observe birds and record data. Short walking transects were conducted from the vehicle wherever habitat allowed and bird productivity was high. The entire Combined Project Area and all the different habitats were surveyed in this manner. No suitable waterbodies where present in and surrounding the Combined Project Area were appropriate waterbirds counts (CWAC) could be conducted. Suitable nesting structures and habitats were evaluated carefully for any possible nests of sensitive/priority bird species.

8.5.1 Receiving environment

The Combined Project Area is relatively flat, located approximately 11 km west of Klerksdorp and consists predominantly of low diversity, homogenous grassland habitats in various degrees of degradation. The botanical habitat description and delineation provided by the Project Botanist is followed for the purposes of this report and is shown in **Figure 8.5.2**. A breakdown of habitat types and surface area calculations for the Dominion 3 Solar Park is provided in Table 1.

Table 1: Habitat types and surface areas for the Dominion 3 Solar Park.

Habitats	Area (ha)
Degraded Grassland	7.2
Secondary Grassland	94.1
Transformed Habitat	3.5
Vachellia erioloba Veld	146.6
Wetland Habitat	10.5
Wet-response Habitat	6.8
Total	**268.8**

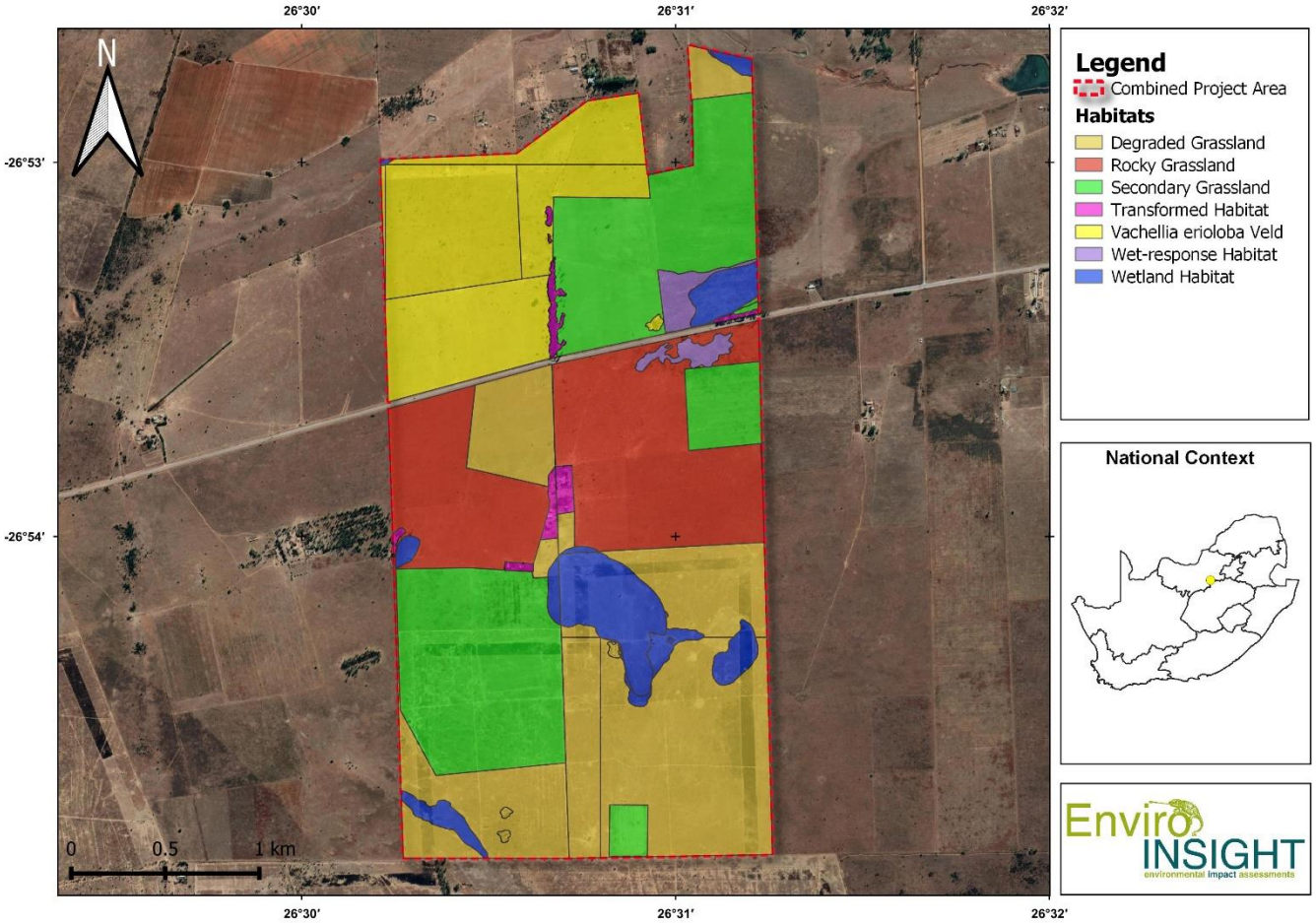


Figure 8.5.2 The Dominion PVSEF Cluster Combined Project Area habitat delineation.

A brief description of the major habitat types for the Combined Project Area and their bird assemblages are provided below, with example photographs shown in **Figure 8.5.3.**

Grasslands (Degraded, rocky and secondary)

This habitat is characterised by short grasslands of varying density (depending on grazing intensity and burning regime). The grasslands support a low vegetation diversity and habitat structure. It is relatively homogenous, occurs in wide expanses throughout the region and is the most ubiquitous habitat within the project area. The avifaunal assemblage is characterised by cryptic grassland species such as Cape Longclaw (*Macronyx capensis*), Rufous-naped Lark (*Mirafra Africana*), Zitting Cisticola (*Cisticola juncidis*) and Long-billed Pipit (*Anthus similis*).

Vachellia erioloba Veld

This habitat is similar to the open grassland but has a more pronounced woody component. Bird assemblages associated with this habitat type are comprised of a mixture of grassland bushveld species such as Acacia Pied Barbet (*Tricholaema leucomelas*) and Chestnut-vented Warbler (*Curruca subcoerulea*).

Wetlands and Dams

A few small depression wetlands occur within and adjacent to the Combined Project Area. Some larger wetlands to the north include several moderately-sized earthen dams. These dams hold perennial accumulations of open water which attract low to moderate abundances of the more common and adaptable waterfowl such as Red-knobbed Coot (*Fulica cristata*), Reed Cormorant (*Microcarbo africanus*), Yellow-billed Duck (*Anas undulata*), Cape Shoveler (*Anas smithii*) and African Spoonbill (*Platalea alba*). The small size of the dams and their limited shorelines (mudflats) preclude the congregation of waterfowl in any nationally or globally significant numbers.

Transformed

All habitat which has been entirely altered from its natural state through built infrastructure or through the establishment of alien bushclumps is referred to as transformed habitat. This includes all roads, buildings, farmsteads, gardens, kraals, barns, workshops and *Eucalyptus* spp. stands. This anthropogenic habitat comprises only a small proportion of the total Combined Project Area which still remains largely intact (albeit slightly degraded by overgrazing and past cultivation). Species typically associated with this include mainly commensal species.

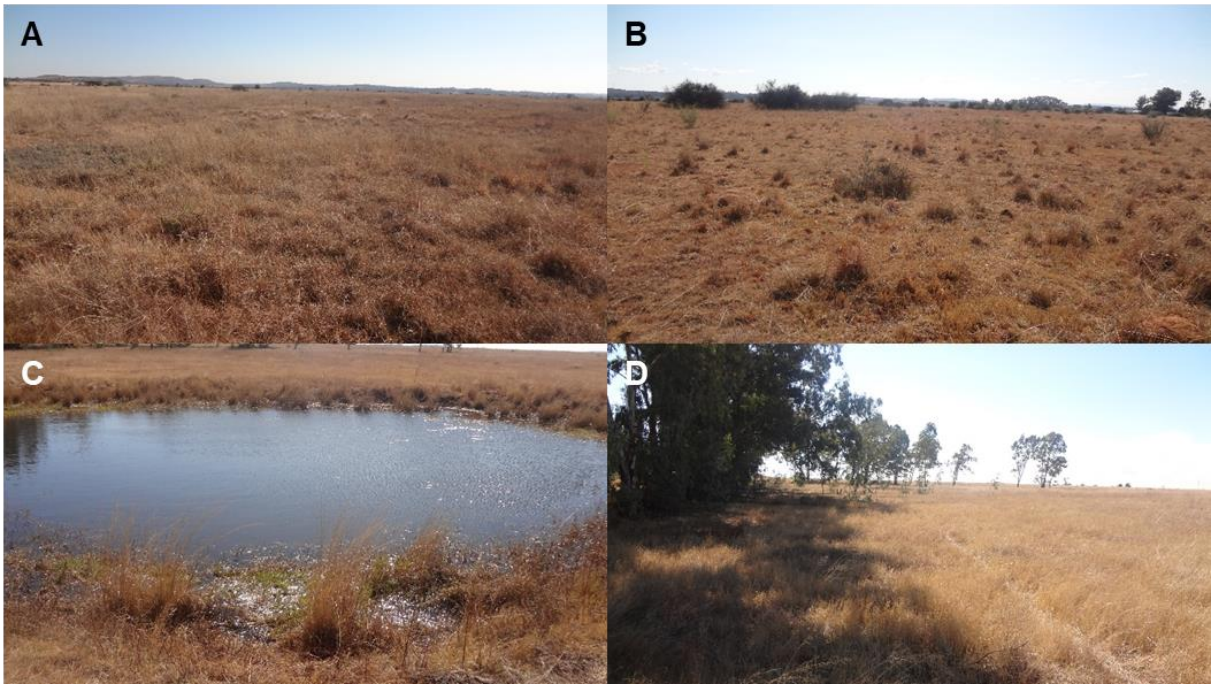


Figure 8.5.3. Major habitats in the Combined Project Area A) Open Grassland B) Open Shrubland, C) Small wetlands or dams, D) Transformed (alien trees).

Observed Avifauna

The total number of bird species observed within and around the Combined Project Area was 79 and 74 per summer and winter seasons respectively with 108 being the total number of unique species observed from over 1100 individuals (Table 4). A selection of birds photographed during the surveys is presented in **Figure 8.5.4**

The observed avian species richness and abundance is considered low to moderate for an area of this size in the South African context. No species of conservation concern (SCC) were recorded during either seasonal survey and all birds observed are generally considered to be common, widespread and adaptable species. No nests of raptor SCC were encountered nor were any other nests of regionally occurring SCC. The Combined Project Area is considered unlikely to support resident and / or breeding populations of any threatened SCC. Flight activity was low and flight paths mainly low, short and local with very few higher-flying commuting individuals observed. No large flocks of commuting waterfowl were observed nor were any large (globally to nationally significant) congregations encountered. Abundances of powerline collision-prone species were low.

Site Ecological Importance (SEI)

As described in the species protocol guidelines (SANBI 2020), Site Ecological Importance (SEI) is a "standardised metric for identifying site-based ecological importance for species, in relation to a proposed project with a specific footprint and suite of anticipated activities". SEI allows for rapid spatial inspection and evaluation of impacts of a proposed development within the context of on-site habitats and SCC, and also facilitates integration of inputs from different specialist studies. SEI depends on the careful spatial delineation of habitat types and an understanding of their utilisation

by species of conservation concern. The evaluation of SEI is presented in Table 2 and shown for the Combined Project Area in **Figure 8.5.4**. No habitats with either High or Very High SEI are present in the Combined Project Area. As per the guidelines for interpreting SEI (**Figure 8.5.5**), no avoidance mitigation is recommended. However, minimisation and restoration mitigation will be required for the Medium and Low SEI habitats.

Table 2: Evaluation of Site Ecological Importance (SEI) of avifauna habitats in the study area. BI = Biodiversity Importance.

Habitat	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Degraded Grassland	**Low** – No confirmed or highly likely populations of SCC. Limited potential to support SCC.	**Low** – Despite large area, this habitat has a sustained high level of current negative ecological impacts.	**High** – Habitat that can recover rapidly, because it is already in a transformed state.	**VERY LOW (BI = Low)**
Rocky Grassland	**Low** – No confirmed or highly likely populations of SCC. Limited potential to support SCC.	**Very High** – Very large (>100 ha) intact area for any conservation status of ecosystem type (Endangered), only minimal current negative ecological impacts.	**Medium** – Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality.	**MEDIUM (BI = Medium)**
Secondary Grassland	**Low** – No confirmed or highly likely populations of SCC. Limited potential to support SCC.	**High** - Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type (Endangered), only minor current negative ecological impacts.	**High** – Habitat that can recover rapidly, because it is already in a transformed state.	**LOW (BI = Medium)**
Transformed Habitat	**Low** – No confirmed or highly likely populations of SCC. Limited potential to support SCC.	**Very Low** – Very small area, Very high level of current negative ecological impacts.	**Very High** – Habitat that can recover rapidly, because it is already in a transformed state.	**VERY LOW (BI = Very Low)**
***Vachellia erioloba* Veld**	**Low** – No confirmed or highly likely populations of SCC. Limited potential to support SCC.	**Very High** – Very large (>100 ha) intact area for any conservation status of ecosystem type (Endangered), only minimal current negative ecological impacts.	**Medium** – Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality.	**MEDIUM (BI = Medium)**
Wetland Habitat	**Low** – No confirmed or highly likely populations of SCC. Limited potential to support SCC.	**Medium** – Very small spatial area and fragmented, Moderate level of current negative ecological impacts (livestock).	**Medium** – Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality.	**LOW (BI = Low)**
Wet-response Habitat	**Low** – No confirmed or highly likely populations of SCC. Limited potential to support SCC.	**Low** – Largely disjunct and fragmented, high level of current negative ecological impacts.	**Medium** – Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality.	**LOW (BI = Low)**

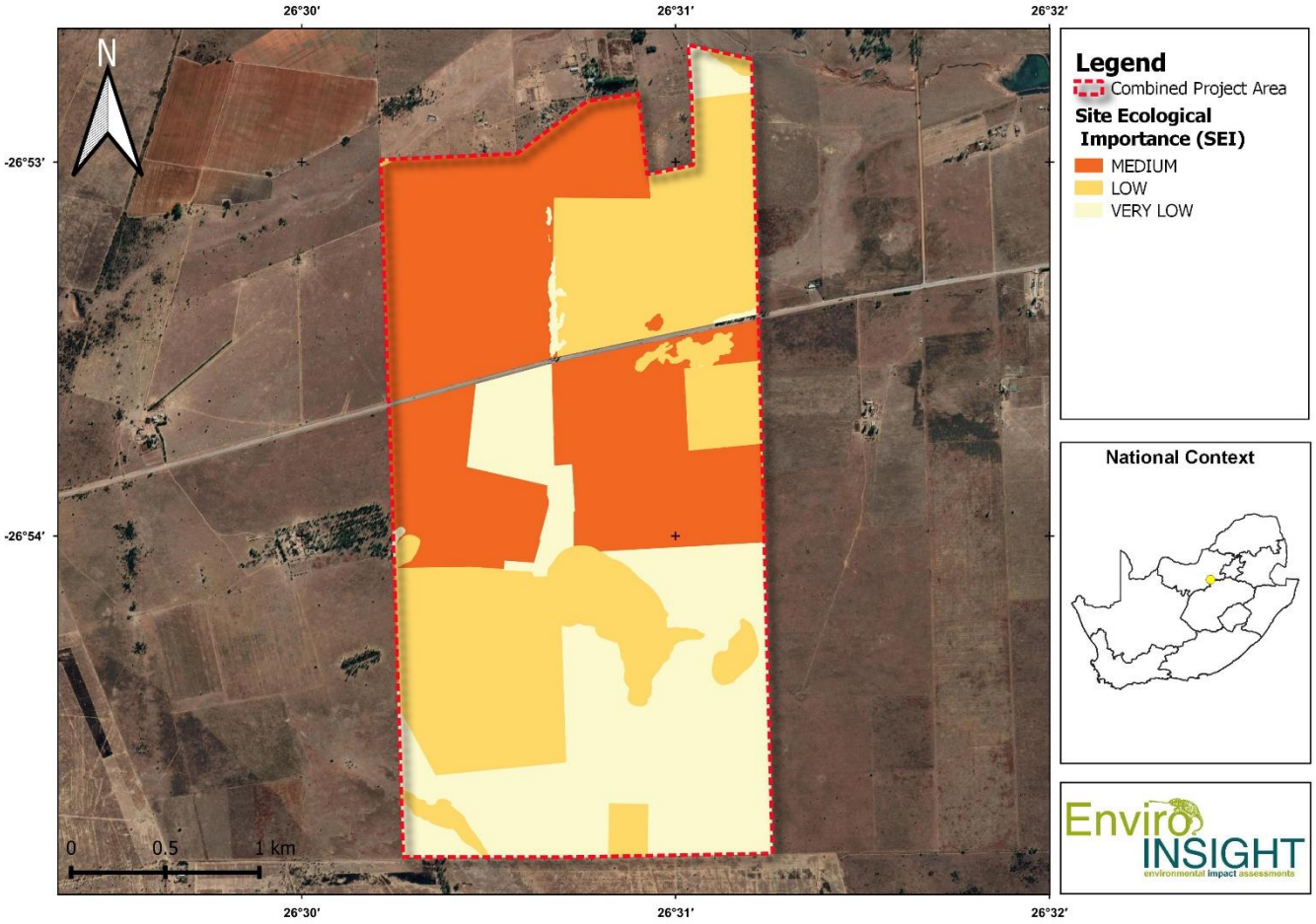


Figure 8.5.4. The Dominion PVSEF Cluster Combined Project Area Site Ecological Importance (SEI).

Site ecological importance	Interpretation in relation to proposed development activities
Very high	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e. last remaining populations of species, last remaining good condition patches of ecosystems/ unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

Figure 8.5.5. Guidelines for interpreting SEI in the context of the proposed development activities, reproduced from SANBI (2020).

To evaluate the intersection between the proposed infrastructure layout and the SEI, all infrastructure components that will result in habitat clearing and/or habitat transformation were combined. The

following infrastructure components were considered for this exercise, shown in (**Error! Reference source not found.**):

- Development area;
- Access road;
- Internal roads;
- Back to back substation;
- O&M building; and
- BESS.

The total area for each SEI category as well as the intersection between the proposed infrastructure and each SEI category are shown for each Solar Park in Table 3 as both the area (ha) and proportion of the total area that will be impacted upon. The degree of avoidance mitigation has been achieved by the current infrastructure layout can be quantified by comparing the proportional difference from 100%. In other words, a 76% intersect means that a 24% avoidance mitigation was achieved.

Table 3: Intersect between Site Ecological Importance (SEI) and proposed infrastructure for each solar park.

Solar Park	Site Ecological Importance (SEI)	Total Area (ha)	Intersect with Infrastructure	
			Area (ha)	Proportion (%)
Dominion 1	MEDIUM	61.8	47.1	76%
	LOW	106.4	95.7	90%
	VERY LOW	77.0	65.2	85%
	Total	245.2	208.0	85%
Dominion 2	MEDIUM	104.8	86.4	82%
	LOW	67.4	28	42%
	VERY LOW	160.8	151.2	94%
	Total	333.0	265.6	80%
Dominion 3	MEDIUM	146.6	93.6	64%
	LOW	111.4	87.5	79%
	VERY LOW	10.7	7.8	73%
	Total	268.8	188.9	70%

Dominion 3 Solar Park

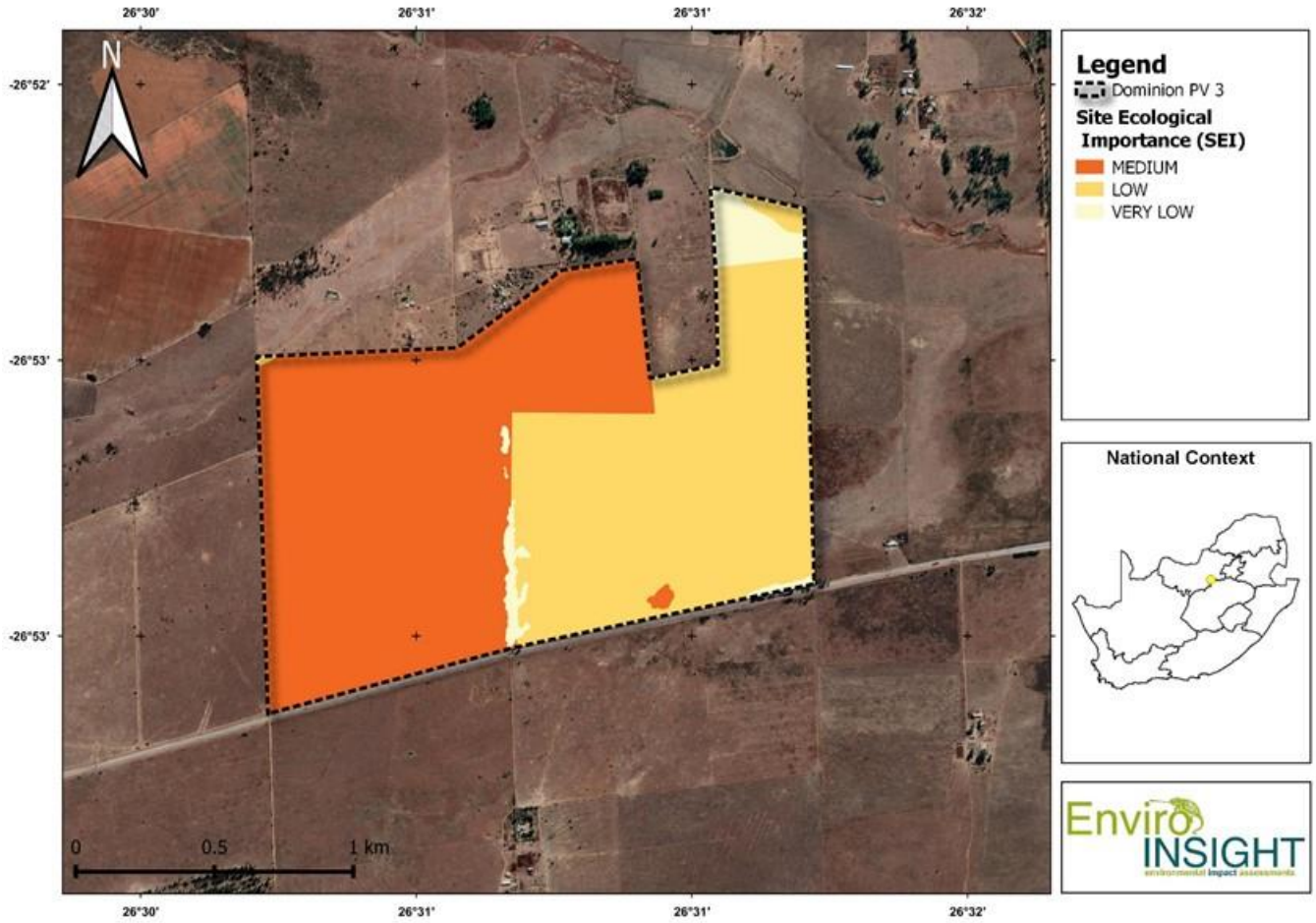


Figure 8.5.6.The Dominion 3 Solar Park Site Ecological Importance (SEI).

8.5.2 Potential Impacts Identified

The main anticipated environmental impacts on avifauna from the proposed Dominion 3 Solar Park Photovoltaic Solar Facility (PVSF) are:

- the removal or alteration of large expanses of habitat specifically utilised by avifauna species;
- collisions with panels from the effects of polarized light and/or the "lake effect" ;
- collisions/electrocutions with auxiliary infrastructure, specifically electrical transmission lines;
- disturbance due to noise such as, machinery movements and maintenance operations during the construction and operational phase of the proposed PVSEF;
- attraction of certain bird species due to the development of PVSEF with associated infrastructure such as perches, nest and shade opportunities; and
- chemicals used to keep the PV panels clean from dust (suppressants) may cause poisoning and or exacerbate habitat loss.

Recommended mitigation measures are discussed in section 19 of this report.

Conclusion

There are no major negative impacts to avifauna expected from the proposed development, provided that the proposed mitigation measures described above are applied. The Combined Project Area and

proposed project activities are considered to represent a low residual risk to avifauna (after application of mitigation) and therefore, the same is true for the Dominion 3 Solar Park. The specialists therefore recommends that the competent authority should grant environmental authorisation for this proposed PVSEF development (exclusive of any transmission lines which are to be evaluated separately), on condition that:

- All mitigation measures stipulated above are adhered to and captured in an Environmental Management Plan (EMP);

- The EMP must include the necessity for post-construction avifauna monitoring as stipulated in Jenkins et al (2017)

8.6 FRESHWATER IMPACT ASSESSMENT

8.6.1 Receiving environment

Freshwater Ecosystem Characterisation

The site assessment confirmed the presence of numerous Hydrogeomorphic (HGM) units, and were classified as follows:

- Two (2) seep wetlands; and
- One (1) unchannelled valley bottom (UCVB) wetland

The freshwater ecosystems identified were classified according to the Classification System (Ollis et al., 2013) as Inland Systems. The freshwater ecosystems fall within the Highveld Aquatic Ecoregion and the Mesic Highveld Grassland Group 3 WetVeg (wetland vegetation) group, classified by Mbona et al. (2015) as "Least Threatened". At Levels 3 (Landscape Unit) and 4 (HGM Type) of the Classification System, the systems were classified as per the summary in the table, below.

Table 8.5.1: Characterisation at Levels 3 and 4 of the Classification System (Ollis et al., 2013) of the freshwater ecosystems associated with the proposed Dominion 3 Solar Park and investigation area.

Freshwater ecosystems	Level 3: Landscape unit	Level 4: HGM Type
Seep wetlands within the proposed Dominion 3 Solar Park and associated investigation area.	Plain: an extensive area of low relief characterised by relatively level, gently undulating or uniformly sloping land.	Seep: a wetland area located on (gently to steeply) sloping land, which is dominated by the colluvial (i.e. gravity-driven), unidirectional movement of material down-slope. Seeps are often located on the side-slopes of a valley but they do not, typically, extend into a valley floor.
Unchannelled Valley Bottom wetland in the north western corner of the proposed Dominion 3 Solar Park and associated investigation area		Unchannelled valley-bottom wetland: a valley-bottom wetland without a river channel running through it.

The delineated freshwater ecosystems are conceptually depicted in Figure 8.6.1 below.

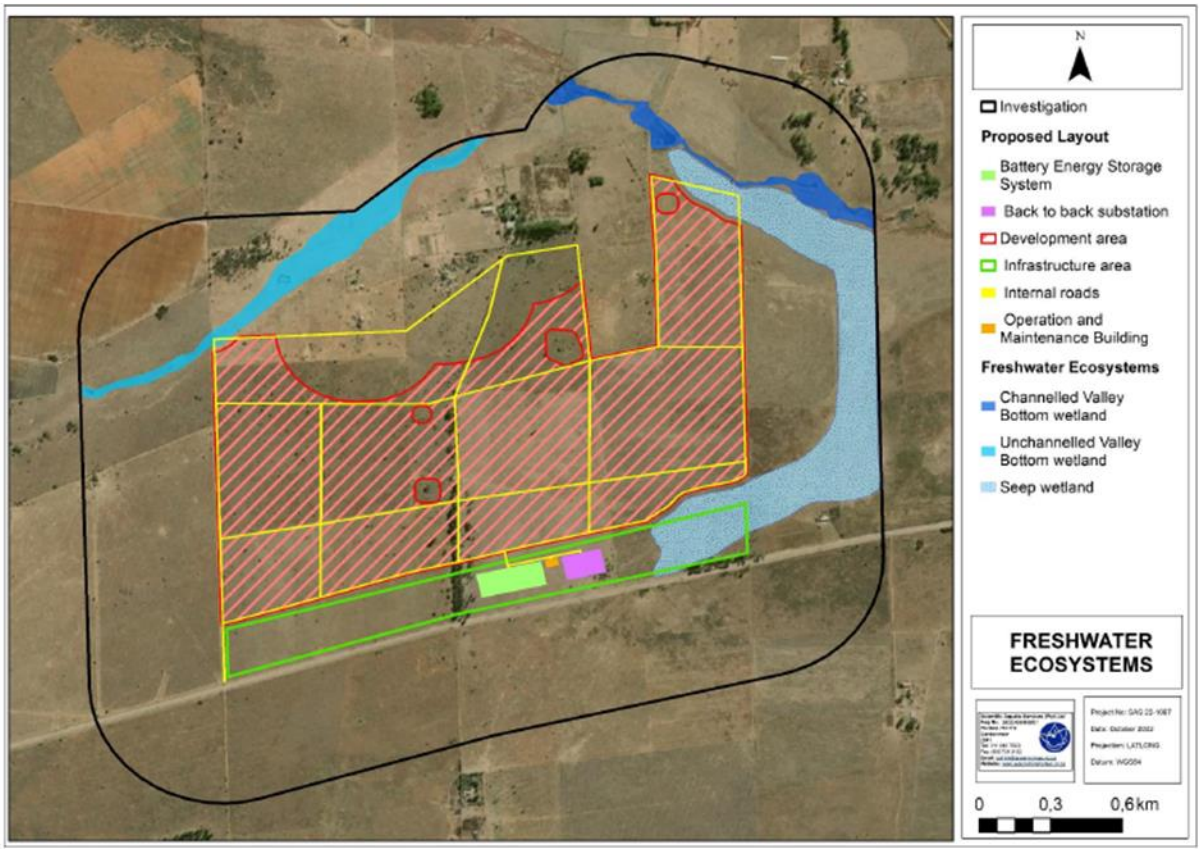


Figure 8.6.1: Location of the freshwater ecosystems associated with the proposed Dominion 3 Solar Park and associated investigation area.

Freshwater Ecosystem Delineation

The freshwater ecosystem assessment was limited to the proposed Dominion 3 Solar Park and associated investigation area as provided by the proponent. It was noted during the site assessment that historical and ongoing agricultural activities have occurred within the proposed Dominion 3 Solar Park footprint, investigation area and immediate surrounds. As a result, changes to the topography, soil and vegetation profiles were evident. The delineations as presented in this report, are nevertheless deemed the best estimate of the freshwater ecosystem boundaries based on site conditions present at the time of the assessment and are considered sufficiently adequate to allow for informed decision-making.

8.6.2 Potential Impacts identified

IFC Performance Standards on Environmental and Social sustainability

The proposed Dominion 3 Solar Park development has avoided development within the freshwater ecosystems identified within the development footprint and their associated scientifically defined buffers thereby ensuring a no net loss of freshwater biodiversity and has avoided potential impacts in line with the mitigation hierarchy.

The freshwater ecosystems associated with the proposed Dominion 3 Solar Park were also categorised according to the relevant IFC defined habitat categories.

Application of Buffer Zones

An aquatic scientific buffer was calculated using the "Preliminary Guideline for the Determination of Buffer zones for Rivers, Wetlands and Estuaries" as developed by Macfarlane et al. (2015). A 24 m construction and operational buffer was applied to all freshwater ecosystems located within the Dominion 3 Solar Park and associated investigation area **(Figure 8.6.2)** .

The relevant Zone of Regulation (ZoR) are applicable **(Figure 8.6.3):**

- NEMA 32 m ZoR as it relates to the National Water Act, 1998 (Act No. 107 of 1998); and
- GN 509 500m ZoR as it relates to the National Water Act, 1998 (Act No. 36 of 1998).

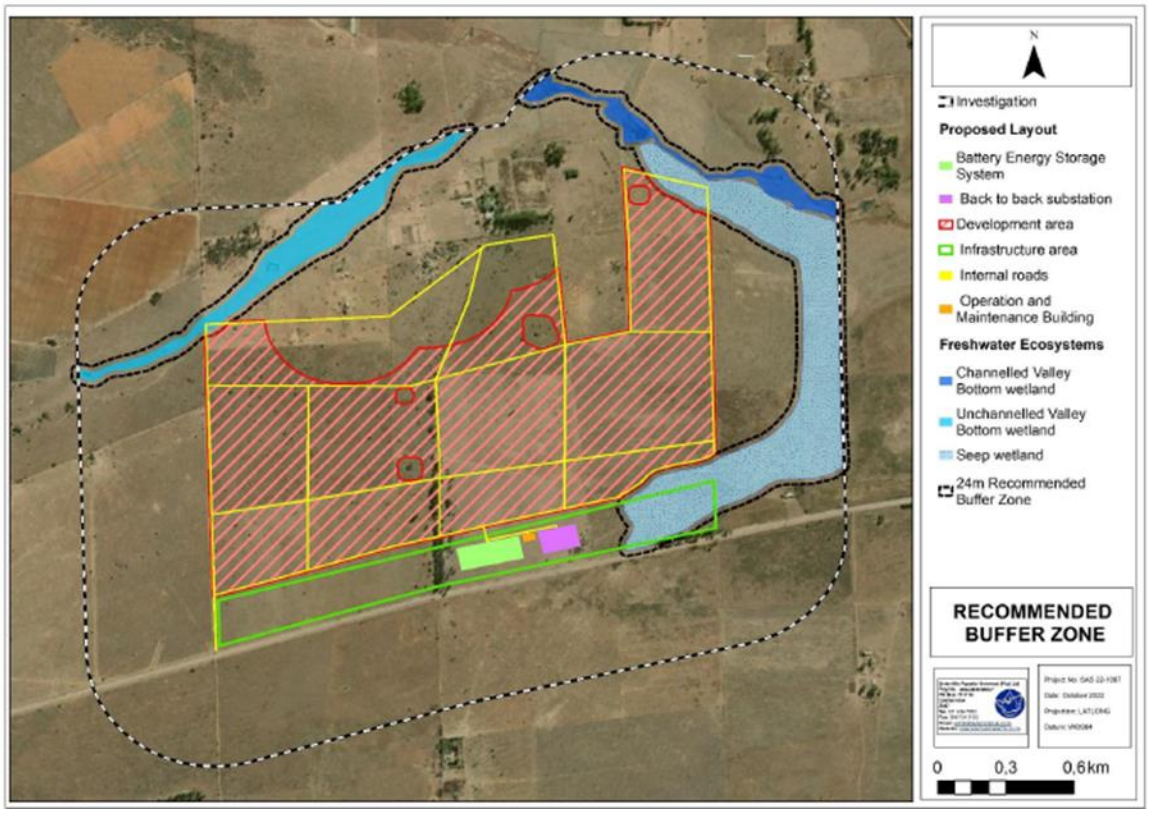


Figure 8.6.2 Conceptual representation of the 24m construction and operational phase buffer applied to the freshwater ecosystems associated with the proposed Dominion 3 Solar Park and investigation area.

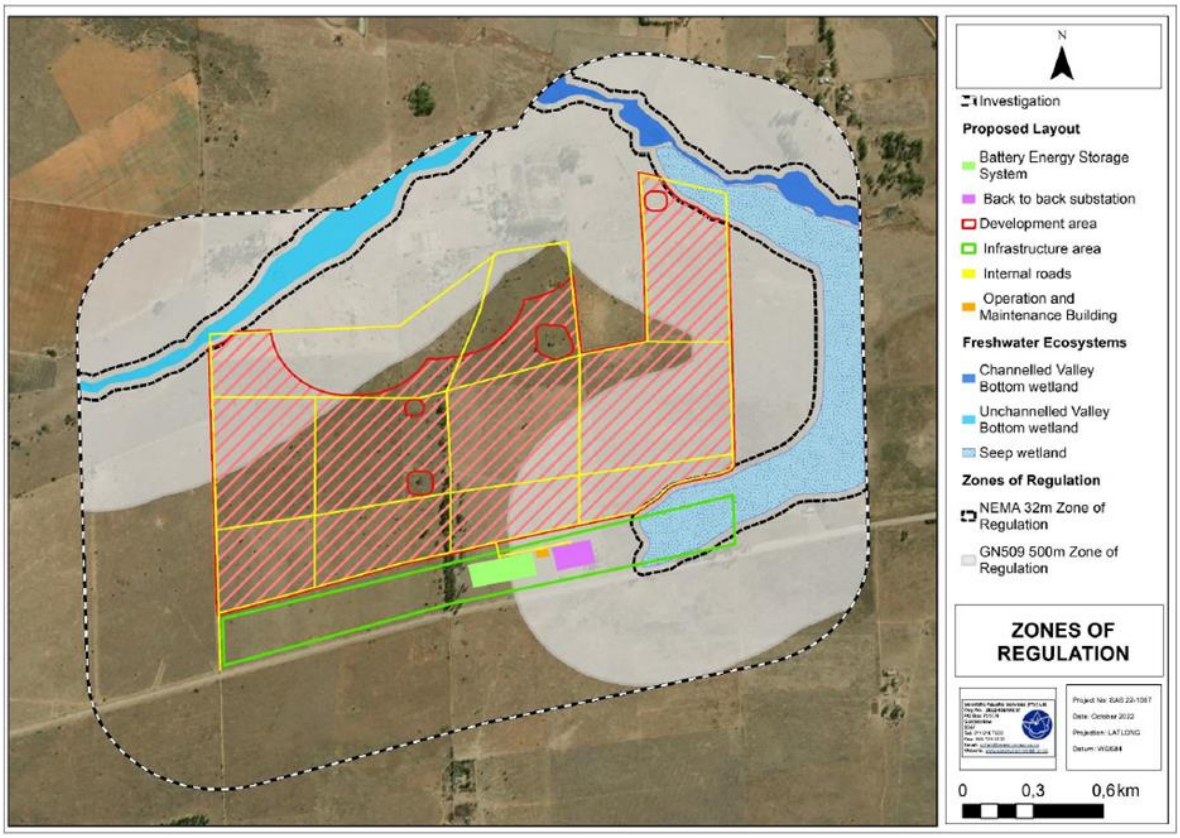


Figure 8.6.3 Conceptual representation of the 24m construction and operational phase buffer applied to the freshwater ecosystems associated with the proposed Dominion 3 Solar Park and investigation area.

Conclusion

A freshwater ecosystem assessment was undertaken on the 13th and 14th of April 2022 during which two (2) seep wetlands and one (1) unchannelled valley bottom wetland were identified within the proposed Dominion 3 Solar Park and associated investigation area (defined as a 500m radius around the proposed Dominion 3 Solar Park). The results of the field assessment are as follows

Freshwater ecosystem	Present Ecological State (PES)	Ecoservices	Ecological Importance and Sensitivity (EIS)	REC/BAS/RMO
Two seep wetlands within the proposed Dominion 3 Solar Park.	Category C (Moderately Modified)	Very Low - Low	Low/Marginal	REC Category: C BAS Category: C RMO: Maintain
Unchannelled Valley Bottom wetland in the proposed	Category C (Moderately Modified)	Very Low-Moderately Low	High	REC Category: C BAS Category: C RMO: Maintain

Dominion 3 Solar Park.				

Following the freshwater ecosystem assessment, the DWS Risk Assessment Matrix (2016) was applied to determine the significance of impacts of the proposed Dominion 3 Solar Park on the receiving freshwater environment. The proposed Dominion 3 Solar Park has been well-planned to avoid directly encroaching on any freshwater ecosystems and an associated 24 m construction and operational phase buffer is a further mitigating factor. As a result, the outcome of the risk assessment indicates that the proposed activities pose a low risk significance to the identified freshwater ecosystems..

The recommended mitigation measures are discussed in section 19 of this report

Consideration was also given in the Freshwater impact assessment to the International Finance Corporation (IFC) Performance Standards (PS), with emphasis on PS 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources). The freshwater ecosystems fall within the natural habitat category of the IFC as the freshwater ecosystems are "composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition". The applicant will not significantly convert or degrade the natural habitats as the freshwater ecosystems have been avoided, as per the mitigation hierarchy, and effective mitigation measures to prevent direct or indirect impacts have been set in this report and EMPR to ensure **no net loss of aquatic biodiversity**.

8.7 VISUAL IMPACT ASSESSMENT

8.7.1 Receiving environment

Land Use and Visual Receptors

The Dominion 3 Solar Park is situated in open veld with patches that have been heavily grazed, on gently sloping terrain. The area is characterised by agricultural practices, mostly meadows for grazing of mega herbivores, with farmsteads scattered across the landscape. With the proposed Dominion 3 Solar Park situated on the outskirts of town the visual receptors are limited to isolated farmsteads, the offices, a small informal settlement and portions of the Alabama and Jouberton townships. The N12 road forms the northern boarder of the Dominion 3 Solar Park. The N12 is a national route which runs from George through Beaufort West, Kimberley, Klerksdorp and Johannesburg to eMalahleni, and is considered one of two national routes that which connects the Western Cape and Gauteng. As such it should be considered a view corridor where open and undisturbed landscapes should be maintained. Several gravel farm roads are also present in the vicinity of the Dominion 3 Solar Park, these are however used infrequently and mostly only by the farmers residing in the area.

Based on the SEAs Identification of No-Go Areas (negative mapping) (2019) a 500m buffer around a national route is recommended, in this case the N12. The field assessment indicated that the viewing window of Dominion 3 Solar Park along the N12 is of short duration, less than 2 km in both directions, due to the gently sloping terrain and roadside vegetation. Based on the field assessment the landscape is homogenous with no prominent topographical features and is quite common throughout the North

West Province. Furthermore, as the town of Klerksdorp does not have any prominent tourist attractions, this portion of the N12 is not considered as important as other stretches of the N12, therefore a 250m buffer was recommended. Since people residing at their home are considered highly sensitive receptors as such a 300 m buffer was recommended, to ensure that the proposed solar panels are not severely visually intrusive to the farmsteads.

Of the above, permanent residents are considered to be high potential sensitive receptors, while people at their place of work are moderately potential sensitive receptors, as they are likely to focus on the activities at hand and not the surrounding environment. Due to their momentary views and experience of the receiving environment, motorists are classified as low potential sensitive receptors.

According to the South African Protected Areas Database (SAPAD, 2022), the South African Conservation Areas Database (SACAD, 2022) and the National Protected Areas Expansion Strategy Database (NPAES, 2009) there are no protected or conservation areas within a 10 km radius of the Dominion 3 Solar Park.

Existing energy infrastructure in the area includes transmission lines. As noted above, there are six approved solar facility project within a 50km radius, therefore the proposed Dominion 3 Solar Park will not introduce discordant elements into the landscape. The cumulative impact of these solar facilities will be discussed in the following section below.

Visual Absorption Capacity

Medium (Score 10)

According to the calculation the VAC of the area is considered moderate, indicating that the proposed PV structures will be absorbed in the area, to a degree. Due to the nature of the project, the relatively low height of the structures and angle thereof and the proposed Dominion 2 Solar Park and 3 and the surrounding approved solar projects within the Klerksdorp REDZ, this project will not set a precedent in the area for renewable energy structures. Should the buffer zones recommended for the N12 and farmsteads be adhered to the overall proposed visual intrusion on the landscape is considered moderately low, with the exception of the portion of the N12 and farmsteads directly adjacent to the Dominion 3 Solar Park which will experience a higher visual intrusion. Should Dominion 3 Solar Park – 3 be approved, PV 1 and 2 will be indistinguishable from each other. With the existing anthropogenic structures in the landscape: existing powerlines, roads, telephone lines, farmsteads and the townships the proposed PV structures are likely to be absorbed in the landscape. With the agricultural practices taking place in the area there are regular intervals where bare ground and shades of brown are present in the landscape, therefore the bi-facial panels with the underlying ground lined with crushed stone will not be significantly contrasting in colour

Landscape Quality

Medium (Score 16)

The open veld is characteristic of this area and the greater region, indicating that the landscape character is relatively common. Even though the landscape is considered homogenous in terms of vegetation and colour palete, the anthropogenic structures in the landscape are isolated and

scattered, as such the landscape still displays a form of scenic quality and therefore is considered to display a moderate sensitivity.

The Screening Tool does however indicate that the majority of the Dominion 3 Solar Park falls within a high ridge, therefore the Landscape (Solar) theme sensivity is considered very high. Based on the field assessment it is evident that there are no ridges within the Dominion 3 Solar Park as the landscape is gently sloping with no prominent outcrops or ridges. In terms of the above-mentioned, the very high sensitivity as per the screening tool outcome is thus not supported.

Due to existing overhead powerlines and telephone lines, fences and dirt roads and other anthropogenic structures the proposed project will not introduce unacceptable discordant elements into the environment.

Night Time Lighting

The Dominion 3 Solar Park project area in its current state contains limited infrastructure (the farmstead) and thus limited lighting. Even though the Dominion 3 Solar Park is situated on the outskirts of town the farmsteads in the vicinity acts as sources of night-time lighting, thus resulting in the area falling within the rural / low district brightness zone (E2). Development of the proposed PVSEF may potentially be a source of light pollution during the construction and operational phases, due to security lighting on the perimeter fence and especially at the buildings (substation, BESS and O&M Buildings). Overall, the impact significance of potential night-time lighting is expected to be moderately low and will be limited to a local area, as the proposed PVSEF is not a development that requires a significant amount of lighting. This corresponds with Bortle's Scale – indicating that Dominion 3 Solar Park falls within a Class 4 area (rural / suburban transition) where there is low light pollution, with distinct and large objects on the ground that have lights, in this case the farmsteads. Furthermore, it is evident that on a cloudy night the lights will be visible in the distance. As a result of the existing night-time lighting sources, lighting levels are not expected to significantly increase in this area due to the proposed infrastructure. The proposed project is expected to somewhat contribute to the effects of sky glow and artificial lighting in the region.

Viewshed Analysis

From the viewshed analysis, it is evident that the proposed infrastructure associated with the Dominion 3 Solar Park project – BESS, Substation and O&M Building will be visible to the potential sensitive receptors located to the north, east and west and within 5 km radius of the proposed infrastructure. The potential sensitive receptors located to the south of the proposed infrastructure does not fall within the viewshed and therefore will not have a clear line of sight of the proposed infrastructure. The broad viewshed is mainly attributed to the relatively flat topography of the area, and limited topographical obstructions such as outcrops, hills or mountains. According to the viewshed analysis for the proposed PV panels all potential sensitive receptors located within a 3 km radius will theoretically have a clear line of sight towards the proposed PV panels. The viewshed becomes scattered from 3 km onwards, and receptors located to the west of the proposed PV panels will not have a clear line of sight. The dense viewshed is mainly attributed to the relatively flat terrain of the area as well as the extent of the area where the PV panels will be placed.

The viewshed analysis does not take into account the vegetation and existing anthropogenic structures of the area, therefore the field assessment displays a more accurate outcome of the visual intrusion and visibility of the proposed project on the receiving environment. With the proposed Dominion 3 Solar Park falling within the Klerksdorp REDZ, it is in keeping with the designated landuse, and with it located approximately 3.6 km west of the nearest urban development, there are limited potential sensitive receptors within close porixmity to the Dominion 3 Solar Park, therefore it is not considered significantly visually intrusive on the surrounding environment. The farmstead located partially within the Dominion 3 Solar Park area and adjacent to it, will experience significant visual intrusion, however it is anticipated that the farmstead will be sold and the homestead converted to an office or similar for the proposed Dominion 3 Solar Park facility. Furthermore should the farm be sold and the farmer remains as the tenant, it is important to ensure that in the commercial arrangement and lease agreement the farmer accepts that the character of the landscape would change and that the farmer in essence accepts the visual impact that they would be exposed to. Additional efforts to screen the farmstead with high and thick vegetation should the landowner/tenant remain in the dwelling could also be agreed upon and investigated. Should the proponent wish to demolish the buildings of the farmstead once ownership is taken, it would be advantageous for the proponent and observer – as it would provide a unified view of the solar PV panels and not a broken view of the PV panels with desolate buildings in-between. **Figures 8.7.1 and 8.6.2** below indicate the viewshed analyses.

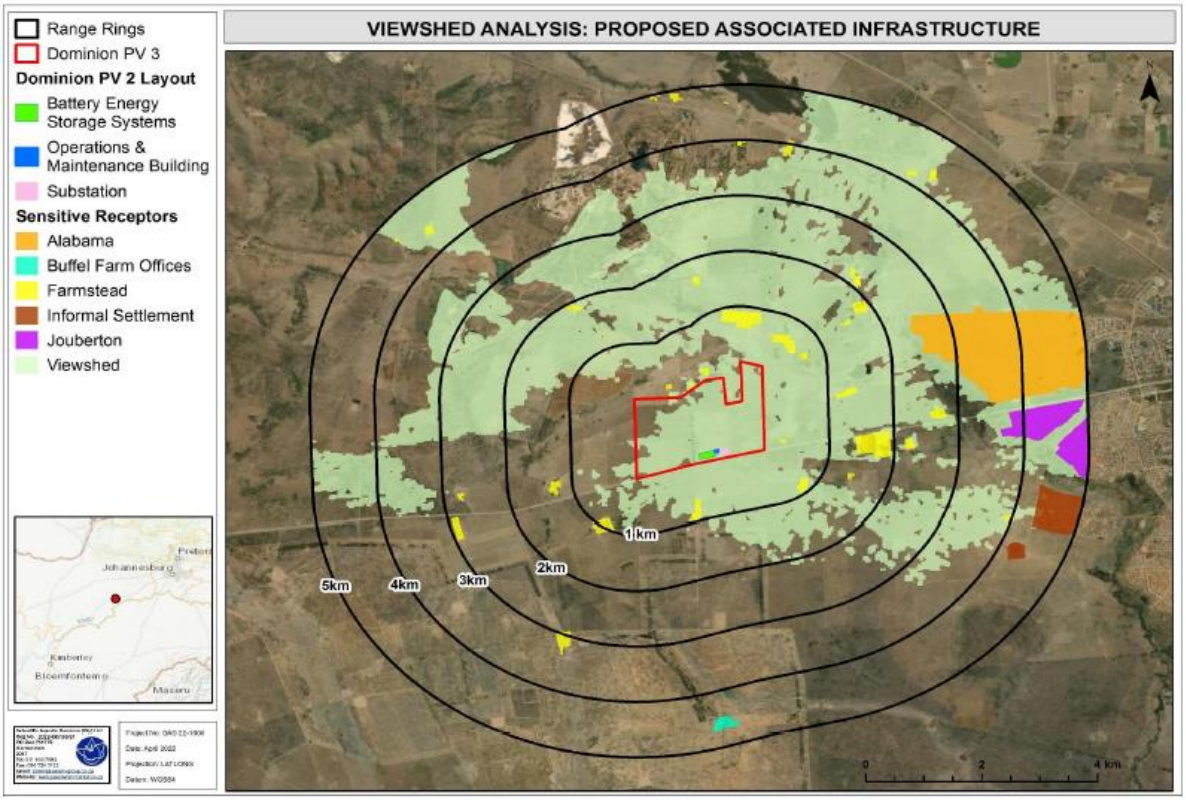


Figure 8.7.1: Viewshed analysis of the proposed infrastructure (BESS, Substation and O & M Building) associated with the Dominion 3 Solar Park.

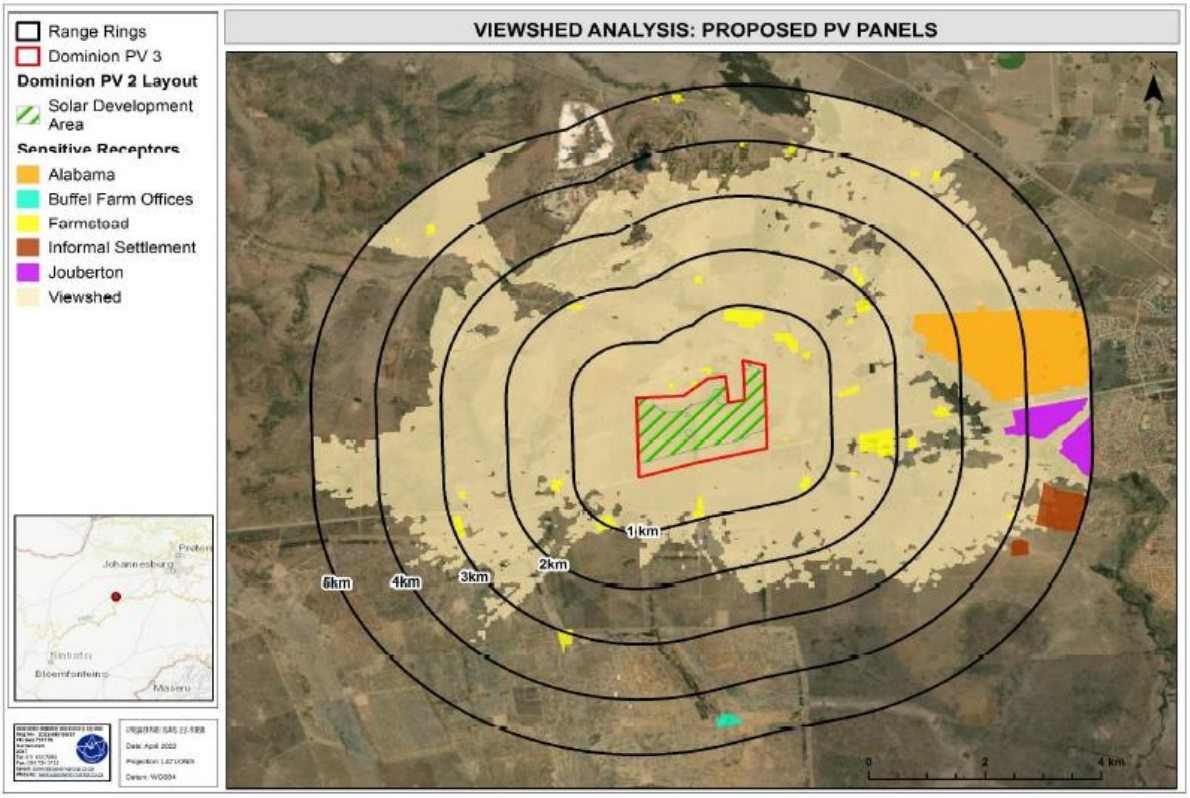


Figure 8.7.2 Viewshed analysis of the proposed solar panels associated with the Dominion 3 Solar Park.

Site Matrix and Visual constraints

Infrastructure placement

- Based on the Strategic Environmental assessment document the visual buffer of 500m should be applied along arterial and scenic routes. However, the field assessment indicated that the landscape is homogenous with no prominent topographical features and is quite common throughout the North West Province. Furthermore, as the town of Klerksdorp does not have any prominent tourist attractions, this portion of the N12 is not considered as important as other stretches of the N12, therefore a 250m buffer was recommended. Hence no PV panels must be developed within the 250 m from the N12. **The substation or any other associated infrastructure may be developed within the 250 m buffer provided that screening / partial screening thereof is implemented, i.e. a row of trees along the side of the N12 road or on the periphery of the infrastructure area;**
- With the three farmsteads located directly north of PV 3, the visual intrusion and visual exposure is expected to be potentially significant at these receptors, therefore to reduce the potential visual impact a 300m buffer around the periphery of the buildings associated with the farmsteads were adhered to. It is further recommended that the proponent liaise with the farmer to investigate in planting more trees on the side of the farm that is in view of the Dominion 3 Solar Park project area, to reduce the visual impacts on the farmer; and
- The proposed PV Panels must avoid visually sensitive resources such as the freshwater ecosystems in the Dominion 3 Solar Park area.

The Visual environmental buffer indicated in red as the non developable area next to the N12 national road **(refer to Figure 8.7.3)** has been assessed by the independent specialist and the outcome of the specialist findings is that the associated infrastructure such as the internal access roads, BESS, Back to Back Substation (Including facility substation, Eskom collector station with feeder bays) and a O&M Building may be placed in these areas next to the N12, but PV Modules are not preferred to be placed next to the N12 due to a visual constraint.

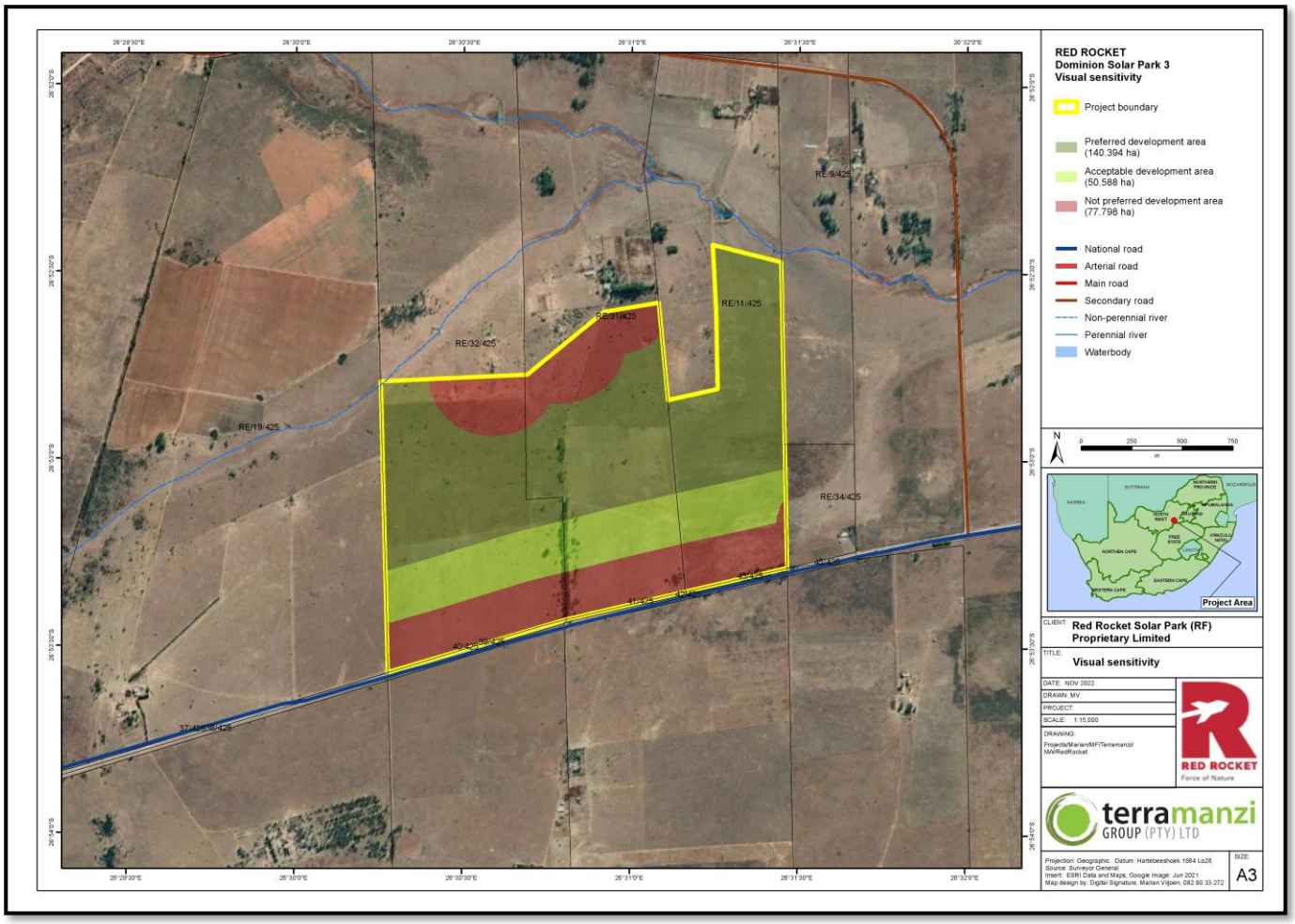


Figure 8.7.3 Visual Opportunities and constraints map , showing the preferred, acceptable and not preferred development areas.

8.7.2 Potential Impacts identified

Impact 1: Impact on Landscape Character and Sense of Place

The proposed Dominion 3 Solar Park may impact on the existing landscape and visual character of the region and Sense of Place associated with the surroundings. The character of the landscape in the region of the Dominion 3 Solar Park is currently dominated by relatively flat open veld terrain,

interspersed with farmstead and cultivated fields, alien tree stands, semi-rural settlements to the east and mining activities to the far north and west. Even though the Dominion 3 Solar Park is situated on the outskirts of town there are various anthropogenic structures present in the landscape, such as mine dumps in the far distance, farmsteads, powerlines telephone lines, gravel roads and fences. Renewable energy facilities, including their supporting infrastructure such as powerlines, can be perceived as industrial structures which have the potential to impact negatively on landscapes and their character. Since industrial structures are present in the area, and the Dominion 3 Solar Park is situated within the Klerksdorp REDZ, the proposed PVSEF is expected to have a moderately low impact on the landscape character. The landscape character and sense of place of the Dominion 3 Solar Park is considered of moderate visual sensitivity and importance. From the table above, it was evident that prior to mitigation, the expected impact on the overall visual character and sense of place of the area as a result of the proposed PVSEF is considered to be Medium High during the construction and operational phases and Medium Low during the decommissioning phase. A temporary change in landscape character and sense of place is likely to occur as the proposed construction and operational activities will alter the land use. However, as the Dominion 3 Solar Park is within the Klerksdorp REDZ, the area has been earmarked for renewable energy structures, therefore the Dominion 3 Solar Park is in keeping with the sense of place and designated zonation of the area. Post mitigation, should management measures be effectively implemented, the overall impact significance may be decreased to Medium Low and Low significance levels.

Impact 2: Visual Intrusion and VAC impacts

PVSEF and associated substations are generally experienced as having a negative impact on landscape aesthetics as it will introduce an industrial aspect to a landscape. This area does however have numerous industrial structures present, thus the visual intrusion of the Dominion 3 Solar Park will be moderately low. The altered visual environment during the construction phase, may lead to moderately high levels of visual intrusion and lead to increased visual contrast, this will however be a temporary visual intrusion and contrast. Furthermore, a visual impact will only be experienced if there are receptors in the area present to experience it, and with the limited potential sensitive receptors present in the area, the proposed visual impact is therefore reduced to moderately low levels. The Dominion 3 Solar Park will have a negative impact on the existing medium VAC (the ability of an area to visually absorb development). It is expected that although the VAC of the project area will be negatively impacted, this impact, as well as visual intrusion may be mitigated through the implementation of suitable mitigation measures. The expected level of visual intrusion as a result of the Dominion 2 Solar Park is considered to be Medium Low during all developmental phases, due to the clearing of vegetation during construction, permanent loss of vegetation underneath the PV Panels, alteration of landforms and possible remnants of infrastructure post decommissioning. The VAC of Dominion 3 Solar Park is however determined to be medium, which illustrates the ability of the project area to absorb or conceal some visual impacts. Due to the relatively low height of the proposed structures, the 250m distance from the N12 and farmsteads located north of the Dominion 3 Solar Park, and the Dominion 1 Solar Park and Dominion 2 Solar Park applications adjacent to Dominion 3 Solar Park, the proposed PVSEF is therefore not expected to lead to a highly significant level of visual intrusion on the surrounding landscape. The perceived significance ratings may be lowered to Medium Low and Low significance levels through the implementation of mitigation

measures and provided that progressive revegetation of impacted areas take place and that clearing of vegetation beyond the footprint of the solar development and infrastructure areas, remain limited.

Impact 3: Visual Exposure and Visibility Impacts

This impact relates directly to the perception of sensitive visual receptors towards the proposed project. Potential sensitive visual receptors have been determined to primarily comprise isolated farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users. Direct visual exposure will take place as a result of infrastructure construction and operations and associated lighting, glaring, an increased amount of human activity within the area and indirectly through fugitive dust generated by construction related activities. In addition to physical infrastructure, impacts from clearing of vegetation, potential erosion as a result of bare soils, maintenance activities and the alteration of local topography will also create contrast in the landscape and may be visible to receptors. It is however important to note that renewable energy structures are becoming increasingly important features in the South African landscapes and an important source of electricity for the growing population of South Africa. Since the Dominion 3 Solar Park is located within the Klerksdorp REDZ, the proposed PVSEF development is considered acceptable, as it is becoming an acceptable feature in the landscape.

The proposed PVSEF is expected to visually impact a limited number of visual receptors in the region, particularly road users on the N12 and the farmers on the farmsteads in the immediate vicinity. The significance of the visual impact is considered to be of Medium Low

significance during all phases of the development prior to mitigation. Should mitigation measures be implemented, this impact is still likely to occur, however at a lower impact significance expected during the various development phases

Impact 4: Impacts due to Night time Lighting

The Dominion 3 Solar Park in its current state contains limited infrastructure (the farmstead) and thus limited lighting. Even though the Dominion 3 Solar Park is situated on the outskirts of town the farmsteads in the vicinity acts as sources of night-time lighting, thus resulting in the area falling within the rural / low district brightness zone. Development of the proposed PVSEF may potentially be a source of light pollution during the construction and operational phases, due to security lighting on the perimeter fence and especially at the buildings (substation, BESS and O&M Buildings). Due to the nature of a PVSEF which would primarily be operational during sunlit (daylight) hours, lighting at night is not a major operational component of such facilities. Possible maintenance activities conducted at night, such as mirror or panel washing or replacement might require vehicle-mounted lights, which could contribute to light pollution. Overall, the impact significance of potential night-time lighting is expected to be low, and will be limited to a local area. Security lights associated with the BESS, Substation and O&M Buildings may potentially contribute somewhat to the effects of skyglow and artificial lighting in the region. This can, however be easily mitigated by installing security lighting no higher than 5 meters above the ground and through appropriate planning of illumination direction.

From the above tables it is clear that before mitigation, the impact on visual resources through light pollution, particularly at night, is not likely to be highly significant during any of the development

phases, with the greatest impact expected during the operational phase. Due to the area already having night-time lighting, the landscape is not considered to be visually sensitive in terms of night-time lighting impacts. The Dominion 3 Solar Park will contribute ever so slightly towards the effects of skyglow and light trespass.

With improved technology and design techniques, PV facilities are no longer associated with glare, however PV Panels can create increased visibility and contrast through the creation of geometric patterns of reflected light caused by simultaneous reflection of sunlight from regularly-spaced metal surfaces in the collector array. The reflected light may not necessarily cause discomfort to the viewer, during the daytime, and may change dramatically as the observer moves (Royal Haskoning DHV, 2015). It should be noted that the PV panels will not contribute to night time light pollution in the area, since no reflection of the sun occurs at night.

Summarised Impact Statement

As the Dominion 3 Solar Park is located within a semi-rural landscape, with existing man-made structures such as powerlines, fences, roads and mining infrastructure, the visual impact associated with the proposed development is considered moderate. Sensitive receptors within the immediate vicinity (within a 1 km radius) will have the highest visual impact during the construction phase and immediately thereafter, however once the proposed PVSEF is operational the visual impact will be lowered as the PVSEF will form part of the existing industrial structures. The visual intrusion of Dominion 3 Solar Park is visually less intrusive to sensitive receptors located further than 1 km, as these receptors are less likely to observe the PVSEF, therefore Dominion 3 Solar Park will have a moderately low visual impact on the receiving environment. It can therefore be concluded that with adherence to the mitigation measures as outlined in this report (Section 19), the proposed development will not have a long term negative visual impact on the surrounding environment, but rather be in keeping with the sense of place.

Conclusion

The Department of Water and Sanitation National Web-Based Screening Tool indicates that the majority of the Dominion 3 Solar Park falls within a high ridge, therefore the Landscape (Solar) theme sensitivity is considered very high. Based on the field assessment it is evident that there are no ridges present within the Dominion 3 Solar Park as the landscape is gently sloping with no prominent outcrops or ridges. The very high sensitivity as per the screening tool outcome is thus not supported.

The proposed Dominion 3 Solar Park is situated on the outskirts of town in a semi-rural area dominated by agricultural practices where farmsteads are scattered across the landscape. The Dominion 3 Solar Park is characterised by open veld with patches that have been heavily grazed, on gently sloping terrain. With the topography being relatively flat, it is unlikely to assist in absorbing and screening the proposed PVSEF.

There are a limited number of receptors within the visual assessment zone, which are mostly situated to the north north east and north west, comprising farmsteads, the Alabama township, a small portion of the Jouberton township and an informal settlement. The only receptor located south of the Dominion 3 Solar Park are offices. The above mentioned sensitive receptors do however have existing tree lines which may potentially screen the view towards Dominion 3 Solar Park. Furthermore, there

are scattered tree clumps across the landscape as well which may partially obscure the view of the Dominion 3 Solar Park.

The VAC of the area is considered moderate, indicating that the proposed PV structures will be absorbed in the area, to a degree. Due to the nature of the project, the relatively low height of the structures and angle thereof, the proposed Dominion 2 Solar Park and Dominion 3 Solar Park and approved future solar projects within the Klerksdorp REDZ, this project will not set a precedent in the area for renewable energy structures. The overall proposed visual intrusion on the landscape is considered moderately low, with the exception of the portion of the N12 and farmsteads directly adjacent to the Dominion 3 Solar Park which will experience a higher visual intrusion. Should Dominion 3 Solar Park – 3 be approved, PV 1 and 2 will be indistinguishable from each other.

The sense of place associated with the Dominion 3 Solar Park is related to the landscape character type, described above and even though the Dominion 3 Solar Park is situated directly adjacent to the N12 road, the footprint area itself can be described as calm, tranquil and peaceful, with limited development and movement, with the exception of the shepherds moving with the livestock and large herbivores. The sense of place is however not unique to the Dominion 3 Solar Park as it extends to the larger region. During the construction phase of the PVSEF, the sense of place will however be affected, shifting the mood to busy and disturbed with construction vehicles and potential need for some earth moving equipment, however, once the panels are operational there will be limited additional vehicular movement in and out of the area, thus returning the area to a calm and tranquil landscape.

The Dominion 3 Solar Park in its current state contains limited infrastructure (the farmstead) and thus limited lighting. Even though the Dominion 3 Solar Park is situated on the outskirts of town the farmsteads in the vicinity acts as sources of night-time lighting, thus resulting in the area falling within the rural / low district brightness zone. Development of the proposed PVSEF may potentially be a source of light pollution during the construction and operational phases, due to security lighting on the perimeter fence and especially at the buildings (substation, Battery Storage units). Overall, the impact significance of potential night-time lighting is expected to be moderately low and will be limited to a local area.

It is the opinion of the specialist that the project be considered acceptable from a visual resource management perspective, provided that the mitigatory measures as outlined in the report are implemented and adhered to.

8.8 HERITAGE IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed (PGS Heritage) (C/O Mr Wouter Fourie) (hereinafter referred to as the “Heritage Specialist”) to undertake a Heritage Assessments for the Dominion 3 Solar Park.

8.8.1 Receiving Environment

The proposed Dominion 3 Solar Park footprint area is characterised by flat grass land divided into various grazing camp by various barbed wire fences Large tracks of the property were previously ploughed for crop cultivation since the early 1940s and 1960s as is evident from historic aerial photographs

The central easter and central western part of the property is characterised by two natural pans or topographical deflations resulting in saturated soils.

Fieldwork Findings

The fieldwork was conducted on 21 April 2022 by a field team of PGS heritage. Their movement on site was tracked by GPS and a tracklog map can be seen in Figure 8.8.1

During the fieldwork a total of twelve heritage features and resources where identified. These consist of two burial grounds with 3 graves (D3-009 and D3-010) and ten localities with recent (D3-001-D3-003, D3-006 to D3-008) and historic structures (D3-004, D3-005, D3-011 and D3-012).

The recent structures consist of the remains of a worker's homesteads (D3-001, D3-006 to D3-008) as well as that of general farm structures such as feeding troughs (D3-003) and farm dams (D3-002). Site D3-001 dates from the late 1970s and was confirmed by the current owner to be temporary farm worker housing. Four (D3-004, D3-005, D3-011 and D3-012) of the identified ruins can be identified on the 1944 maps and aerial photographs. Homesteads D3-004 and D3-005 show occupation for at least forty years, from 1944 up to the 1982 topographical maps. Homesteads D3-011 and D3-012 are not present in the 1963 maps and not visible on the 1963 aerial photographs. It does however not exclude an extended occupation up to the 1960s.

The fact that these four homesteads were occupied over and extend period and the multiple structures at each of the sites indicate that it houses a family or families. Our experience over the past twenty tears has shown that these farm homesteads can contain infant or stillborn burials in or on the outside of the structures or their remains. For this reason, these homesteads are rated as having a potentially high local heritage significance and is provisionally graded as 3A, up until further investigation can confirm the presence of such possible burials The structure and remains of structures are not conservation worthy and contain no cultural or scientific value and is consequently graded as not conservation worthy. A two burial ground consisting of 3 graves were identified at site D3-009 and D3-010. D3-009 is a formal cemetery with tow graves each having its own headstone and The grave at D3-010 is s single stone lined graves aligned east-west. Due to the cultural and religious significance of burial grounds the site is graded as Grade 3A

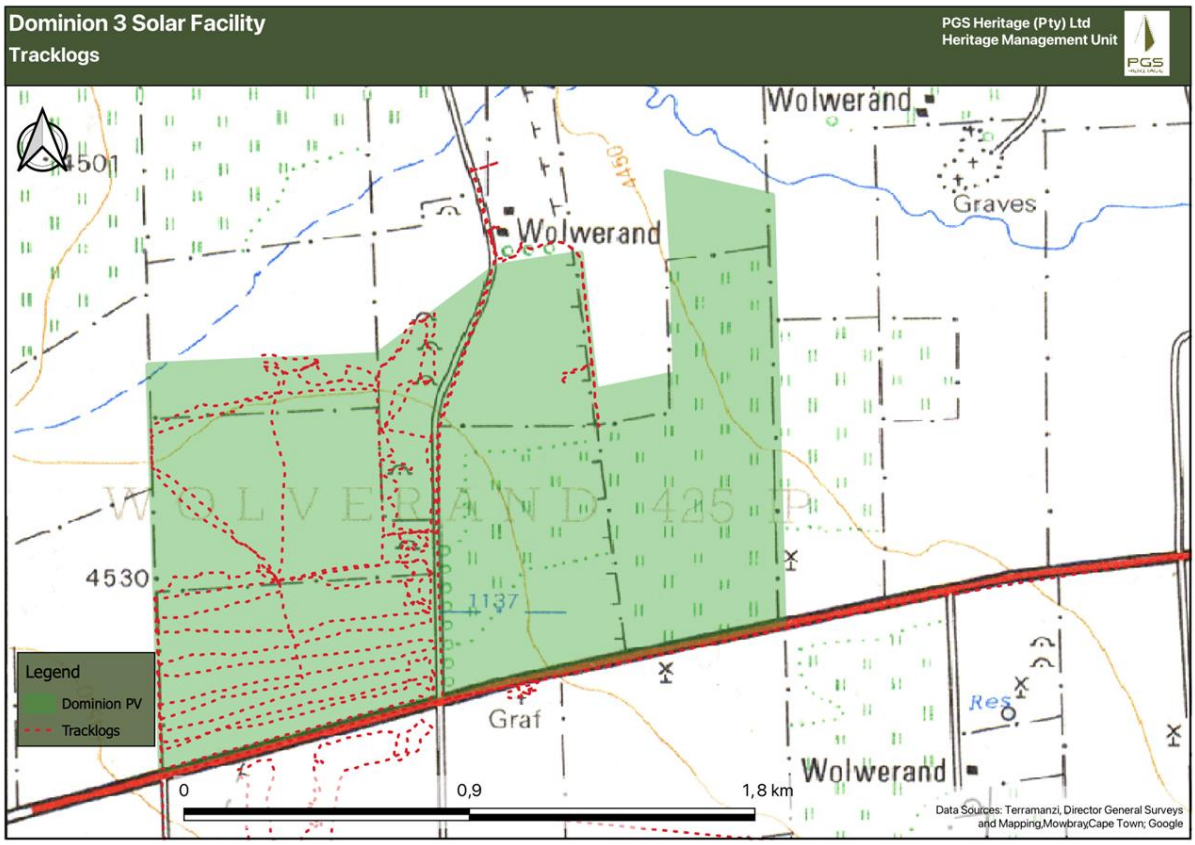


Figure8.8.1 Fieldwork tracklogs (track in red, study area in green)

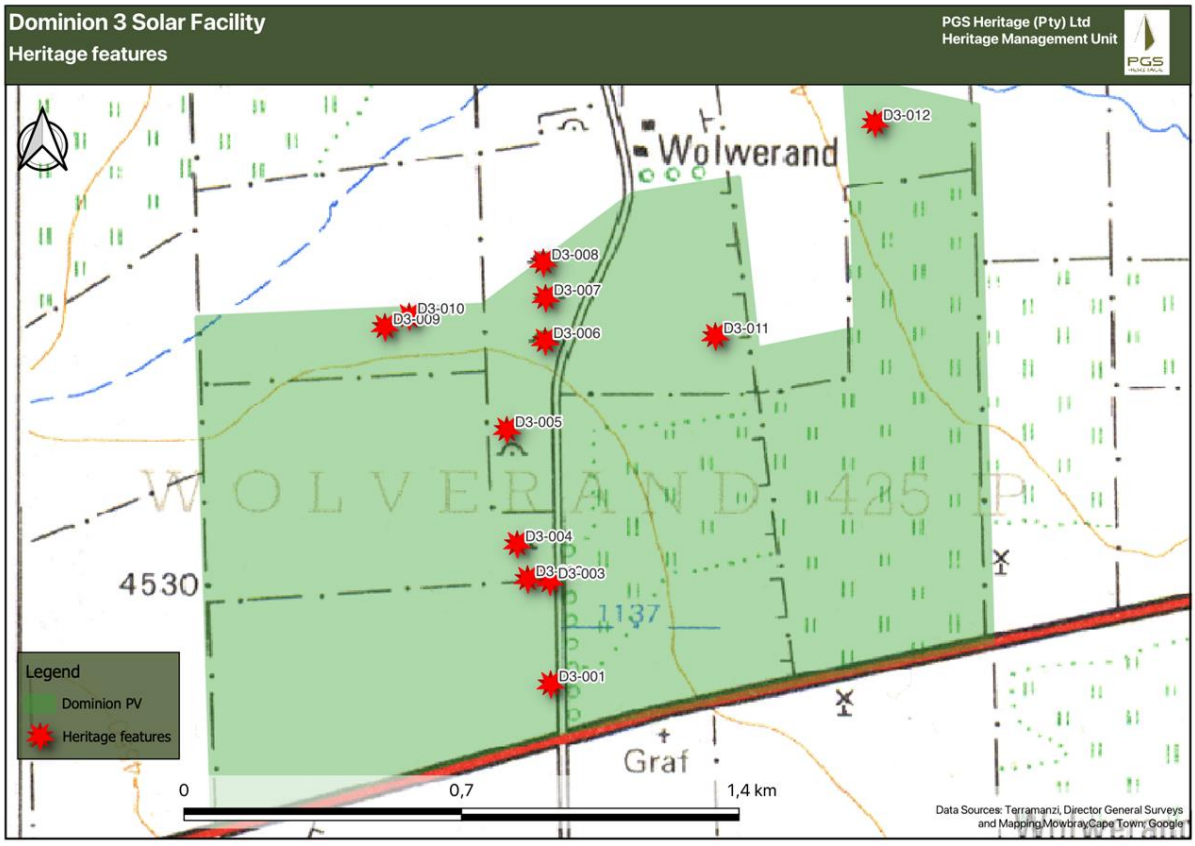


Figure 8.8.2- Identified heritage resources within the Dominion 3 development area

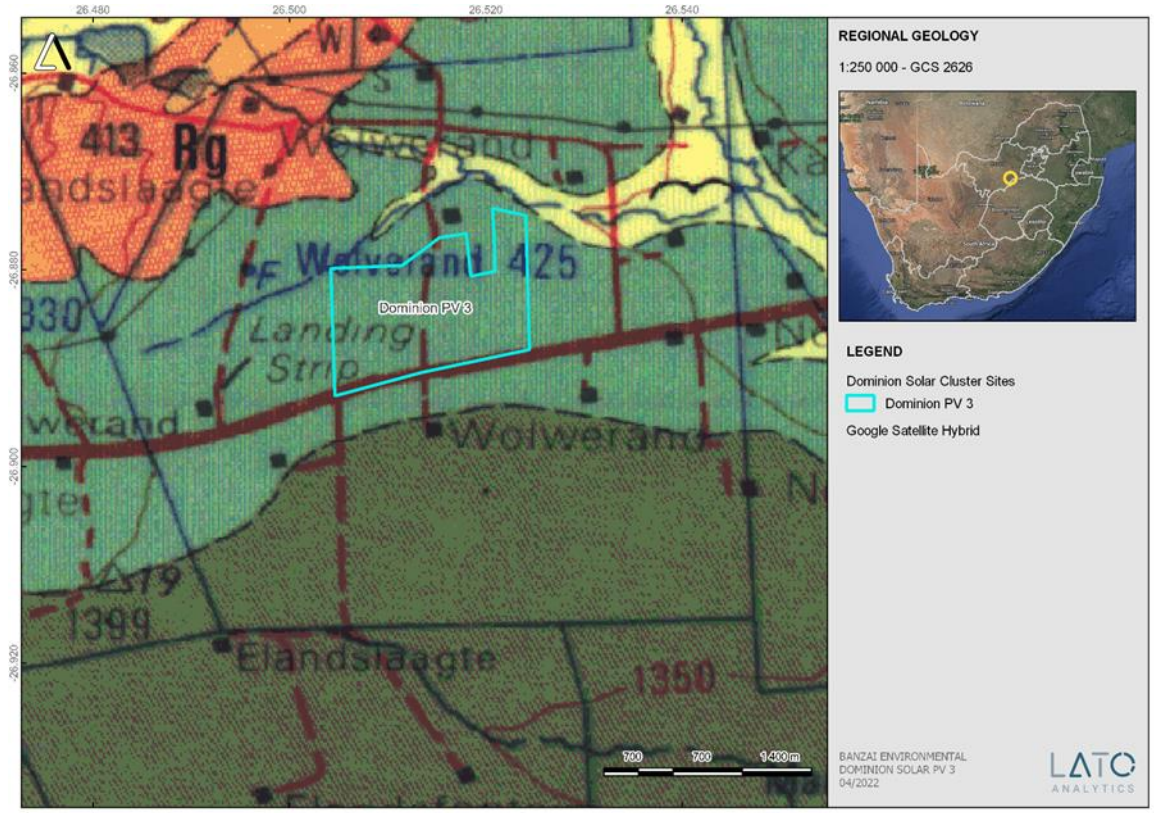


Figure 8.8.3 - The proposed Dominion 3 Solar Park near Klerksdorp is underlain by the Allanridge Formation (Ra-dark green) and the Rietgat Formation (R-Vr), (Platberg Group, Ventersdorp Supergroup.

8.8.2 Potential Impacts Identified

Burial Grounds and Graves

The burial ground at site D3-009 and D3-010 has a high local heritage significance with 3A heritage grading. The possibility of the burial ground impacted by the Dominion 3 Solar Park cannot be excluded and the project can potentially have a MODERATE impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to LOW

Recent Structures

The impact on the recent structures (D3-001-D3-003, D3-006 to D3-008) identified during the fieldwork is calculated as having a LOW significance before and after the implementation of the proposed mitigation measures.

Historical Structures

The recent historic structures (D3-004, D3-005, D3-011 and D3-012) identified during the archival research and fieldwork was provisionally rated as having a high heritage significance with a grading of 3A due to the potential of infant or stillborn burial at these sites. The impact calculation shows a MODERATE impact significance pre-mitigation and LOW after the implementation of mitigation measures.

Palaeontological resources

The PDA notes that the paleontological significance and potential of the geology of the area is rated as low to zero. The impact significance is rated as LOW before and after mitigation

Recommended mitigation measures include:

- General Project Area
  - Implement a chance to find procedures in case where possible heritage finds are uncovered.
- Burial grounds and graves
  - All burial grounds and graves should be retained and avoided with a buffer zone of 50m as per SAHRA guidelines. If this is not possible, the graves could be relocated after completion of a detailed grave relocation process, that includes a thorough stakeholder engagement component, adhering to the requirements of s36 of the NHRA and its regulations as well as the National Health Act and its regulations.
- Historical Structures
  - Avoid the identified structures with a 30-meter no-go buffer
  - If this is not possible a stakeholder engagement process must be initiated to investigate the possible presence of infant and still born burials for the identified sites
  - If the presence of such burial is confirmed a comprehensive grave relocation process must be implemented and managed by a competent and experienced grave relocation professional.
- Palaeontological resources
  - If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist

The mitigation measures are described in section 19 of this report.

Conclusion

The HIA identified various heritage resources within the study area including archaeological resources and burial grounds and graves which are rated as having a high heritage significance and will require further mitigation work before the project can continue.

During the fieldwork a total of twelve heritage features and resources where identified These consist of two burial grounds with 3 graves (D3-009 and D3-010) and ten localities with recent (D3-001-D3-003, D3-006 to D3-008) and historic structures (D3-004, D3-005, D3-011 and D3-012).

Recent Structures

The impact on the recent structures (D3-001-D3-003, D3-006 to D3-008) identified during the fieldwork is calculated as having a LOW significance before and after the implementation of the proposed mitigation measures.

Historical Structures

The recent historic structures (D3-004, D3-005, D3-011 and D3-012) identified during the archival research and fieldwork was provisionally rated as having a high heritage significance with a grading of 3A due to the potential of infant or stillborn burial at these sites. The impact calculation shows a MODERATE impact significance pre-mitigation and LOW after the implementation of mitigation measures.

Burial grounds and graves

The burial ground at site D3-009 and D3-010, consist of three graves, and have a high local heritage significance with 3A heritage grading. The possibility of the burial ground impacted by the Dominion Solar Park cannot be excluded and the project can potentially have a MODERATE impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to LOW.

Palaeontology

The proposed Dominion 3 Solar Park is underlain by the Allanridge Formation and the Rietgat Formation (Platberg Group, Ventersdorp Supergroup). According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Allanridge Formation is Zero while that of the Rietgat Formation is Moderate (Almond and Pether 2008, SAHRIS website).

The PDA notes that the paleontological significance and potential of the geology of the area is rated as low to zero. The impact significance is rated as LOW before and after mitigation.

Final project layout Impact Statement

The final proposed project layout for the Dominion 3 Solar Park project took the specialist recommendations identified during the various field assessments done during the Basic Assessment process into consideration. From an archaeological and historical structure perspective, the proposed footprint areas have changed the pre- and post-mitigation impact to LOW for the heritage resources identified during the fieldwork.

As such, the recommended mitigation measures as described in the HIA report remain.

The Heritage Specialist has no objection to the proposed layout.

General

It is the combined considered opinion of the heritage specialists that the proposed project will have a direct impact on several identified heritage resources rated being of low to high heritage significance.

With the implementation of recommended mitigation measures the overall impact on heritage resources will be **reduced** to acceptable levels during the activities of the project.

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that The proposed Dominion 3 Solar Park is acceptable and implementable from a Heritage perspective

8.9 TRAFFIC IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed ITS Engineers (Mr Nico Jonker)) (hereinafter referred to as the "Traffic Impact Specialist") to undertake a Traffic Impact Assessments for the Dominion 3 Solar Park.

8.9.1 Receiving Environment

The proposed development, located adjacent to the N12 freeway, is currently zoned for agriculture. Permission for the applicable land use rights will have to be obtained from the relevant authorities through a town planning process.

Background Traffic Volumes 2022

Traffic counts were conducted, at the intersections of the N12 and D837 covering 6 hours on Wednesday, 20 April 2022. The counts conducted were used for the 2022 base year traffic. The background weekday AM and PM peak hour traffic volumes for 2022 are shown in the Traffic Impact Assessment as appendix B.

Future Background Traffic Volumes 2024

A growth rate of 2% per annum was applied to the 2022 background peak hour volumes to estimate the future background volumes for the 2024 horizon year. Analysis of the horizon year 2024 corresponds with the estimated construction period of the development.

Future Background Traffic Volumes 2027

A growth rate of 2% per annum was applied to the 2022 background peak hour volumes to estimate the future background volumes for the 2027 horizon year. Analysis of the horizon year 2027 corresponds with the estimated period in which the development will be in normal operations.

8.9.2 Potential Impacts Identified

Existing Road Network - The roads in the vicinity of the proposed development:

- N12: Is a Class 1 Two-lane undivided principal arterial road and borders the proposed site to the north. This road serves as the main East-West link between Klerksdorp and Wolmaransstad.
- D837: Is a provincial gravel road and is located to the east of the proposed development. This road serves as the link between the N12 and farm portions to the north of the N12.

Future planned roads in the vicinity of the proposed development:

- **P234-1:** Is a Class 1 principal arterial road proposed for the future as a "ring road" to link the N12 freeway eliminating the need to travel through the Klerksdorp CBD. The interchange between the N12 and the proposed P234-1 is located east of the proposed development.

Access

Access to the proposed development is proposed from the N12 freeway via an access road. The proposed intersection of the new access road is located approximately 2 935 m from the intersection of D837 and the N12 Freeway. As per TRH 26, the interchange spacing of 2 935 m should be acceptable. The proposed access road will traverse along the western border of the proposed development and could be extended in the future to link to the existing D837 road. The location of the proposed intersection of the access road and the N12 freeway relative to the existing

Proposed Upgrades

Due to the access requirements as described in Chapter 7 of the Traffic Impact Assessment attached as Appendix B and the locality of the development in relation to the future developments close to Dominion 3 Solar Park, it is proposed that a new intersection be constructed. The new intersection on the N12 freeway could be in future be utilised as an interchange. From the new intersection on the N12, an access road is required to service the development to the south.

Construction Phase and Operational Phase

- The expected number of person trips based on the employment opportunities for the development is 1400 during the construction phase and 120 person trips during the operational phase. This translates into 88 vehicle trips for the construction phase and 40 vehicle trips for the operational phase

Mitigation Measures

- Adherence to OHSA regulations during the construction phase.
- Encourage environmentally friendly transportation alternatives for construction staff.
- Encourage environmentally friendly transportation alternatives for operational staff

Recommendations:

- The proposed intersection on the N12 and access road should be implemented
- The proposed development should be considered favourably from a traffic engineering point of view by the City of Matlosana Municipality and by the National Roads Agency (SANRAL).

Conclusion:

- A 100MW photovoltaic (PV) solar energy facility (SEF) referred to as the Dominion 3 Solar Park is planned approximately 15 km west of Klerksdorp in the City of Matlosana Municipality.
- In the TIA, the impact of the additional traffic of the proposed Dominion 3 Solar Park development on the road network was investigated. The transportation activities include transportation activities during the construction phase as well as transportation activities during the operational phase of the project.
- The proposed development, located adjacent to the N12 freeway, is currently zoned for agriculture. Permission for the applicable land use rights will have to be obtained from the relevant authorities through a town planning process.
- Traffic counts were conducted, at the intersection of the N12 and D837 covering 6 hours on Wednesday, 20 April 2022.
- A growth rate of 2% per annum was applied to the 2022 background peak hour traffic volumes to estimate the future background volumes for the 2024 and 2027 horizon years.
- The expected number of person trips based on the employment opportunities for the development is 1400 during the construction phase and 120 person trips during the operational phase. This translates into 88 vehicle trips for the construction phase and 40 vehicle trips for the operational phase.
- Access to the proposed development is proposed from the N12 freeway via an access road. The location of the new intersection will in the future form part of the planned road network as per the latest roads masterplan.
- The spacing requirements of the proposed intersection are acceptable as per the Committee of Transport Officials (COTO) South African Road Classification and Access Management Manual (TRH 26).
- PTV Vistro software was used to conduct the capacity analysis for the intersections included in the study area. The existing and proposed intersections on the N12 are expected to operate at an acceptable Level of Service (LOS).
- Due to the locality of the proposed development, no existing pedestrian facilities are present. It is not expected that pedestrian facilities will be required.

- Due to the locality of the project in relation to other expected developments, and to be compliant with the road's master plan of the study area a full 2-way intersection of the N12 freeway and the proposed access road is required.
- The environmental impact of the transportation activities during the construction phase of the proposed development, with a significance rating of -5, is expected to be low.
- The environmental impact of the transportation activities during the operational phase of the proposed development, with a significance rating of -15, is expected to be low.

8.10 NOISE IMPACT ASSESSMENT

8.10.1 Receiving environment

The noise impact assessment was done to determine which acoustic screening measures will be required to comply with the Dr Kenneth Kaunda District Municipality Noise Control By-law No 7011 of 29 June 2012 and or SANS 10103 of 2008.

Two aspects are important when considering potential impacts of a project:

- The increase in the noise levels, and;
- The overall noise levels produced.

The proposed Dominion 3 Solar Park and changes during the construction, operational and decommissioning phases may require approved environmental management measures, ongoing environmental noise survey and mitigatory measures to ensure compliance to the relevant noise regulations and/or standards.

Site Characteristics

The following observations were made in and around the study area:

- There was a continuous flow of traffic along the N12 main road between Klerksdorp and Wolmaransstad;
- Distant seasonal agricultural activity noise was audible at some of the measuring points;
- The wind and weather conditions play an important role in noise propagation.

Current noise sources

- Intermittent traffic noise;
- Agricultural type noises;
- Insects - seasonal;
- Birds;
- Wind noise

8.10.2 Potential Impacts identified

The impact rating during the different stages of the construction phase of the project is as follows:

Site clearing and grubbing of footprint

Noise may be generated by the construction activities and the use of construction equipment such as Graders, TLB's and Front-end loaders. The use of this equipment will create an increase in noise levels in the immediate vicinity of the construction activities and in some cases at some distance from the activities.

Construction activities at the PV modules per solar park.

Noise could be generated by the following activities: earth drilling, generator noise and civil construction.

Construction of the infra-structure

The construction of the BESS, O&M building, Sub-station, roads may generate localised noise increase in particular the use of cranes and generators during the assembly stage of the sub-station and/or batteries.

Conclusion and Recommendations

The proposed Dominion 3 Solar Park will be situated in an area where there are feeder roads, seasonal agricultural activities, and residential areas. The noise impact assessment revealed that the noise impact will be negligible-negative low during the operation, construction and decommission phases after the implementation of the mitigatory measures. The recommended noise mitigatory measures will ensure that the proposed PV Plant project will be environmentally sustainable.

Domestic animals depend on acoustic signals for essential functions. The noise impact will be below 1.0dBA which is very low and therefore classified as insignificant which will not interfere with the acoustic signals for essential functions.

Integrated Environmental Management (IEM) is a continuous process that ensures that the environmental impacts which can be introduced by mechanised activities during the construction, operation and decommissioning phases are avoided or mitigated throughout the project life cycle from design to the operational phase of the project (DEAT, 2004).

The following recommendations will be applicable for the activities during the different phases to comply with the noise standards:

- Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels.
- Construction activities take place during daytime periods only.
- All equipment with noise levels exceeding 85.0dBA to be acoustically screened off by means of engineering control measures.
- The Inverter will have to be acoustically screened off (acoustic screen on the side facing the residential areas) when the sound from the Inverter is audible at the abutting residential areas.

There will be no noise intrusion into the abutting residential areas during the construction, and/or operation and decommissioning phases.

8.11 CLIMATE IMPACT ASSESSMENT

8.11.1 Receiving Environment

Construction

The construction phase comprises activities, such construction of access roads and maintenance roads, construction of the solar PV modules, as well as site clearing for paved areas and buildings. Each of these operations has its own duration and GHG emission potential with typical activities land clearing, topsoil removal, material loading and hauling, stockpiling, grading, bulldozing, compaction, well drilling etc. It is anticipated therefore that the extent of GHG emissions would vary substantially from day to day depending on the level of activity and the specific operations.

Operations

The operational phase of the Project will include mainly the Solar PV modules, the battery energy storage system (BESS) and the substation. In addition, maintenance vehicles and equipment will operational as needed.

Assumptions and Limitations

The following important limitation applies to the study and should be noted:

- Project information required to calculate GHG emissions for proposed operations were provided by Terramanzi Group. Where necessary, assumptions were made based on common industry practice and experience.
- The assessment was limited to GHG emissions from combustion mobile and stationary equipment and Scope 2 emissions from the usage of Eskom generated electricity.

8.11.2 Potential Impacts identified

8.11.2.1 *Scope 1 GHG Emission Sources*

Clearing and Rehabilitation – Carbon Sequestration and Carbon Sink

Accounting for the uptake of carbon by plants, soils and water is referred to as carbon sequestration and these sources are commonly referred to as carbon sinks. Quantifying the rate of carbon sequestration is however not a trivial task requiring detailed information on the geographical location, climate (specifically temperature and humidity) and species dominance (Ravin & Raine, 2007).

Photosynthesis is the main sequestration process in forests and in soils. Carbon is absorbed as fixed carbon into the roots, trunk, branches, and leaves and during the shedding of leaves, but is emitted – although at a reduced percentage – from foliage and when biomass decays. Several factors also determine the amount of carbon absorbed by trees such as species, size, and age. Mature trees, for example, will absorb more carbon than saplings (Ravin & Raine, 2007).

Aspects required to calculate the carbon stack change in the pool (in tons of carbon per year) include the climate, the type of forest or vegetation removed and the type to be re-introduced, and management measures. Soil type also has different absorption and release ratios that need to be included. "Decomposition of soil organic matter in drained inland grassland" was used to the carbon losses from the cleared areas. It should be noted that carbon losses apply to the replacement of vegetation with built infrastructure, except where temporary clearing activities could have long-term impacts on water resources, including rivers, aquifers, streams, and wetlands, or water infrastructure (for example dams and storm water systems) (Government Gazette No. 44761, Notice 559, 25 June 2021), where in this case, vegetation may recover over the pipeline areas.

The project includes the installation of Solar PV modules covering an area of approximately 210Ha. Vegetation clearance will be avoided and obstacles below piling locations for tracker structures will be removed only if required. This area was therefore not included in the land clearing calculation.

The areas to be cleared were accounted for as indicated in Table 8.1. There will be an initial carbon sink loss due to the vegetation removal for the establishment of the Dominion 3 Solar Park.

Construction Activity	Description of Area	Area (m2) (unit area)	No of units	Total area (m2)
Land Clearance	Road construction	128 000	1	160 000
	Paved area	2 200	1	2 200
	Substation	15 000	1	15 000
	Booster station Buildings	1 500	1	1 500
			Area (m2)	178 700

Construction fuel combustion

GHG will be emitted through operating diesel-powered mobile equipment such as mobile drilling or ramming rigs, road building equipment, concrete trucks, mobile cranes, forklifts, light duty transport vehicles. The fuel use of the mobile equipment is estimated at approximately 15 000 litres of diesel per month.

Operations

The main sources of GHG due to the proposed operations are the mobile (maintenance vehicles and equipment) and stationary equipment (generators) table 8.2

Table 8.2 - Dominion 3 Solar Park operational phase fuel combustion per year

Road transportation (diesel)	Total litres per annum	Stationary Equipment	Total litres per annum
Diesel usage	3 390	Generator (80 kW)	< 300
Petrol usage	1 410		

The South African CO2eq emission factors (kg/tonne of fuel consumed) were used (DEFF, 2022) with different emission factors for the fuel, and mobile and stationary sources.

Decommissioning

As operations progress, the previously cleared areas that form part of the project will be rehabilitated resulting in a carbon sink gain. Even assuming rehabilitation uses the same indigenous vegetation, the carbon balance will not be completely restored. The Solar PV modules cover the vegetation, which may impact on species that prefer sunlight. However, there is insufficient data at this point to determine the decommissioning GHG emissions. This is likely to be equivalent or less than the construction phase, with the reestablishment of a carbon sink in the revegetation of the site.

8.11.2.2 *Scope 2 GHG Emission Sources*

Scope 2 GHG emissions apply to consumption of purchased electricity, heat, or steam. Scope 2 emissions will result from the use of approximately 200 kWh per month of Eskom generated electricity during construction

8.11.2.3 *Summary of Scope 1 and Scope 2 GHG Emissions*

A summary of the calculated GHG emissions for the construction and operational phases is provided in Table 8.3 and the emission factors used provided in Appendix B of this report – Climate Impact Assessment's appendix A .

Table 8.3 - Dominion 3 Solar Park operational phase fuel combustion per year

Emission Summary		
Construction	**Activities**	**Total CO2–e (tonnes/year)**
Total Scope 1 emissions	Land clearance, construction	883
Total Scope 2 emissions	Electricity bought from ESKOM	2.4
Total Scope 3 emissions	Scope 3 emissions were not included in the assessment.	Scope 3 emissions were not included in the assessment.
Total Emissions		**829**
Operations	**Activities**	**Total CO2–e (tonnes/year)**
Total Scope 1 emissions	Vehicles, equipment, and generator	14
Total Scope 2 emissions	Electricity bought from ESKOM	0
Total Scope 3 emissions	Scope 3 emissions were not included in the assessment.	Scope 3 emissions were not included in the assessment.
Total Emissions		**14**

The total CO2eq emission rate from the Dominion 3 Solar Park construction phase 883 tpa (Scope 1) and 2.4 tpa (Scope 2). For a single operational year, the Scope 1 GHG emissions are 14 tpa.

Assuming that the facility operates at the contracted capacity for an average of 6.2 hours a day, the project could potentially avoid emissions of approximately 231 000 CO2eq per annum. Over the lifetime of the project, assumed to be 20 years, the avoided emissions 4 617 GgCO2eq. The avoided emissions do not consider the impact of Scope 3 emissions which are beyond the scope of this assessment.

8.11.2.4 *The Project's GHG Emissions Impact*

Impact on the National Inventory

The operational phase of Dominion 3 Solar Park will likely result in an increase in Scope 1 emissions and a decrease in Scope 2 emissions. The annual operational CO2-e emissions from the Dominion 3 Solar Park is less than 0.000003% to the South African "energy" sector total and the National GHG inventory total, based on the published 2017 National GHG Inventory (DFFE, 2020). The annual CO2-e emissions from the construction phase would contribute approximately 0.002% to the South African "energy" sector total and represent a contribution of 0.001% to the National GHG inventory total (DFFE, 2020).

Alignment with national policy

Regulations pertaining to GHG reporting using the NAEIS were published in 2017 (Republic of South Africa, 2017) (as amended by GN R994, 11 September 2020) where mandatory reporting guidelines focus on reporting of Scope 1 emissions only. The DFFE is working together with local sectors to develop country specific emissions factors in certain areas; however, in the interim the IPCC default emission figures may be used to populate the SAAQIS GHG emission factor database. With the operational Scope 1 CO2-e emissions below 100 000 t/a, Dominion 3 Solar Park does not have to report on SAGERS, calculate its Carbon Tax nor compile a pollution prevention plan (PPP).

Physical Risks of Climate Change on the Project's Construction and Operations

Temperature

With the increase in temperature, including heat waves, there is the likelihood of an increase in discomfort, possibility of heat related illness (such as heat exhaustion, heat cramps, and heat stroke). Both these have the potential to negatively affect staff process performance and productivity.

From a process point of view, elevated ambient temperatures (up to 45°C) may slightly reduce the fuel requirements needed to meet the generating capacity required. However, water use as a dust control measure during construction, may increase.

Rainfall, Water Stress, and Extreme Events

Rainfall decreases in autumn, winter and spring could result in constrained water supply outside of summer months. During drought conditions water supply could decline and intended use of reclaimed water and boreholes/wellpoints should be investigated to secure long-term supplies.

The impact of intense rainfall events on the Solar PV Plant cannot be ruled out, where the frequency of intense rainfall events could increase from the long-term baseline. These events could affect production capacity during high cloud cover events. High rainfall events could result in flooding affecting site access, safe operation of equipment, delivery of fuel; collection of gas product, as well as physical damage to infrastructure during high wind speed events associated with intense storms.

Impact Assessment: Potential Effect of Climate Change on the Community

Temperature

With the increase in temperature, including heat waves, there is the likelihood of an increase in discomfort and possibility of heat related illness (such as heat exhaustion, heat cramps, and heat stroke). There is also the possibility of increased evaporation which in conjunction with the decrease in rainfall can result in water shortage. This does not only negatively affect the community's water supply but can reduce the crop yields and affect livestock resulting in compromised food security.

Rainfall, Water Stress, and Extreme Events

As discussed above the decrease in rainfall can result in the following effects:

- Reduced water supply of reduced water quality; and,
- A negative impact on food security.

The impact of intense rainfall events on the local communities cannot be ruled out, where the frequency of these event could increase from the long-term baseline. These events could affect road access within the area due to flooding, and physical damage to public and private infrastructure through flooding and high wind speeds.

Mitigation measures are described in section 19 of this report.

Conclusion

The region around Klerksdorp where Dominion 3 Solar Park is proposed to be developed is likely to experience increased temperatures and decreased rainfall events in the future. Climate change impacts will disproportionately affect under-developed communities that lack the physical and financial resources to cope with the physical effects of climate change, such as droughts, floods and increases in diseases.

Assuming that the hybrid facility replaces generative capacity from other fossil fuel sources, the facility could lower South Africa's GHG emissions from the Energy sector since the PV arrays and BESS provide renewable energy at a lower CO2-e emission per unit electricity.Based on Dominion 3 Solar Park Scope 1 and Scope 2 GHG emissions, it is the specialist opinion that the project may be authorised due to its low impact significance. Assuming that the gas to power facility replaces generative capacity from other fossil fuel sources, the cumulative downstream impact from the facility could lower South Africa's GHG emissions from the Energy sector by 1.3% since Solar PV facility will have a lower emission per unit compared with the Eskom which is largely dependent on coal fired power stations. The cumulative impact significance on climate change could therefore be **Positive Medium**

Based on Dominion 3 Solar Park Scope 1 and Scope 2 GHG emissions, it is the specialist opinion that the project may be authorised due to its low impact significance, and the **positive** cumulative downstream impact since the Solar PV facility will have a lower emission per unit compared with the Eskom which is largely dependent on coal fired power stations

8.12 GEOTECHNICAL IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed GEOSS South Africa (C/O Shane Teek) (hereinafter referred to as the "Geotech Specialist") to undertake the Geotechnical Impact Assessment for Dominion 3 Solar Park.

8.12.1 Receiving environment

Topography and Site Features

The elevation of the site ranges between 1353 and 1388 metres above mean sea level (mamsl). There is a small drainage that runs in a general easterly direction around the northern perimeter of the area that has been proposed for development (Map 2). The site is generally covered by a thin veneer of hillwash, comprising mainly sand and gravel sized materials, of approximately 0.2 m thick.

Structure Behaviour

The structures present on remainder 32 Farm 425 are free of visible cracks. Based on anecdotal evidence, these structures were constructed prior to 2010. We understand that conventional shallow spread footings were adopted for these structures. The structures comprise typical farm infrastructure and are associated with low dead loads

Geology and anticipated soil conditions

The Council for Geoscience (CGS) has mapped the area at a scale of 1:250 000 (CGS, 1986). The geological setting is shown in **figure 8.12.1**. The majority of the site is shown to be underlain largely by volcanic rocks of the Ventersdorp Supergroup (refer to Figure 8.1). The northern extent of the farm is shown to be underlain by sediments of derived from the lava agglomerate, and volcanic tuff of the Rietgat Group (R-Vr); whereas the southern extent of the site is shown to be underlain by sediments derived from mainly amygdaloidal basaltic lava of the Allanridge Formation (Va)

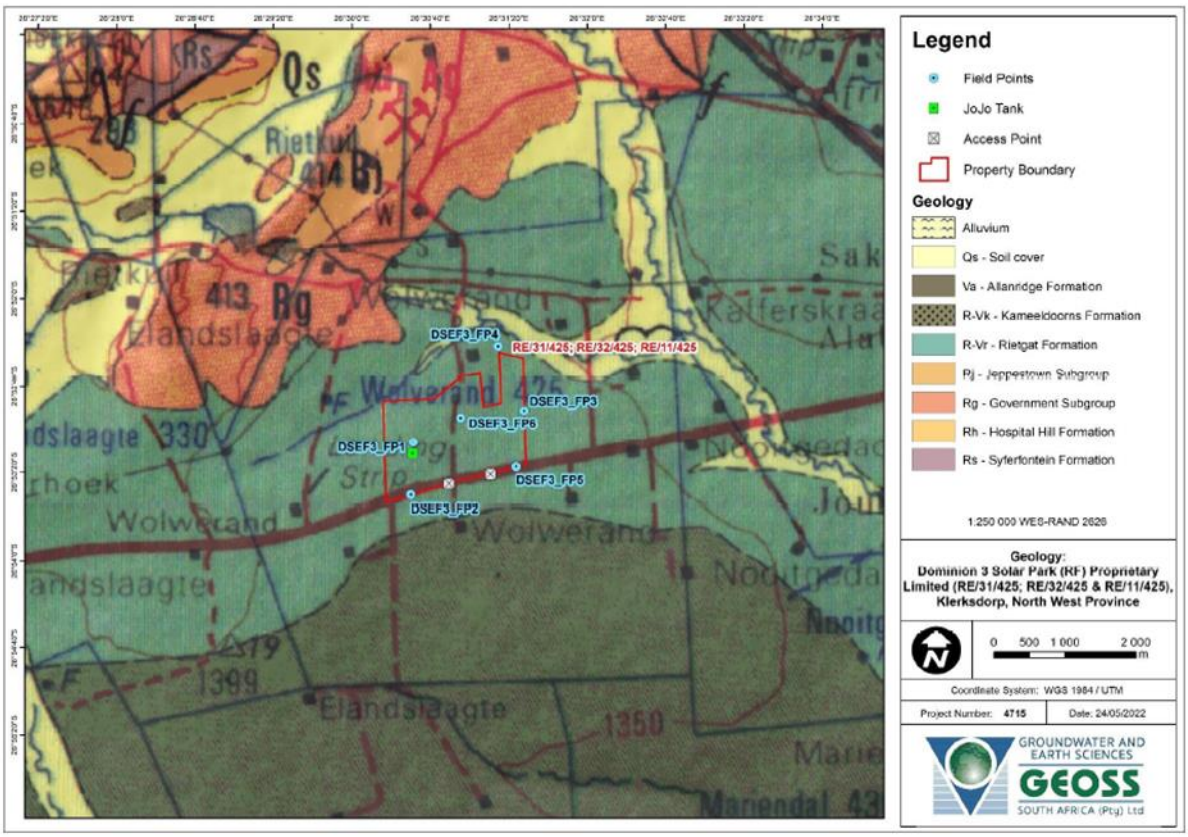


Figure 8.12.1 - The proposed Dominion 3 Solar Park Geological setting

Expected Soil profile

The expected soil profile for the area that has been proposed for development is contained in Table 8.1

Table 8.1 Table 4: Expected soil profile for the area proposed for development.

Depth (mbgl)	Expected soil profile
0.0 - 0.2	Reddish-brown loose to medium dense gravelly SAND to sandy GRAVEL. Hillwash.
0.2 - 1.0	Dark reddish-brown dense to very dense NODULAR FERRICRETE and/or MANGANANOCRETE in a sandy matrix. Pedogenic.
1.0 - 2.0	Reddish-brown intact dense silty SAND with occasional ferricrete nodules tending to stiff and very stiff fissured sandy clayey SILT with occasional ferricrete nodules. Residua
2.0+	Refusal on partially weathered medium hard rock amygdaloidal ANDESITE.

Hydrogeology

The aquifers underlying the property are classified by the Department of Water Affairs and Forestry (DWAF, 2002) as an 'intergranular and fractured' aquifers with an average yield potential ranging between 0.5 and 5.0 L/s. Generally, the anticipated yields increase northward across the property. Intergranular aquifers allow for groundwater flow through openings and void space between sand

grains or weathered rock. Fractured aquifers allow for movement of water through fissures, fractures, cracks and faults within the host rock.

The regional groundwater quality is classified as "good" directly underlying the study area with an associated electrical conductivity (EC) of 0 – 70 mS/m (DWAF, 2002).

It should be noted that the above classifications are based on regional datasets, and therefore only provide an indication of conditions to be expected.

8.12.2 Potential Impacts identified

The impact of the project alternatives on the geological environment will predominantly relate to the impact that the development will have on the soils / rock units beneath the site. The impact of the development and construction, and operation of the proposed Dominion 3 Solar Park activity on the geological environment is limited to topsoil stripping, excavations for pad foundations (if required), trenching, the construction of access roads and associated light infrastructure. Bulk earthworks, where required for the construction of platforms and access roads, may generate a significant impact on the soils and rocks where construction takes place.

The primary concern associated with geotechnical works is increased soil erosion on site, due to stripping of vegetation during the construction phase of the project. Removal of vegetation reduces infiltration, thereby increasing runoff yielding increased erosion. Further, compaction during earthworks reduce rainwater infiltration and increase surface runoff, and increasing erosion. The construction of paved and/or hard-surfaced areas increases runoff and often localises discharge of stormwater, which may lead to increased erosion and consequently loss of topsoil. Disturbance of the soil may extend beyond the footprint of the structures should such conditions persist for long periods of time, e.g. more than 10 years.

Conclusion

The following conclusions can be drawn from the investigation:

- Increased soil erosion may transpire as an impact of development, this may persist for the life of the project. However, the impact of this is expected to be low and is anticipated to have little effect on the site from a geotechnical point of view.
- The site is covered by a thin veneer of transported sediments. The transported sediments are granular in nature, and are chiefly comprised of a gravelly sand. Beneath the transported horizon a medium dense to dense pedogenic ferricrete unit of between 1 and 2 m thick is anticipated. Underlying the pedogenic horizon, residual soils are anticipated to consist of sandy- to silty clay or clayey silt material. Based on exploratory holes dug on Remainder RE 32 of Farm 425, i.e. immediately north of the N12 highway, refusal of a typical tractor loader backhoe (TLB) occurred at between 1 and 2 mbgl. The thicknesses and engineering properties of the above horizons will need to be appropriately confirmed through future exploratory geotechnical investigations, prior to construction.
- Some geotechnical constraints have been identified, including the presence of potentially expansive soils and shallow bedrock and/or scattered rock outcrops and rockheads. These constraints may be mitigated via standard engineering design and construction measures.
- It is anticipated that shallow spread footings are suitable to support proposed typical single and double storey structures that are commonly associated with such a development. However, this would have to be confirmed by intrusive investigations prior to construction.

- Based on anecdotal evidence and experience in the area, it is expected that light earth moving equipment would be sufficient to undertake the majority of the civil works. However, in areas of localised rock outcrops/rockheads, larger earth moving equipment may be required.
- Intrusive investigations will be required to confirm the anticipated conditions.
- Regardless of the specific location(s) at which the various components of the proposed development are constructed within the property boundaries, the outcome of the impact assessment remains valid.
- GEOSS has endeavoured to highlight and characterise all potential geotechnical risks that are presented by the site that has been proposed for development. However, due to the anisotropic (variable) nature of earth materials, each point on the site will present results that differ. For this reason, it is considered of the utmost importance that the foundation trenches be inspected prior to casting to ensure that soil with an adequate bearing capacity is obtained beneath each footing.

Based on the findings of the Geotechnical Impact Assessment before the EAP, the appointed specialist has **not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the proposed Dominion 3 Solar Park is acceptable from a Geotechnical Impact perspective.

8.13 SOCIAL IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed Tony Barbour Environmental Consulting (C/O Tony Barbour) (hereinafter referred to as the "Social Specialist") to undertake the Social Impact Assessment for Dominion 3 Solar Park.

8.13.1 Receiving environment

The proposed PV SEF sites are located within the City of Matlosana Local Municipality (CoMLM), which forms part of the Dr Kenneth Kaunda District Municipality (DKKDM) The town of Klerksdorp serves as the administrative centre for the CoMLM

Demographic Overview

Population

The majority of the population of the DKKDM reside within the CoMLM (56.18% in 2016).

The population of the CoMLM in 2016 was 417 282 (Community Household Survey 2016). Of this total, 35.8% were under the age of 18, 59.3% were between 18 and 64, and the remaining 4.9% were 65 and older. The population of Ward 4 in 2011 was 17 242. Of this total, 39.8% were under the age of 18, 57.6% were between 18 and 64, and the remaining 2.6% were 65 and older. The figures for the economically active age group of 18-65 for the DKKDM and North West were 61% and 59.4% respectively.

The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates reduced revenue for local authorities to meet the growing demand for services. The national dependency ratio in 2011 was 52.7%, while the North West Province was 54.5%. The traditional approach is based people younger than 15 or older than 64. The information provided provides information for the age group under 18. The total number of people falling within this age

group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e. they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratios for the CoMLM (2016) and Ward 4 (2011) were 68.6% and 73.6% respectively. The high dependency ratios reflect the decline the mining sector of the last 2 decades and the associated impact on employment and economic opportunities in the area.

In terms of race groups, Black Africans made up 82.6% of the population on the CoMLM, followed by Whites, 13.5% and Coloureds, 3.2%. In Ward 4, Black Africans made up 73.8% of the population, followed by Coloureds, 22.8% and Whites, 2.2%. The main first language spoken in both the CoMLM and Ward 4 was Setswana, 41.1% and 44.1% respectively followed by Sesotho in the CoMLM (21.6%) and Afrikaans in Ward 4 (27.9%).

Households and house types

There were a total number of 135 896 (2016) and 5 050 (2011) households in the CoMLM and Ward 4 respectively. Of these 79.5% (CoMLM) and 66.4% (Ward 4) were formal houses. 12.2% of the structures in the CoMLM and 30.8% in Ward 4 were shacks. A high percentage of the dwellings in Ward 4 are therefore informal structures. The majority of the formal structures in the CoMLM (49.7%) and Ward 4 (59.5%) were owned and fully paid off, while 22.4% of the structures in Ward 4 were rented. Approximately 38% of the households in the CoMLM and 36% in Ward 4 were headed by women. These figures are similar to figures for the DKKDM (36%) and North West (36.4%). Women headed households tend to be more vulnerable.

Household income

Based on the data from the 2011 Census, 16.2% of the households in the CoMLM had no formal income, 4.6% earned less than R 4 800, 7.1% earned between R 5 000 and R 10 000 per annum, 16% between R 10 000 and R 20 000 per annum and 18.3% between R 20 000 and 40 000 per annum (2016). For Ward 4, 17.8% of the households had no formal income, 6.2% earned less than R 4 800, 10.1% earned between R 5 000 and R 10 000 per annum, 18.7% between R 10 000 and 20 000 per annum and 22.3% between R 20 000 and 40 000 per annum (Census 2011).

The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 62.2% of the households in the CoMLM and 75.1% in Ward 4 live close to or below the poverty line. The low-income levels reflect the decline the mining sector of the last 2 decades and the associated impact on employment and economic opportunities in the area. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the CoMLM. This in turn impacts on the ability of the CoMLM to maintain and provide services.

Household income levels are likely to have been impacted by the COVID-19 pandemic. The number of households in the CoMLM and Ward 4 that live close to or below the poverty line is likely to have increased over the last 18 months. This, coupled with the high dependency ratio, is a major cause of concern for the area.

Employment

The official unemployment rate in the CoMLM in 2016 was 19.6%, while 40.4% were employed, and 35.7% were regarded as not economically active. The figures for Ward 4 in 2011 were 27.9% unemployed, 38.8% employed and 30.2% not economically active. The unemployment rates for the CoMLM and Ward 4 are higher than the Provincial rate of 17.1% and the District rate of 14.8%. The COVID-19 pandemic is likely to have resulted in an increase in unemployment rates in both the CoMLM and Ward 4. Recent figures released by Stats South Africa also indicate that South Africa's unemployment rate is in the region of 36%, the highest formal unemployment rate in the world.

Education

In terms of education levels, the percentage of the population over 20 years of age in the CoMLM and Ward 4 with no schooling was 7.9% (2016) and 8.9% (2011) respectively, compared to 8.7% and 11.5% for the North West Province in 2016 and 2011 respectively. The percentage of the population over the age of 20 with matric was in the CoMLM and Ward 4 was 34.2% and 29.3% respectively, compared to 31% (2016) and 27.6% (2011) for the North West. The higher education levels are linked to established urban settlement patterns in the CoMLM.

Municipal Services

Electricity

Based on 2016 survey, 96.3% of households in the CoMLM had access to, while 3.7% had no access to electricity. No data was on electricity access was available for Ward 4.

Access to water

Based on the 2016 survey information, 95.2% of households in the CoMLM were supplied by a service provider, while 2.1% relied on their own sources. For Ward 4, 87.2% were supplied by the local service provider, while 8.6% of households relied on boreholes and 2.4% were supplied by tanker (2011). This reliance on boreholes reflects the rural nature of parts of Ward 4.

Sanitation

95.7% of the households in the CoMLM had access to flush toilets (2016), while 1.8% relied on pit toilets and 2% did not have access to formal sanitation. In Ward 4, 91.4% of the households had access to flush toilets, while 5.5% relied on pit latrines and 1.7% had no form of formal sanitation (2011). The high percentage of households with access to flush toilets in Ward 4 is surprising given that 30.8% of the structures were recorded as shacks.

Refuse collection

92.6% of the households in the CoMLM had access to regular refuse removal service, while 3.5% disposed of their waste at their own dump and 1.5% had no access to refuse services (2016). In Ward 4, 86.7% of households had access to regular disposal; services, 7.9% relied on their own dump, and 3.7% had no access to refuse removal services (2011).

Economic Overview

The GDP of the DKKDM was R 60.1 billion in 2016 (up from R 27.1 billion in 2006). This made up 22.79% to the North-West Province GDP of R 264 billion in 2016, a decrease from 25.79% in 2006. The CoMLM contributed 58.88% to the GDP of the DKKDM in 2016. The most important sectors were mining and agriculture. In term of employment, the most important Community Services (28.7%), followed by Trade (23.2%), Finance (13.1%) and Manufacturing (8.2%) were the most important economic sectors

8.13.2 Potential Impacts identified

Construction Phase Social Impacts

Potential positive impacts

- *Creation of employment and business opportunities* – ***medium positive significance post mitigation***

Potential negative impacts

- *Impacts associated with the presence of construction workers on local communities* – ***low negative significance post mitigation***
- *Impacts related to the potential influx of job-seekers* – ***low negative significance post mitigation***
- *Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site* – ***low negative significance post mitigation***
- *Increased risk of veld fires associated with construction related activities* – ***low negative significance post mitigation***
- *Noise, dust and safety impacts of construction related activities and vehicles* – ***low negative significance post mitigation***
- *Impact on productive farmland* – ***low negative significance post mitigation***

Operational Phase Social Impacts

Operational phase impacts

The following key social issues are of relevance to the operational phase:

Potential positive impacts

- *The establishment of renewable energy infrastructure* – ***high positive significance post mitigation***
- *Creation of employment and business opportunities* – ***medium positive significance post mitigation***
- *Generation of additional income for farmers* – ***medium positive significance post mitigation***

- *Benefits associated with the establishment of a Community Trust* – ***high positive significance post mitigation***

Potential negative impacts

- *The visual impacts and associated impact on sense of place* – ***low negative significance post mitigation***
- *Impact on property values* – ***low negative significance post mitigation***
- *Potential impact on tourism* – ***low negative significance post mitigation***

Conclusion

The findings of the SIA indicate that the development of the Dominion 2 Solar Park will create employment and business opportunities during both the construction and operational phase of the project. The findings of the SIA also indicate that the majority of the potential negative impacts can be effectively mitigated. The establishment of a Community Trust will also benefit the local community in the area. The significance of this impact is rated as High Positive. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The findings of the SIA also indicate that the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to foreign Direct Investment, local employment and procurement and investment in local community initiatives.

The study area is also located within the Klerksdorp REDZ and has been identified as suitable for renewable energy facilities. The establishment of the Dominion 2 Solar Park and associated infrastructure is therefore supported by the findings of the SIA

9 PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY, SITE AND LOCATION WITHIN THE SITE

In accordance with ***Appendix 1 Regulation 3(h) (i, x and v); of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended)****:*

2(h) *– A full description of the process followed to reach the proposed development footprint within the approved site, including:*

2(h) i *– Details of the alternatives considered*

2(h) x*- If no alternatives, including alternatives location for the activity were investigates the motivation for not considering such*

2 (h) v *–The impact and risks identified of each alternative including the nature, significance, consequence, extent, duration and probability of impacts including the degree to which these impacts-*

(aa)*- can be reversed*

(bb) *– May cause irreplaceable loss of resources; and*

(cc) *– Can be avoided, managed or mitigated*

9.1 LEGISLATIVE REQUIREMENTS

The NEMA EIA Guidelines (2014 as amended) on Alternatives require that a "*description of any feasible and reasonable alternatives identified*" must be provided and define alternatives as the following:
In terms of the NEMA EIA Regulations (2014, as amended) all Basic Assessment Reports, Scoping Reports and Environmental Impact Reports must contain a description of any feasible and reasonable alternatives that have been identified, including a description and comparative assessment of the advantages and disadvantages that the proposed activity and alternatives will have on the environment and on the community that may be affected by the activity.

Every EIA process must therefore identify and investigate alternatives, **with feasible and reasonable alternatives** to be comparatively assessed.

Alternatives are defined in the NEMA EIA Regulations as "*different means of meeting the general purpose and requirements of the activity*".

The "*feasibility*" and "*reasonability*" of and the need for alternatives must be determined by considering, *inter alia*, (a) the general purpose and requirements of the activity, (b) need and desirability, (c) opportunity costs, (d) the need to avoid negative impact altogether, (e) the need to minimise unavoidable negative impacts, (f) the need to maximise benefits, and (g) the need for equitable distributional consequences.

"***Alternatives***" in the context of an activity may include alternatives to:

- The "***property***" on which or location where it is proposed to undertake the activity;
- The type of "***activity"*** to be undertaken;
- The "***design or layout"*** of the activity;
- The "***technology"*** be used in the activity; and
- The "***operational"*** aspects of the activity.

The "No-Go" alternative must also be assessed.

An illustrative table is provided below, describing alternatives that are typically referred to during an EIA process, which are strongly influenced by the development opportunities and constraints identified during the process.

Table 9.1: Illustration of some typical alternatives assessed during an Environmental Application process.

TYPE OF ALTERNATIVE	EXPLANATION/EXAMPLES
Location	Refers to both alternative properties as well as alternative sites on the same property. **Note:** In terms of the Minimum Requirements for Waste Disposal by Landfill, location alternatives must considered during the EIA process.
Activity	Incineration of waste rather than disposal at a landfill site/ Provision of public transport rather than increasing the capacity of roads.
Design or Layout	Design: E.g. Different architectural and or engineering designs Site Layout: Consideration of different spatial configurations of an activity on a particular site (e.g. Siting of a noisy plant away from residences).
Technological	Consideration of such alternatives is to include the option of achieving the same goal by using a different method or process (e.g. 1000 megawatt of energy could be generated using a coal-fired power station or wind turbines.
Demand	Arises when a demand for a certain product or service can be met by some alternative means (e.g. the demand for electricity could be met by supplying more energy or using energy more efficiently by managing demand).
Input	Input alternatives are applicable to applications that may use different raw materials or energy sources in their process (e.g. Industry may consider using either high sulphur coal or natural gas as a fuel source).
Routing	Consideration of alternative routes generally applies to linear developments such as power line servitudes, transportation and pipeline routes.
Scheduling and Timing	Where a number of measures might play a part in an overall programme, but the order in which they are scheduled will contribute to the overall effectiveness of the end result.
Scale and Magnitude	Activities that can be broken down into smaller units and can be undertaken on different scales (e.g. for a housing development there could be the option 10, 15 or 20 housing units. Each of these alternatives may have different impacts).
"No-Go Option"	This is the option of not implementing the activity.

The NEMA Principles states that sustainable development requires the consideration of all relevant factors including the following:

- *That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
- *that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
- *that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;*
- *that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;*
- *that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*

- *that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
- *that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and*
- *that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*

Based on the available information the following feasible and reasonable alternatives for the Project have been identified and, in conjunction with reference to various specialist opinions have considered that the following alternatives, should be comparatively assessed, during the Basic Assessment Process of the Project:

1. Property Alternative
2. Activity Alternative
3. Design or Layout Alternative
4. Technology Alternatives
5. Operational Alternative
6. The "No-Go" consideration (this is a mandatory option)

Based on the contextual information presented above, and described in detail below, there is no evidence to suggest that other alternatives should be investigated for the proposed activity.

1. The "Site" Alternative

This site was selected as it was identified as particularly well suited for the proposed activity (the PVSEF), in addition to the Landowner being eager to participate in the Project. Further to this, the independent specialist that have assessed the site have not identified any fatal flaws with the site as a whole and this has been summarised though an opportunities and constraints map, to be used to inform further assessments as well as to inform the PVSEF layout on site during the Basic Assessment process of the Project, in accordance with Appendix 2 (1)(f) of GNR 326.

An Opportunities and Constraints Map (please refer to Section 10) was compiled to provide a clear indication of areas that are immediately deemed suitable and those areas which are considered potentially problematic for development.

Based on the above, at this stage, there is no reason to suggest that alternative sites are investigated as these would not meet the general purpose and need of the proposed activity.

Therefore, no alternative sites were investigated for the purpose of this Basic Assessment Report

2. The "Activity" Alternative

The purpose of the activity type is particularly well suited to the proposed activity, and the activity applied for is very specific, which is to construct a PVSEF to generate renewable energy in order for the Applicant to be able to participate in the Department of Energy REIPPPP and any renewable energy tenders in South Africa.

Further to the above, the expert assessments undertaken for the site did not find any reason to suggest that an activity alternative is required to be investigated.

Based on the above, at this stage, there is no reason to suggest that any activity alternatives are investigated as these would not meet the general purpose and need of the proposed activity.

Therefore, no activity alternatives were investigated for the purpose of this Basic Assessment Report

3. The "Design or Layout" Alternative

Opportunities and Constraints Study

Given the nature of the application process (a Basic Assessment in the Klerksdorp REDz), a full opportunities and constraints analyses was undertaken by the EAP and Professional Team upfront in order to determine 'developable' and 'not preferred'. This process enabled the Client to pursue the most time and cost-effective design process for the Project application by aligning the design upfront with 'preferred' areas identified through this rigorous process. Within this acceptable development footprint, envelope, the preferred layout was designed.

Based on the above, there were no other reasonable or feasible development footprints identified and therefore, the Preferred Layout (Facility Layout 1) has been assessed together with the 'no-go' alternative.

This layout is deemed to be implementable by the Professional Team and no fatal flaws have been identified. However, all the Professional Team's recommendations and mitigation measures are required to be adhered to and form part of the Environmental Management Programme (EMPr) for the site.

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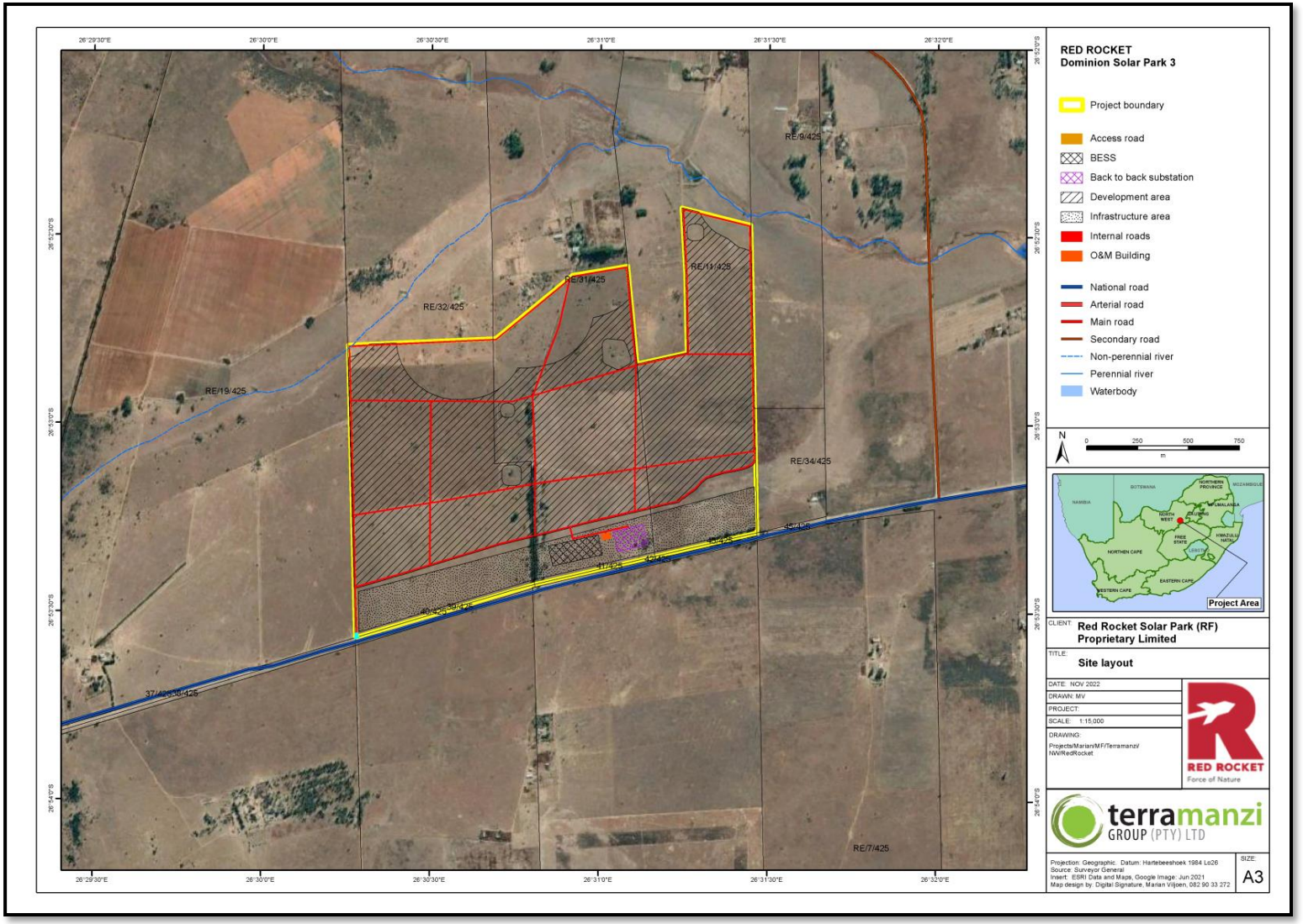

Figure 9.1: This figure shows Facility Layout 1 which is presented and assessed in this Basic Assessment Report

4. Sustainable "Technology" Alternatives

Sustainable Technology Alternatives have been identified and investigated as such alternatives should be investigated due to the fact that they will ensure the most efficient generation of renewable energy for the facility. The EAP has presented below a concise summary of the technology alternatives investigated as part of this environmental permitting process.

Fixed Panel System – Technology Alternative 1	**Tracking Panel System – Technology Alternative 2**
Fixed panel which does not track the sun	Tracking panel which moves with the sun's movement
Fixed panel with no axis	Single or double axis
Less energy efficient	More energy efficient

The Applicant has confirmed that a Tier 1 bi-facial tracking panel system with a single axis, with a maximum height of up to 6m will be used as the preferred technology alternative for the Project. This tracking panel system will ensure that as much sunlight as possible will be used by the tracking panel system to capture the sunlight and convert this into energy. The use of the sun's radiation by means of a tracking panel is a much more efficient technology than a fixed panel system and therefore the tracking panel system is the proposed preferred technology alternative for this project.

Therefore, the proposed PVSEF will be a tracking panel system and not a fixed system.

5. The "Operational" Alternative

No operational phase alternative was assessed as part of the Report as the independent specialists that have assessed the site have not identified any fatal flaws on the site as a whole and this has been summarised through an opportunities and constraints map, which will be used to inform micro-siting of infrastructure.

Based on the above, at this stage, there is no reason to suggest that alternative operational alternatives are required to be investigated at this stage of the process as these would not meet the general purpose and need of the proposed activity. **Therefore, no alternative sites were investigated for the purpose of this Scoping Report.**

6. The "No Go" Option (Mandatory Option)

The "no-go" option would result in the proposed activity not being implemented and the status quo on the property remaining. Should the activity not be implemented then the status quo of the site will remain, which continued grazing farming and further erosion of entire site over time and associated loss of biodiversity and habitat. This alternative would also not achieve the general purpose and requirements of the activity.

The No Go alternative usually implies the continuation of the status quo in terms of development potential, zoning and management. The No-Go Alternative would not achieve the general purpose and requirements of the activity, which is to develop a PVSEF on site of up to 100MW. It is clear that the no-go option would result in a significant opportunity loss for the site, Renewable Energy in South Africa and importantly, the Communities which could potentially be involved in the Project.

9.2 CONCLUDING STATEMENT INDICATING PREFERRED ALTERNATIVE (SITE, LAYOUT, LOCATION)

*In accordance with **Appendix 1 Regulation 3(g) and (h)(xi) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**):*

***3(g)** – A motivation for the **preferred development footprint** within the approved site.*

***3(h) xi** – A concluding statement indicating the **preferred alternative development location** within the approved site*

The **Preferred Alternative** for the purpose of this Report refers to a Project alternative that takes into consideration and implements the findings and recommendations of the professional team, which have been noted above in terms of operational, layout and infrastructure alternatives considered to date, and which have all been informed through independent expert assessments.

The Preferred Alternative for this Project:

Given the nature of the application process (a Basic Assessment in the Klerksdorp REDz), a full opportunities and constraints analyses was undertaken by the EAP and Professional Team upfront in order to determine 'Preferred development area, the acceptable development area and 'not preferred development area'. This process enabled the Applicant to pursue the most time and cost-effective design process for the Project application by aligning the design upfront with 'preferred' areas identified through this rigorous process. Within this development footprint, envelope, the preferred layout was designed for this Basic Assessment process

The preferred layout has been developed to exclude not preferred development areas to ensure that the Dominion 3 Solar Park is the most reasonable or feasible development footprints identified and therefore, the Preferred Layout (Facility Layout 1) has been assessed together with the 'no-go' alternative.

This layout is deemed to be implementable by the Professional Team and no fatal flaws have been identified. However, all the Professional Team's recommendations and mitigation measures are required to be adhered to and form part of the Environmental Management Programme (EMPr) for the site.

The preferred alternative is the feasible and reasonable alternative and was assessed against the No-Go Alternative in Section 12 as part of this Basic Assessment Report.

In conclusion and based on the alternative assessments and motivation, the Preferred Alternative for the Basic Assessment Process, has considered and will comprise the following alternatives:

1. **Technology alternative** – Technology Alternative will be assessing a tracking panel system as this is a much more efficient technology compared to a fixed panel system.
2. **Layout Development Footprint alternative** – Within the Layout Development footprint, envelope, the preferred layout was designed comprising of preferred development areas for

the PV modules and preferred development areas of the associated infrastructure which is located on the most preferred and acceptable areas and as guided by the Landowners's consent use on his land.

3. **Operational alternative** – ensuring that all management plans as required by the professional team are implemented accordingly.

In consultation with the Independent Professional Team, the EAP believes the following:

- Within the Layout Development footprint, envelope, the preferred layout was designed comprising of preferred development areas for the PV modules and preferred development areas of the associated infrastructure which is located on the most preferred and acceptable areas as indicated by the professional team and as guided by the Landowners's consent use on his land.
- It is reasonable to assess that the preferred layout (Facility Layout 1), which consists of development areas areas that exclude sensitive environmental areas for the PV modules and the associated infrastructure are the most feasible alternative for the site.

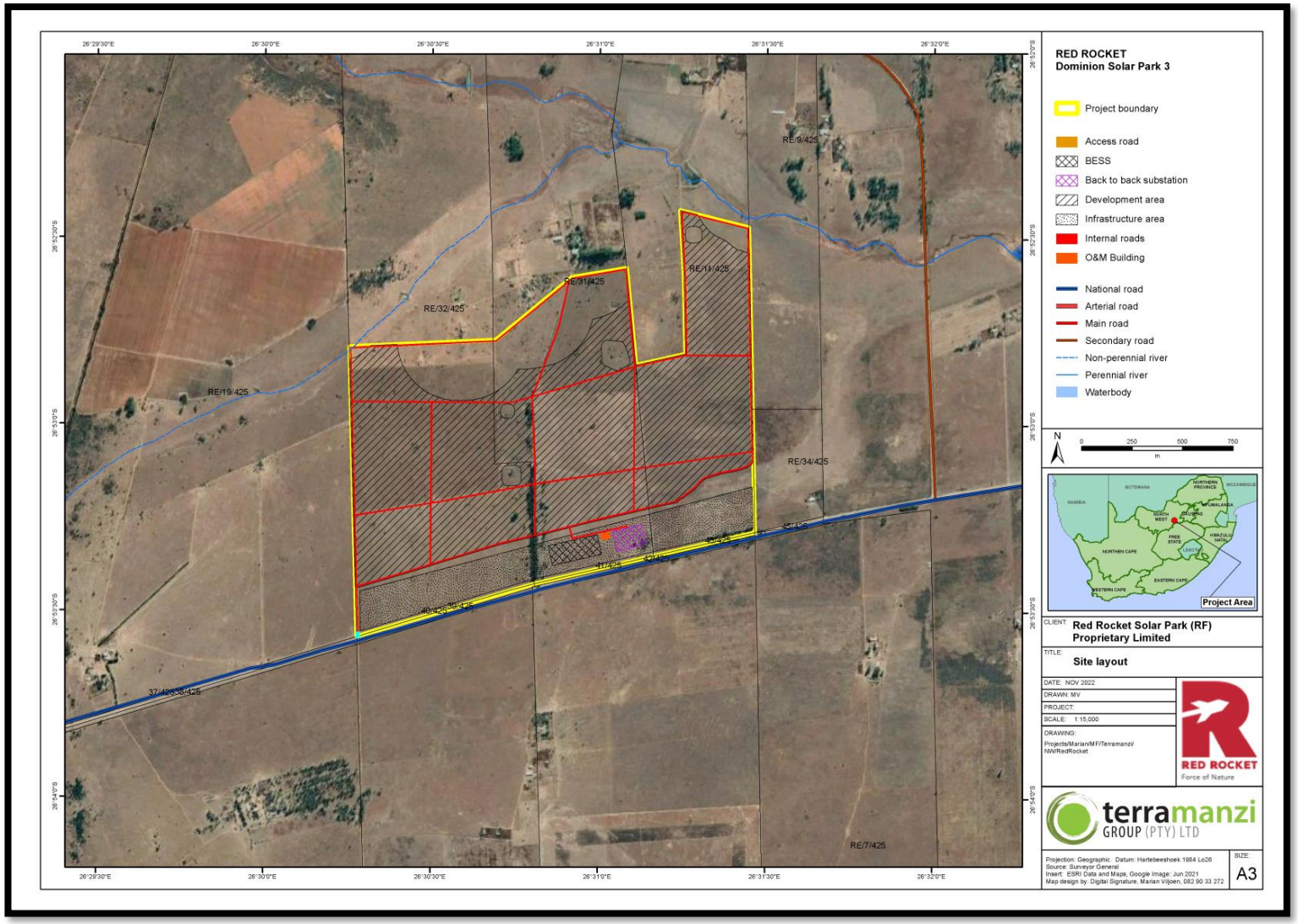

Figure 9.1: This shows the Preferred Facility Layout 1 (Preferred Alternative) which has been assessed within this Basic Assessment Report

10 SITE MATRIX BASED ON SENSITIVE AREAS ON SITE

In accordance with ***Appendix 1 Regulation 3(h) (ix); of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended)****:*

3(h) ix *– the outcome of the site matrix*

In terms of Regulation 3 (h) and (ix) of GNR 326 as amended in of the NEMA EIA Regulations (2014, as amended) Appendix 1, a matrix is required to form part of this Basic Assessment Report.

Terms of Reference:

- Specialists were requested to provide a site matrix based on the requirements of Appendix 1 Regulation 3(h) (ix); of GN No. R. 326 of the NEMA EIA Regulations (2014 as amended);
- The site maps were consolidated by a GIS specialist and presented as an overall site matrix, which is presented below

Description of the areas

- **Developable** in this Report means areas that do not have any development constraints
- **Acceptable** in this Report means areas that have some development constraints and that the development in these areas can proceed, however, the specialist's recommended mitigation measures must be adhered to by the Applicant.
- **Not preferred** in this Report means areas, which are unfavourable for the development and are fatally flawed and cannot be developed.

The following sensitivity categorisation has been developed for this Report and sensitivity mapping matrix:

Developable Area	Acceptable Area	Not Preferred Area

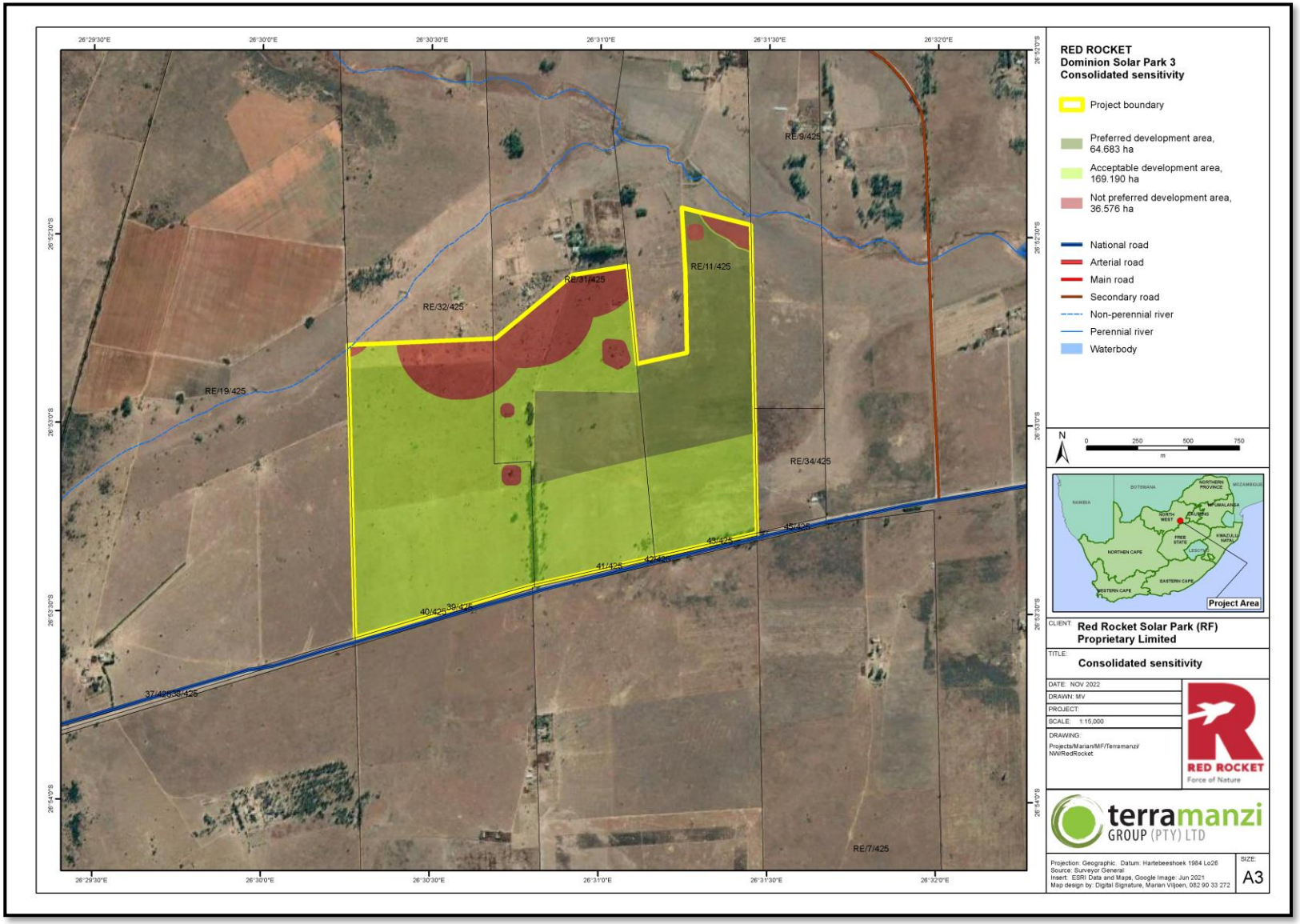

Figure 10.1: This figure summarises the overall sensitivity matrix for the site (image courtesy of Deplane Urban and Regional Planning)

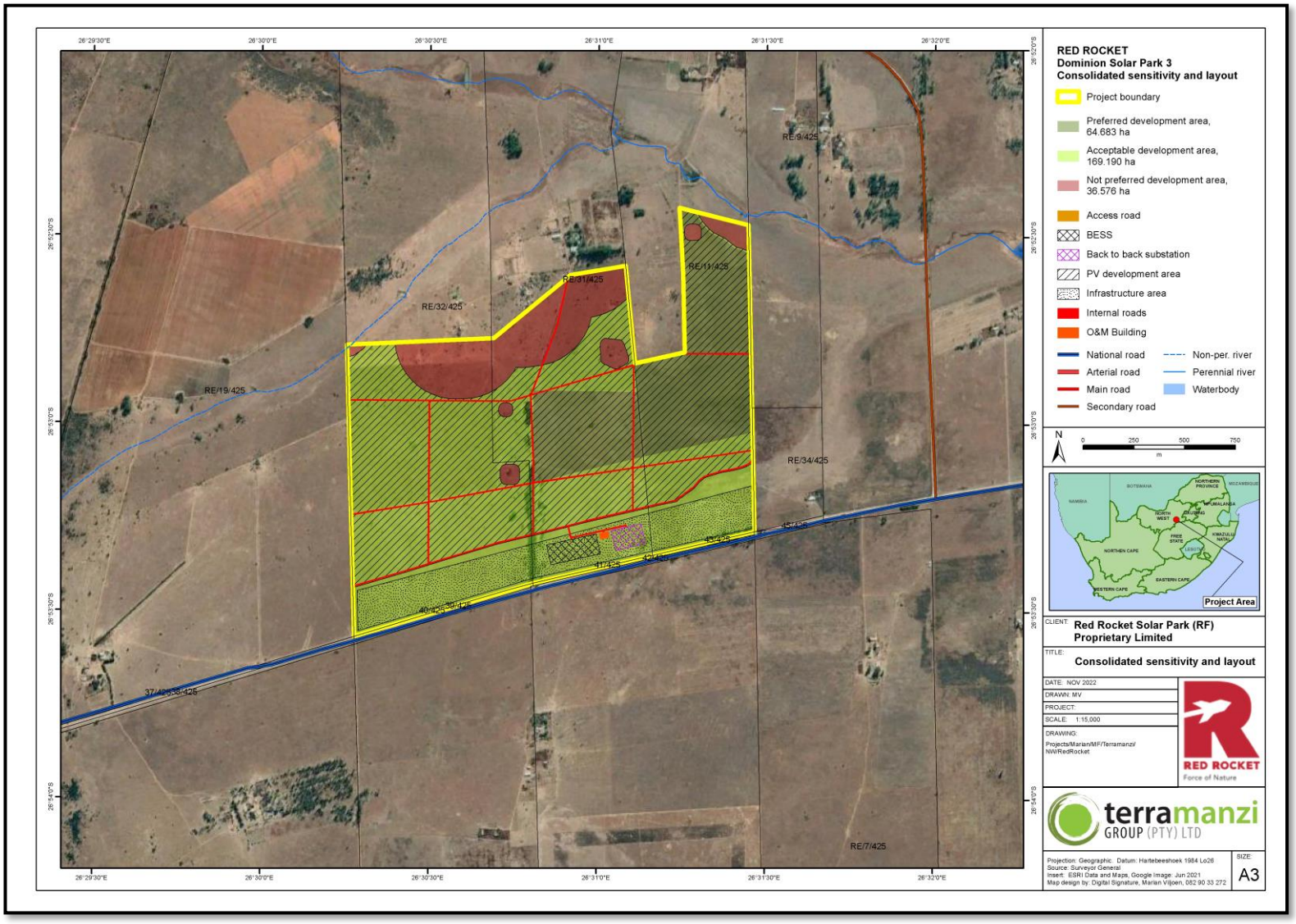

Figure 10.1: This figure summarises the overall sensitivity matrix for the site with the proposed Layout of Dominion 3 Solar Park

The BA Level Impact Assessment below, has comparatively assessed the preferred alternative against the No-Go Alternative, which is the status quo for the site.

11 METHODOLOGY FOR ASSESSMENT OF POTENTIAL IMPACTS

*In accordance with **Appendix 1 Regulation 3(h) (vi) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**):*

> ***3(h) vi** – The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives,*

The assessment of the potential impacts has been based on extensive experience related to environmental impact assessment as well as informed by specialist assessments and inputs, where applicable on the basis of professional judgement.

In this BAR, the types of potential impacts (direct, indirect, and cumulative) have been considered along with the nature and magnitude (severe, moderate, and low), extent and location of the potential impacts.

A prediction has been made of the timing (construction, operation or decommissioning phase) and duration (short, long term, intermittent or continuous) of the potential impact. A prediction has also been made of the likelihood or probability of impacts occurring and an estimation of the significance of the potential impact (local, regional or global scale).

Mitigation measures have been identified that are required to be implemented to lessen the potential impacts to acceptable levels and an evaluation of the predicted significance of residual impacts after mitigation is put into place, has been made. The assessment of the potential impacts will be carried out in a methodology that has been adapted from best practice guidelines disseminated from the Competent Authority.

These impacts have been identified based on the following:

- Inspection of the site and surroundings (current environmental conditions).
- Discussions with members of the project team.
- Discussions with relevant authorities.
- Previous investigations in the area.
- Independent specialist studies.
- Determining future changes to the environment as a result of the proposed activity.

Table 11.1: Definition of terminology

ITEM	DEFINITION
EXTENT	
Local	Extending only as far as the boundaries of the activity, limited to the site and its immediate surroundings
Regional	Impact on the broader region
National	Will have an impact on a national scale or across international borders
DURATION	
Short-term	0-5 years
Medium-Term	5-15 years
Long-Term	>15 years, where the impact will cease after the operational life of the activity
Permanent	Where mitigation, either by natural process or human intervention, will not occur in such a way or in such a time span that the impact can be considered transient.
MAGNITUDE OR INTENSITY	
Low	Where the receiving natural, cultural or social function/environment is negligibly affected or where the impact is so low that remedial action is not required.
Medium	Where the affected environment is altered, but not severely and the impact can be mitigated successfully and natural, cultural or social functions and processes can continue, albeit in a modified way.
High	Where natural, cultural or social functions or processes are substantially altered to a very large degree. If a negative impact then this could lead to unacceptable consequences for the cultural and/or social functions and/or irreplaceable loss of biodiversity to the extent that natural, cultural or social functions could temporarily or permanently cease.
PROBABILITY	
Improbable	Where the possibility of the impact materialising is very low, either because of design or historic experience
Probable	Where there is a distinct possibility that the impact will occur
Highly Probable	Where it is most likely that the impact will occur
Definite	Where the impact will undoubtedly occur, regardless of any prevention measures
SIGNIFICANCE	
Low	Where a potential impact will have a negligible effect on natural, cultural or social environments and the effect on the decision is negligible. This will not require special design considerations for the project
Medium	Where it would have, or there would be a moderate risk to natural, cultural or social environments and should influence the decision. The project will require modification or mitigation measures to be included in the design
High	Where it would have, or there would be a high risk of, a large effect on natural, cultural or social environments. These impacts should have a major influence on decision making.
Very High	Where it would have, or there would be a high risk of, an irreversible negative impact on biodiversity and irreplaceable loss of natural capital that could result in the project being environmentally unacceptable, even with mitigation.

	Alternatively, it could lead to a major positive effect. Impacts of this nature must be a central factor in decision making.
STATUS OF IMPACT	
Whether the impact is positive (a benefit), negative (a cost) or neutral (status quo maintained)	
DEGREE OF CONFIDENCE IN PREDICTIONS	
The degree of confidence in the predictions is based on the availability of information and specialist knowledge (e.g. low, medium or high)	
MITIGATION	
Mechanisms used to control, minimise and or eliminate negative impacts on the environment and to enhance project benefits Mitigation measures should be considered in terms of the following hierarchy: (1) avoidance, (2) minimisation, (3) restoration and (4) off-sets.	

To comparatively rank the impacts, each impact has been assigned a score using the scoring system outlined in Table 4 below. This scoring system allows for a comparative, accountable assessment of the indicative cumulative positive or negative impacts of each aspect assessed. A summary of the various impact scores is presented in Table 11.2 below to allow for easy reference and comparison of the various alternatives scoring.

Table 11.2: Scoring System for Impact Assessment Ratings

IMPACT PARAMETER	SCORE	
Extent (A)	**Rating**	
Local	1	
Regional	2	
National	3	
Duration (B)	**Rating**	
Short term	1	
Medium Term	2	
Long Term	3	
Permanent	4	
Probability (C)	**Rating**	
Improbable	1	
Probable	2	
Highly Probable	3	
Definite	4	
IMPACT PARAMETER	**NEGATIVE IMPACT SCORE**	**POSITIVE IMPACT SCORE**
Magnitude/Intensity (D)	**Rating**	**Rating**
Low	-1	1
Medium	-2	2
High	-3	3
SIGNIFICANCE RATING (F) = (A*B*D)*C	**Rating**	**Rating**
Low	0 to - 40	0 to 40
Medium	- 41 to - 80	41 to 80

High	- 81 to - 120	81 to 120
Very High	> - 120	> 120

The above significance bands have been determined through calculating a maximum potential score of 156 (e.g. positive or negative) using the above methodology. This was then subdivided into broad bands as indicated above to provide a comparative assessment of all impacts in relation to the maximum possible significance score. The overall status of the impact (after mitigation) for the preferred

12 POTENTIAL IMPACTS ASSOCIATED WITH THE ACTIVITY

In accordance with ***Appendix 1 Regulation 3(h)(vii and viii) and Regulation 3 (i) and (j)of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended****):*

> ***3(h) vii*** *– Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects*
>
> ***3(h) viii*** *– The possible mitigation measures that could be applied and level of residual risk,*

Regulation 3(i) *- A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-*

> ***3(i) (i)*** *– A description of all environmental issues and risks that were identified during the environmental impact assessment process; and*
>
> ***3(i) (ii)*** *– An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures*

Regulation 3 (j) *– An assessment of each identified potentially significant impact and risk, including*

> ***3(j) (i)*** *– Cumulative impacts;*
>
> ***3(j) (ii)*** *– The nature, significance, and consequences of the impact and risk*
>
> ***3(j) (iii)*** *– The extent and duration of the impact and risk*
>
> ***3(j) (iv)*** *– The probability of the impact and risk occurring*
>
> ***3(j) (v)*** *– The degree to which the impact and risk can be reversed*
>
> ***3(j) (vi)*** *– The degree to which the impact and risk may cause irreplaceable loss of resources; and*
>
> ***3(j) (vii)*** *- -The degree to which the impact and risk can be mitigated*

The intention of this chapter is to raise awareness about **potential** impacts that are evident through the establishment and operation of the Project and associated infrastructure.

The **potential** impacts listed below have been assessed based on available information and through specialist recommendations, which have provided mitigation measures to ensure that the impacts associated with the activity are mitigation to acceptable levels.

Potential environmental impacts and issues that may be associated with the construction, operational and decommissioning phases of the proposed project and a summary of these have been identified and are listed below. Further please refer to the Figure below for a lifecycle depiction of the Project. The applicability and degree and extent of these impacts are anticipated to vary depending on the lifecycle stage of the development.

As part of this Environmental Permitting Process, an EMPr will be compiled for the various project life cycle stages to ensure that these impacts are minimised and/or eliminated where feasible.

Anticipated Project Life Cycle Phases:

12.1 POTENTIAL CONSTRUCTION / DECOMMISSIONING IMPACTS:

Based on the information assessed within this BAR the following construction and decommissioning impacts are likely to be prevalent during the construction and/or decommissioning phase of the Project.

The Preferred Alternative will be comparatively assessed against the No-Go Alternative as this is the most feasible and reasonable alternative, in terms of the impacts assessed by the professional team, taking into account all necessary mitigation measures, which ensure the least impact on the environment.

The potential construction and decommissioning impacts, have been assessed and all mitigation measures pertaining to the impacts identified, are detailed in the EMPr, which is attached for ease of reference as Appendix D.

In addition, the potential impacts have been assessed in terms of the required criteria, which requires the assessment of *"positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects".*

12.1.1 Agricultural Impacts

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.1.1 *Agricultural Impact 1 – Soil Erosion*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact Nature - Soil Erosion**		**STATUS**	**NEGATIVE**
Impact Description	The proposed development footprint is located on a moderately sloping terrain, which increases the erosion hazard. While the identified soils display a moderate susceptibility to erosion under current conditions, their susceptibility to erosion is likely to increase once the land is cleared for construction activities, and the soils will inevitably be exposed to wind and stormwater.			
Impact Source(s)	• Site clearing, removal of vegetation, and associated disturbances to soils, leading to, increased runoff, erosion and consequent loss of land capability in cleared areas. • Potential frequent movement of earth moving machinery within lose and exposed soils, leading to excessive erosion			
Receptor(s)	Soil, Land use and Land Capability Assessment			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated			

	agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.
CONFIDENCE	Low
MITIGATION MEASURES	As described in section 19 of this report

12.1.1.2 *Agricultural Impact 2 – Soil Compaction*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact Nature - Soil Compaction**		**STATUS**	**NEGATIVE**
Impact Description	Heavy equipment traffic during construction and activities is anticipated to cause soil compaction. The severity of this impact is anticipated to be moderately high for most soils under cultivation and moderately low for soils characterised by the presence of rocky outcrops			
Impact Source(s)	• Site clearing, removal of vegetation, and associated disturbances to soils, leading to, increased runoff, soil compaction and consequent loss of land capability in cleared areas. • Potential frequent movement of construction machinery within the project footprint, leading to excessive soil compaction.			
Receptor(s)	Soil, Land use and Land Capability Assessment			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural			

	productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.
CONFIDENCE	Low
MITIGATION MEASURES	As described in section 19 of this report

12.1.1.3 *Agricultural Impact 3 – Potential Soil Contamination*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact Nature - Soil Contamination**		**STATUS**	**NEGATIVE**
Impact Description	Contamination sources are mostly unpredictable and often occur as incidental spills or leaks during both the construction and operational phase. Thus, all the identified soils are considered equally predisposed to potential contamination. The significance of soil contamination is considered to be medium for all identified soils without mitigation, largely depending on the nature, volume and/or concentration of the contaminant of concern as well as the rate at which contaminants are transported by water in the soil.			
Impact Source(s)	• Spillage of petroleum hydrocarbons during construction of associated infrastructure • Potential disposal of hazardous and non-hazardous waste, including waste material spills and refuse deposits into the soil.			
Receptor(s)	Soil, Land use and Land Capability Assessment			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-27**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**

CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.
CONFIDENCE	Low
MITIGATION MEASURES	As described in section 19 of this report

12.1.1.4 *Agricultural Impact 4 – Loss of Agricultural Land Capability*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact Nature - Loss of Agricultural Land Capability**		**STATUS**	**NEGATIVE**
Impact Description	The study area is largely characterised by soils of restricted potential due to the shallow nature of the soils mixed intimately with rocky material and the high clay content. Also, considering the climatic conditions of the area with limited rainfall and the absence of any irrigation scheme this renders the study area not suitable for any large-scale agricultural cultivation and have little bearing on agricultural productivity, with limited contribution to the regional and provincial as well as national food production			
Impact Source(s)	• Land Capability Agriculture and Grazing environments changed • The Low impact with mitigation measures takes in to account the recommendation that the possibility for any agricultural activity concurrently with solar generation was investigated			
Receptor(s)	Soil, Land use and Land Capability Assessment			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
	Preferred Alternative:	-3	Preferred Alternative:	-2

INTENSITY OR MAGNITUDE (D)	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-27**	Preferred Alternative:	**-8**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.			
CONFIDENCE	Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.1.2 Terrestrial Impacts (Floral)

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.2.1 *Terrestrial Impact 1 – Impact on Habitat and Diversity*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Secondary Grassland, Transformed habitat, wet response habitat and south eastern wetland habitat, wetland habitat (north-western UCVB and north-eastern seep) Vachellia erioloba Veld. Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Habitat and Diversity**	**STATUS**	**NEGATIVE**
Impact Description	The direct impact of the Dominion 3 Solar Park's activities on the floral ecology is not anticipated to result in significant or residual impacts to floral ecology. Without mitigation measures implemented, the impact significance varies from low (planning and operational and maintenance phases) for the Degraded Grassland and the Secondary Grassland. For the Vachellia erioloba Veld, the impact significance medium-low (operational and maintenance phases). For the Transformed Habitat, Wet-response Habitat and south-eastern Wetland Habitat, the impact significance remains low for all phases. For the Wetland Habitat (north-western UCVB and north-eastern seep), the impact significance medium-low (edge effect impacts during construction and operation and maintenance phases). With mitigation measures adequately implemented, impact significance can be reduced for all habitat units. The impact significance can be reduced to low (operational and maintenance phase) levels for		

	the Degraded Grassland. The impact significance can be reduced to very low (operational and maintenance phase) levels for the Secondary Grassland, whereas for the Transformed Habitat, the impact significance can be reduced to very low levels for all phases of the project. For the Vachellia erioloba Veld, the impact significance can be reduced low (operational and maintenance phase) levels. Impact significance for the Wet-response Habitat and south-eastern Wetland Habitat can be reduced to very low (planning and operational and maintenance phases) levels with mitigation measures implemented. For the Wetland Habitat (north-western UCVB and north-eastern seep), the impact significance can be reduced to very low (planning phase phase), and low levels (edge effect impacts anticipated during the construction and operational and maintenance phases).			
Impact Source(s)	Direct impacts through clearance of vegetation will result in the loss of approximately 239 ha of vegetation. Of this, approximately 112 ha will be clearance of moderately low (Degraded, Secondary Grassland, and Wet-response Habitat) and low sensitivity habitat (Transformed Habitat), and 114 ha of intermediate sensitivity habitat (Vachellia erioloba Veld). No direct loss of Wetland Habitat (of moderately high sensitivity) will take place with the proposed layout.			
Receptor(s)	Floral habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	AIPs are reported to be one of the greatest threats to biodiversity and are closely associated with disturbance; these species are able to colonise disturbed areas rapidly. Several sections of Dominion 3 Solar Park are already associated with AIP proliferation and bush encroachment (i.e., Seriphium plumosum encroachment) and, if not controlled, these species can continue to spread across the landscape, resulting in a cumulative loss of indigenous floral species and potential permanent displacement of protected species and their habitat. The spread and encroachment of Seriphium plumosum, specifically is of concern as the densification of these species in the landscape results from intense grazing pressures, which may result in an increase in encroachment within the land adjacent to Dominion 3 Solar Park, as domestic species would need to be moved to new grazing lands. Grasslands are particularly sensitive to Seriphium plumosum encroachment.			
CONFIDENCE	Medium Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.1.2.1 *Terrestrial Impact 2 – Impact on Floral SCC*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Rocky Grassland, Secondary Grassland, Wetland Habitat and Transformed habitat). Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Floral SCC**		**STATUS**	**NEGATIVE**
Impact Description	The direct impact of the Dominion 3 Solar Park's activities on the floral SCCs is not anticipated to result in the loss of significant SCCs, given that a walkdown of the site takes place and measures taken to rescue potentially occurring VU species (nationally and provincially protected species are not likely to result in significant loss to population dynamics). Without mitigation measures implemented, the impact significance low (construction phase and operational and maintenance phase) for the Degraded Grassland. Impact significance varies between medium-low (planning and operational and maintenance phases) for the Vachellia erioloba Veld and the Wetland Habitat (north-western UCVB and north-eastern seep). For the Transformed Habitat, Wet-response Habitat and south-eastern Wetland Habitat, the impact significance remains very low throughout all phases. For the Secondary Grassland, impact significance remains low throughout all project phases. With mitigation measures adequately implemented, impact significance can be reduced for all habitat units. The impact significance can be reduced to very low (construction and operational and maintenance phases) levels for the Degraded Grassland. For the Vachellia erioloba Veld and and the Wetland Habitat (north-western UCVB and north-eastern seep), the impact significance can be reduced to low (planning and operational and maintenance phases). For the Secondary Grassland, Transformed Habitat, Wet-response Habitat and south-eastern Wetland Habitat, impact significance can be reduced to very low levels for all project phases.			
Impact Source(s)	Significant loss of protected flora is anticipated, i.e., no TNCO-species were recorded on site and those anticipated to be present are common and widespread species. Moreover, NFA-tree species were present in low abundances and seedlings and/or propagules should be harvested to attempt replacement within the section of Vachellia erioloba Veld where no development is planned. Potentially occurring VU species should be confirmed with a floral walkdown prior to the project kicking-off. The proposed activities can attempt to avoid destruction of floral SCC through footprint walkdowns and planning of a rescue and relocation plan (where feasible).			
Receptor(s)	Floral habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1

INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-18**	Preferred Alternative:	**-8**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The proposed project could further impact on the floral habitat and diversity as well as floral SCC through fragmentation of habitat within the landscape. That being said, the landscape surrounding Dominion 3 Solar Park is already significantly fragmented and much thereof either is actively cultivated or has been in the past. The cumulative impact from additional fragmentation to the landscape is not anticipated to be significant in the long-term.			
CONFIDENCE	Low			
MITIGATION MEASURES	• The relocation success of floral SCC or protected floral species (where applicable) must be monitored during the construction phase to ensure immediate actions can be taken if it becomes evident that relocation is not successful; • No collection of floral SCC must be allowed by construction personnel; and • Edge effect control needs to be implemented to prevent further degradation and potential loss of floral SCC or protected floral species outside of the proposed development footprint area.			

12.1.3 Terrestrial Impacts (Fauna)

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.3.1 *Terrestrial Impact 1 – Impact on Habitat and Diversity*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Rocky Grassland, Secondary Grassland, Wetland Habitat and Anthropogenic Landscape) Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Habitat and Diversity**	**STATUS**	**NEGATIVE**
Impact Description	Medium high impacts to the Vachellia erioloba Veld and Secondary Grassland habitat are anticipated without mitigation as a result of the scale of vegetation that will be removed and the resultant loss of faunal habitat. Leading to a reduction in faunal opportunities for shelter and forage and higher competition for resources within the remaining assemblage of fauna. Currently the project areas supports a modest variety of faunal classes, and although mostly common herbivorous species are anticipated to utilise the project boundary on a permanent basis, 5 SCC do occur within the project boundary and habitat for these species will be reduced. Large predators are absent while mesopredators will intermittently pass through while foraging.		
Impact Source(s)	The proposed development activities within the project areas will reduce the current levels of diversity within the faunal community and will lead to the local reductions in faunal abundances, especially for faunal classes with poor dispersal abilities, such as terrestrial invertebrates and herpetofauna. Impacts to the more sensitive Vachellia erioloba Veld Habitat will likely be responsible		

	for a reduction in diversity within the project areas as this provides the highest diversity of flora and opportunities for faunal species with a unique rockier nature.			
Receptor(s)	Faunal habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The most prominent threat to the faunal ecology within the project areas is the scale of the development without the consideration of faunal corridors to maintain faunal movement. Increased human presence and activity in the area, during construction and once the development is operational, could potentially lead to general disturbance, illegal harvesting and persecution of fauna in or adjacent to the project areas. There is also an increased risk of fire frequency, which could negatively impact faunal communities outside the development footprint. Littering and dumping of other waste material in sensitive areas within or surrounding the project areas, is another cumulative impact that could increase substantially over the operations of the development.			
CONFIDENCE	Medium Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.1.3.2 *Terrestrial Impact 2 – Impact on Fauna SCC*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Rocky Grassland, Secondary Grassland, Wetland Habitat and Anthropogenic Landscape) Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Fauna SCC**	**STATUS**	**NEGATIVE**
Impact Description	All habitat units, except the Anthropogenic Habitat, have the potential to be utilised from a faunal SCC perspective, however, for the most part the habitats are not considered ideal habitat for Orycteropus afer (Aardvark) and Pyxicephalus adspersus (Giant African Bullfrog). Opistophthalmus pugnax (Pugnacious Burrower), Harpactira hamiltoni and Opistophthalmusc arinatus (Radiant		

	Burrower) do potentially have habitat suitable for breeding within the Grassland Habitats, notably the Rocky Grassland. Medium high impacts from the development are therefore without mitigation as the proposed PV footprint encroaches on habitats known to support faunal SCC. Species with reduced mobility such as arachnids and amphibians are at increased risk of mortality and habitat loss resulting in fragmentation in the landscape. As such, a faunal corridor should be planned within the designs of Dominion 3 Solar Park			
Impact Source(s)	Prior to vegetation clearing activities, the site should be inspected for the presence of SCC, including burrowing scorpion and baboon spider burrows as well as the burrows of Orycteropus afer (Aardvark). If located, these species should be carefully rescued and relocated as per an approved rescue and relocation plan that must be developed. Permits are to be obtained from DFFE and North West Department: Economic Development, Environment, Conservation and Tourism (NWDEDECT) prior to the relocation of any faunal SCC.			
Receptor(s)	Fauna habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The proposed activities will lead to the loss of faunal habitat within the development footprints and to a reduction in the abundance of fauna and a potential for local reductions in SCC presence. This will lead to the displacement of faunal species currently inhabiting these areas, driving them out into the surrounding vegetated areas, leading to increased competition for territories and breeding sites. Moreover, there is likely to be a knock-on dispersal effect, leading to increased resource competition and possible increased mortality rates as the carrying capacity is impacted, resulting in a decreased species abundance, decreased breeding potential and possible further loss of species diversity.			
CONFIDENCE	Medium Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.1.4 Avifaunal Impacts

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.4.1 *Avifaunal Impact 1 – Direct loss of avifaunal habitat*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Direct loss of avifaunal habitat**		**STATUS**	**NEGATIVE**
Impact Description	Clearing of natural vegetation for the construction and establishment of the solar PV and associated infrastructure will result in the loss, degradation and fragmentation of habitat for avifauna. Loss of breeding habitat for SCC or the loss of habitat for important bird congregations are typically the main concern. However, the Combined Project Area does not support any resident and / or breeding populations of any threatened avifauna SCC nor is likely to support any globally, nationally or regionally important congregations of waterfowl and / or migratory species.			
Impact Source(s)	Site clearing and preparation.			
Receptor(s)	Primarily widespread and adaptable, non-SCC avifauna.			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	Regional (2)	Preferred Alternative:	Local (1)
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	Permanent (4)	Preferred Alternative:	Long-term (3)
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	Highly Probable (3)	Preferred Alternative:	Probable (2)
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	High (-3)	Preferred Alternative:	Medium (-2)
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**Medium (-72)**	Preferred Alternative:	**Low (-12)**
	No-Go Alternative:		No-Go Alternative:	
CUMULATIVE IMPACTS	Considering that only Low to medium SEI habitat occupied by non-SCC avifauna will be lost it is unlikely that this and other developments of this nature, in similar habitats within this REDZ zone, are likely to impact on regional avifauna assemblages to any appreciable level.			
CONFIDENCE	High			
MITIGATION MEASURES	• Use the SEI spatial layers to appropriately position all surface infrastructure so as to minimise loss of Medium sensitivity avifaunal habitat and avoid encroaching on wetlands and their prescribed buffers.			

	• Demarcate such areas on the ground during construction and sign post them as environmentally sensitive areas keep out. • Ensure that the BESS and non-solar panel infrastructure occur in Low SEI portions of the project area. • Rehabilitate all areas that may have been disturbed immediately after construction. • Prioritise existing roads for access routes. • Develop and implement an Alien and Invasive Plant Control Plan.

12.1.4.2 *Avifaunal Impact 2 – Sensory disturbance*

IMPACT NATURE	**Sensory disturbance**		**STATUS**	**NEGATIVE**
Impact Description	Sensory disturbances to avifauna are inevitable, but are unlikely to negatively impact upon nesting SCC and is mainly likely to be restricted to the construction phase. Although dust, noise and human activity during construction is unavoidable, much can be done to reduce the effect of these sensory disturbance impacts on avifauna. During operation, the residual impacts associated with sensory disturbance should be negligible.			
Impact Source(s)	Machinery, influx of people, noise, dust, light.			
Receptor(s)	All avifauna, particularly large terrestrial birds and raptors			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	Regional (2)	Preferred Alternative:	Local (1)
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	Long-term (3)	Preferred Alternative:	Long-term (3)
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	Highly Probable (3)	Preferred Alternative:	Probable (2)
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	Medium (-2)	Preferred Alternative:	Low (-1)
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**Low (-36)**	Preferred Alternative:	**Low (-6)**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Disturbances to birds from the construction of solar PV farms in the region is likely to be short lived and very occasional and therefore unlikely to represent a significant cumulative impact			

CONFIDENCE	High
MITIGATION MEASURES	• Adopt temporal avoidance strategies. Attempt, as far as possible to conduct the majority of the high intensity earthmoving and building activities during winter (June to September) to minimize disturbance of avifauna during sensitive life stages such as lekking, courting, nesting and fledging. • Minimise light pollution and fit external lighting with downward facing hoods. • Demarcate natural areas beyond the surface infrastructure footprint and restrict access of personnel into these areas through education and signposting. • Train staff and contractors on the importance of birds and other biodiversity and the sensitive areas for these species which should be avoided. • Introduce and enforce a speed limit (40 km/h)

12.1.5 Freshwater Impacts

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.5.1 *Freshwater Impact 1 – Freshwater Ecosystems – Site clearing*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Freshwater Ecosystems**		**STATUS**	**NEGATIVE**
Impact Description	• Compaction of soil due to the movement of heavy machinery; • Reduced vegetation cover; • Alteration of runoff patterns; • Smothering of vegetation as a result of increased sediment leading to altered habitat; • Disturbance of soil leading to increased AIP proliferation; • Potential soil and stormwater contamination from oils as well as hydrocarbons from construction machinery.			
Impact Source(s)	• Site clearing and set-up of contractor camps prior to commencement of construction activities outside the delineated extent of the freshwater ecosystems and associated the 24m construction phase buffer. Removal and clearing of all terrestrial vegetation leading to exposure and associated disturbances to soil; • Exposure of soil and increased likelihood of dust generation; • Increased likelihood of sedimentation and erosion of the freshwater ecosystems •Creation of access roads to facilitate contractor laydown areas and subsequent construction activities; and • Laydown of construction offices and ablution facilities.			
Receptor(s)	Identified Freshwater Ecosystems			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**

EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-24**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	No cumulative impacts are anticipated from the project and other known projects in the area which are of unacceptably high significance.			
CONFIDENCE	Medium			
MITIGATION MEASURES	• The proposed Dominion 3 Solar Park and all associated infrastructure has been acceptably designed to best avoid the identified freshwater ecosystems and associated 24 m construction and operational phase buffer, which is deemed the minimum mitigation measure to minimise potential impacts on the freshwater ecosystems. However, for the manual adjustment to be implemented to define this risk as low and to allow authorisation by means of a confirmation of General Authorisation in terms of the requirement of Regulation GN509 of 2016, it was deemed necessary to increase the development setback from the freshwater ecosystems to 32m. This is deemed necessary to best ensure increased protection from the risk of the potential increase in sedimentation and erosion from the removal and clearing of natural terrestrial vegetation in close proximity to the freshwater ecosystems. This is deemed particularly pertinent since bi-facial solar panel technology is being proposed; • Access to the construction site must be via existing access roads wherever possible. In the event that the creation of any additional access roads are required to facilitate construction, they must ensure that they take into account and avoid the delineated boundaries of the freshwater ecosystems and associated 24m construction phase buffer; • Vegetation clearing must be restricted to the approved development footprint, done in a phased manner as the development of the proposed Dominion 3 Solar Park progresses and, as much indigenous vegetation as possible is to be retained; • Dust suppression techniques must be implemented to prevent smothering of freshwater vegetation; • Protect exposed soil/ soil stockpiles by means of a geotextile fabric such as hessian sheeting; • Drifts fences/silt curtains must be placed along the 24 m or 32 m construction and operational phase buffers (whichever is decided upon) to mitigate against potential sediment deposition and erosion control; • Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the delineated watercourses and applicable development exclusion buffer area; • The freshwater ecosystems and associated 24m construction and operational phase buffers, outside of the construction areas in which no proposed activities will occur, should be clearly demarcated by an ECO and marked as a no-go area; and • Construction footprint areas to remain within the authorised footprint and vegetation clearing to be limited to what is absolutely essential within that footprint.			

12.1.5.2 *Freshwater Impact 2 – Freshwater Ecosystems – Installation of Solar Panels*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Freshwater Ecosystems – Installation of Solar Panels**		**STATUS**	**NEGATIVE**
Impact Description	• Excavations and hardened surfaces, resulting in impacts on hydrology and sediment balance; • Removal of vegetation in close proximity to the freshwater ecosystems, but outside the 24 m construction phase buffer; • Altered runoff patterns as a result of excavation and hardened surfaces, potentially leading to increased erosion and sedimentation thereof; • Disturbances of soil, leading to increased AIP proliferation and potentially altered freshwater habitat; and • Potential for deteriorated water quality, including increased likelihood of dust generation and turbidity			
Impact Source(s)	• Installation of the solar panels and associated support structures. • Excavation of soil to facilitate foundations for mounting of the Solar panels; • Mixing and casting of concrete for foundations; • Installation of solar panels including mounting of rods into foundations; • Vehicles, construction machinery and personnel movement to facilitate mounting of Solar panels.			
Receptor(s)	Identified Freshwater Ecosystems			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-12**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	No cumulative impacts are anticipated from the project and other known projects in the area which are of unacceptably high significance.			

CONFIDENCE	Low
MITIGATION MEASURES	The following measures are recommended to mitigate against indirect impacts: • During excavation activities, it must be ensured that stockpiles are not higher than 2 m in height and all exposed soil must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation of the receiving freshwater environment. Furthermore, measures should be undertaken to limit the time in which soil is exposed; • Dust suppression measures must be implemented (such as spray watering on gravel access roads) throughout the proposed development activities to prevent excessive dust and suppress the potential for runoff of sediment which may smother vegetation; • With regards to concrete mixing on site: • Concrete and cement-related mortars can be toxic to aquatic life and other biota. Proper handling and disposal is considered imperative to minimize or eliminate discharge into the drainage lines. High alkalinity associated with cement can dramatically affect and contaminate both soil and ground water. The following recommendations must be adhered to: • Fresh concrete and cement mortar must be mixed within the approved development footprint and may not be undertaken on bare soil; • Mixing of concrete is to be strictly undertaken within a lined, bound or bunded portable mixer. Consideration must be given to the use of ready mix concrete; • A batter board or other suitable platform/mixing tray is to be provided onto which any mixed concrete can be deposited whilst it awaits placing; • A washout area should be designated within the approved development footprint and wash water should be treated on-site or discharged to a suitable sanitation system; • Any cement bags must be disposed of in the demarcated hazardous waste receptacles; • Concrete spillage outside of the areas of application must be promptly removed and taken to a suitably licensed waste disposal site. • Excavation of pits for the foundation of solar panels and support structures may result in loose sediments within the landscape, specifically if works are taken during a period

12.1.6 Visual Impacts

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.6.1 *Visual Impact 1: Impact on Landscape Character and Sense of Place*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Landscape Character and Sense of Place**	**STATUS**	**NEGATIVE**
Impact Description	• During the construction phase of the PVSEF, the sense of place will however be affected, shifting the mood to busy and disturbed with construction vehicles and potential need for some earth moving equipment, however, once the panels are operational there will be limited additional vehicular movement in and out of the area, thus returning the area to a calm and tranquil landscape.		

Impact Source(s)	• The sense of place associated with the Dominion 3 Solar Park is related to the landscape character type, described above and even though the Dominion 3 Solar Park is situated directly adjacent to the N12 road, the footprint area itself can be described as calm, tranquil and peaceful, with limited development and movement, with the exception of the shepherds moving with the livestock and large herbivores. The sense of place is however not unique to the Dominion 3 Solar Park as it extends to the larger region.			
Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..			
CONFIDENCE	Medium - High			
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.			

12.1.6.2 *Visual Impact 2: Visual Intrusion and VAC impacts*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Landscape Visual Intrusion and VAC impacts**	**STATUS**	**NEGATIVE**

Impact Description	• The altered visual environment during the construction phase, may lead to moderately high levels of visual intrusion and lead to increased visual contrast, this will however be a temporary visual intrusion and contrast. Furthermore, a visual impact will only be experienced if there are receptors in the area present to experience it, and with the limited potential sensitive receptors present in the area, the proposed visual impact is therefore reduced to moderately low levels.			
Impact Source(s)	• Visual Absorption Capacity (VAC) refers to the inherent ability of a landscape to accommodate change without degeneration of the visual quality and without resulting in an overall change of the identified landscape character type. • Sources / Factors :Vegetation, Soil contrast, Visual variety, topographical diversity, recovery time.			
Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-27**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..			
CONFIDENCE	Moderate – Low			
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.			

12.1.6.3 *Visual Impact 3: Visual Exposure and Visibility Impacts*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Visual Exposure and Visibility Impacts**		**STATUS**	**NEGATIVE**
Impact Description	• Direct visual exposure will take place as a result of infrastructure construction and operations and associated lighting, glaring, an increased amount of human activity within the area and indirectly through fugitive dust generated by construction related activities. In addition to physical infrastructure, impacts from clearing of vegetation, potential erosion as a result of bare soils, maintenance activities and the alteration of local topography will also create contrast in the landscape and may be visible to receptors.			
Impact Source(s)	• This impact relates directly to the perception of sensitive visual receptors towards the proposed project. Potential sensitive visual receptors have been determined to primarily comprise isolated farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users. Direct visual exposure will take place as a result of infrastructure construction and operations and associated lighting, glaring, an increased amount of human activity within the area and indirectly through fugitive dust generated by construction related activities			
Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region The cumulative impact of additional traffic in the area on			

	the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..
CONFIDENCE	Moderate – Low
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.

12.1.6.4 *Visual Impact 4: Impacts due to Night time Lighting*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impacts due to Night time Lighting**		**STATUS**	**NEGATIVE**
Impact Description	• Development of the proposed PVSEF may potentially be a source of light pollution during the construction and operational phases, due to security lighting on the perimeter fence and especially at the buildings (substation, BESS and O&M Buildings). Due to the nature of a PVSEF which would primarily be operational during sunlit (daylight) hours, lighting at night is not a major operational component of such facilities. Possible maintenance activities conducted at night, such as mirror or panel washing or replacement might require vehicle-mounted lights, which could contribute to light pollution.			
Impact Source(s)	• Security lights associated with the BESS, Substation and O&M Buildings may potentially contribute somewhat to the effects of skyglow and artificial lighting in the region. This can, however be easily mitigated by installing security lighting no higher than 5 meters above the ground and through appropriate planning of illumination direction.			
Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-18**	Preferred Alternative:	**-8**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**

CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..
CONFIDENCE	Moderate – Low
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.

12.1.7 Heritage Impacts

Based on the available information and the Heritage Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.7.1 *Heritage Impact 1 – Loss of recent structures*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Loss of heritage structures**		**STATUS**	**NEGATIVE**
Impact Description	Loss of heritage structures (D3-001). The development can result in the permanent loss of the identified recent historic structures			
Impact Source(s)	Site clearing during construction			
Receptor(s)	Identified heritage resources			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
	Preferred Alternative:	-1	Preferred Alternative:	-1

INTENSITY OR MAGNITUDE (D)	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-12**	Preferred Alternative:	**-12**
	No-Go Alternative:	**4**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Due to the low cultural significance of the identified structures the cumulative impact is rated as low			
CONFIDENCE	High			
MITIGATION MEASURES	1. N/A			

12.1.7.1 *Heritage Impact 2 – Loss of Historic structures*

IMPACT NATURE	**Impact – Nature of Impact** **Loss of historic structures**		**STATUS**	**NEGATIVE**
Impact Description	Potential impact on unmarked infant and still born graves (D3-004, D3-005, D3-011 and D3-012. The development can result in the permanent loss unmarked infant and still born graves			
Impact Source(s)	Site clearing during construction			
Receptor(s)	Identified archaeological resources			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-24**	Preferred Alternative:	**-8**
	No-Go Alternative:	**4**	No-Go Alternative:	**4**
CUMULATIVE IMPACTS	The potential cumulative impact due to the impact on burial ground identified in the various Dominion 3 Solar Park can have an elevated impact on the combined projects			
CONFIDENCE	High			

MITIGATION MEASURES	1. Avoid the identified structures with a 30-meter no-go buffer 2. If this is not possible a stakeholder engagement process must be initiated to investigate the possible presence of infant and still born burials for the identified sites 3. If the presence of such burial is confirmed a comprehensive grave relocation process must be implemented and managed by a competent and experienced grave relocation professional.

12.1.7.2 *Heritage Impact 3 – Loss of burial ground*

IMPACT NATURE	**Impact – Nature of Impact** **Loss of burial ground**		**STATUS**	**NEGATIVE**
Impact Description	The development can result in the permanent loss of the identified burial ground at site D3-009 and D3-010			
Impact Source(s)	Site clearing during construction			
Receptor(s)	Identified burial ground			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-72**	Preferred Alternative:	**-12**
	No-Go Alternative:	**4**	No-Go Alternative:	**4**
CUMULATIVE IMPACTS	The potential cumulative impact due to the impact on burial ground identified in the various Dominion 3 Solar Park can have an elevated impact on the combined projects			
CONFIDENCE	High			
MITIGATION MEASURES	All burial grounds and graves should be retained and avoided with a buffer zone of 50m as per SAHRA guidelines. If this is not possible, the graves could be relocated after completion of a detailed grave relocation process, that includes a thorough stakeholder engagement component, adhering to the requirements of s36 of the NHRA and its regulations as well as the National Health Act and its regulations.			

12.1.7.1 *Heritage Impact 4 – Palaeontology*

IMPACT NATURE	**Loss of Fossil Heritage** **Palaeontology**		**STATUS**	**NEGATIVE**
Impact Description	Destruction of fossils			
Impact Source(s)	Direct			
Receptor(s)				
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-16**	Preferred Alternative:	**-8**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Medium			
CONFIDENCE	High			
MITIGATION MEASURES	If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist			

12.1.8 Traffic Impacts

Based on the available information and the Traffic Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.8.1 *Traffic Impact 1 – Transportation activities during construction*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Transportation activities during construction**		**STATUS**	**NEGATIVE**
Impact Description	Impact of transportation activities during construction			
Impact Source(s)	Staff vehicles on roads and access roads			
Receptor(s)	-			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	5	Preferred Alternative:	5
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-5**	Preferred Alternative:	**-5**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	None			
CONFIDENCE	High			

MITIGATION MEASURES	Adherence to OHSA regulations during the construction phase. Encourage environmentally friendly transportation alternatives for construction staff.

12.1.9 Noise Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.9.1 *Noise Impact 1 – Transportation activities during construction*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise from site clearing and grubbing**		**STATUS**	**NEGATIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the construction activities			
Impact Source(s)	Construction vehicles such as graders, rippers, earthmoving equipment, hauling vehicles.			
Receptor(s)	Farm-houses in the vicinity of the Dominion solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	2	No-Go Alternative:	2
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	-2	No-Go Alternative:	-2
	Preferred Alternative:	**-4**	Preferred Alternative:	**-2**

SIGNIFICANCE RATING (F) = (A*B*D)*C	No-Go Alternative:	**-12**	No-Go Alternative:	**-8**
CUMULATIVE IMPACTS	The noise impact during the daytime will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Site clearing and grubbing to take place during daytime only			

12.1.9.1 *Noise Impact 2 – Noise from the construction activities at the PV modules per solar park*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise from the construction activities at the PV modules per solar park**		**STATUS**	**NEGATIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the construction activities			
Impact Source(s)	Construction vehicles such as graders, rippers, earthmoving equipment, hauling vehicles.			
Receptor(s)	Farm-houses in the vicinity of the Dominion solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	2	No-Go Alternative:	2
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	-2	No-Go Alternative:	-2

SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-4**	Preferred Alternative:	**-2**
	No-Go Alternative:	**-12**	No-Go Alternative:	**-8**
CUMULATIVE IMPACTS	The noise impact during the daytime will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Construction activities to take place during daytime only			

12.1.9.1 *Noise Impact 3 – Construction of the infra-structure*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise from the construction activities of the infrastructure such as the BESS, O&M building sub-station and roads**		**STATUS**	**NEGATIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the construction activities			
Impact Source(s)	Construction vehicles such as graders, rippers, earthmoving equipment, hauling vehicles.			
Receptor(s)	Farm-houses in the vicinity of the Dominion solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	2	No-Go Alternative:	2
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
	Preferred Alternative:	-1	Preferred Alternative:	-1

INTENSITY OR MAGNITUDE (D)	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-4**	Preferred Alternative:	**-2**
	No-Go Alternative:	**-12**	No-Go Alternative:	**-8**
CUMULATIVE IMPACTS	The noise impact during the daytime will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Construction activities to take place during daytime only			

12.1.9.1 *Noise Impact 4 – Construction of the roads to and from site*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise from the construction of the roads to and from the sites**	**STATUS**	**NEGATIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the construction activities.		
Impact Source(s)	Construction vehicles such as graders, rippers, earthmoving equipment, hauling vehicles.		
Receptor(s)	Farm-houses in the vicinity of the Dominion solar Cluster		

PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2

INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-8**	Preferred Alternative:	**-8**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the maintenance activities will be below the threshold value of 7.0dBA			
CONFIDENCE	High			
MITIGATION MEASURES	Assessment of the maintenance activities on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA.			

12.1.10 Climate Impact

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.10.1 *Climate Impact 1 – Emissions resulting from construction activities*

Given the nature of construction activities for the roads, buildings, substation and PM modules the negative climate change impacts are considered to be of Low significance without mitigation and Low significance with mitigation

IMPACT NATURE	**Impact – Nature of Impact** **Climate change impacts due to construction activities**		**STATUS**	**NEGATIVE**
Impact Description	Emissions resulting from construction activities			
Impact Source(s)	Mobile sources and electricity usage			
Receptor(s)	N/A			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1

	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-12**	Preferred Alternative:	**-12**
	No-Go Alternative:	**4**	No-Go Alternative:	**4**
CUMULATIVE IMPACTS	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.			
CONFIDENCE	High			
MITIGATION MEASURES	• Construction will be of limited duration. • Develop and implement management programs and procedures.			

Note: (a) The extent of climate change impact is always national or wider and therefore can result in an overly conservative significance, and since the overall consequence and significance are not influenced by the extent, but rather by the intensity of emissions,

12.1.11 Geotechnical Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.11.1 *Geotechnical Impact 1 – Soil erosion*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Geological Impact – soil erosion**	**STATUS**	**NEGATIVE**
Impact Description	Soil erosion, contamination and destabilisation		
Impact Source(s)	Stripping of vegetation during construction Machinery and earth moving plant causing spills contaminating soils		
Receptor(s)	Soil, biota and vegetation		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	1
	No-Go Alternative:	-1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-2**	Preferred Alternative:	**1**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Low			
CONFIDENCE	Medium			
MITIGATION MEASURES	• Do not prolong construction period, and rehabilitate any disturbed areas following completion of construction period, whether complete or on hold. • Only designated laydown areas and access roads, within appropriate locations, should be used. • Where required, during construction, temporary drainage channels should divert surface runoff to appropriate areas. • Appropriately design drainage for infrastructure and roads. • Implement erosion control measures, where appropriate, e.g. erosion control mats. Vehicles should be well maintained, parked over drip trays/hard-surfaced areas, and parked within designated areas.			

12.1.11.2 *Geotechnical Impact 2 – Soil erosion (Decommissioning Phase)*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	Impact – Nature of Impact	STATUS	NEGATIVE

	Geological Impact – soil erosion			
Impact Description	Soil erosion, contamination and destabilisation			
Impact Source(s)	Soil destabilisation and erosion due to infrastructure removal. Spillages from vehicles. Increased siltation within natural water courses due to increased runoff and soil erosion.			
Receptor(s)	Soil, biota and vegetation			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-8**	Preferred Alternative:	**1**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Low			
CONFIDENCE	Medium			
MITIGATION MEASURES	• Vehicles should be well maintained, parked over drip trays/hard-surfaced areas, and parked within designated areas. • Land rehabilitation to near natural state, i.e. removal of foundations and filling of any resultant voids within the soil, as well as removal of hard surfaced areas. Replacement soil should be sourced locally to ensure homogeneity			

12.1.12 Social Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.12.1 *Social Impact 1: Creation of employment and business opportunities*

Based on the available information it is reasonable to suggest that this impact has a low positive impact.

IMPACT NATURE	**Impact – Nature of Impact** **Creation of employment and business opportunities during the construction phase**		**STATUS**	**POSITIVE**
Impact Description	Improved pool of skills and experience in the local area.			
Impact Source(s)	Construction of the facility			
Receptor(s)	Local and Regional communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	2	No-Go Alternative:	2
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	-2	No-Go Alternative:	1-3
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**12**	Preferred Alternative:	**18**
	No-Go Alternative:	**-4**	No-Go Alternative:	**-6**
CUMULATIVE IMPACTS	Opportunity to up-grade and improve skills levels in the area.			
CONFIDENCE	Medium			
MITIGATION MEASURES	See mitigation measures under section 19			

12.1.12.2 *Social Impact 2: Presence of construction workers and potential impacts on family structures and social networks*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Potential impacts on family structures and social networks associated with the presence of construction workers**		**STATUS**	**NEGATIVE**
Impact Description	The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks.			
Impact Source(s)	Construction of the facility			
Receptor(s)	Local and Regional communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
1DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	-2	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-4**	Preferred Alternative:	**-2**
	No-Go Alternative:	**-3**	No-Go Alternative:	**-2**

CUMULATIVE IMPACTS	Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community
CONFIDENCE	low
MITIGATION MEASURES	Yes, to some degree. However, the risk cannot be eliminated

12.1.12.3 *Social Impact 3: Influx of job seekers*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Potential impacts on family structures, social networks and community services associated with the influx of job seekers**		**STATUS**	**NEGATIVE**
Impact Description	Large construction projects tend to attract people to the area in the hope that they will secure a job, even if it is a temporary job. These job seekers can in turn become "economically stranded" in the area or decide to stay on irrespective of finding a job or not. As in the case of construction workers employed on the project, the actual presence of job seekers in the area does not in itself constitute a social impact. However, the manner in which they conduct themselves can impact on the local community			
Impact Source(s)	Construction of the facility			
Receptor(s)	Local and Regional communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
1DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4

PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	2	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-8**	Preferred Alternative:	**-8**
	No-Go Alternative:	**-8**	No-Go Alternative:	**-8**
CUMULATIVE IMPACTS	Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community			
CONFIDENCE	low			
MITIGATION MEASURES	See mitigation measures under section 19			

12.1.12.4 *Social Impact 4: Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Potential risk to safety of scholars, farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site**	**STATUS**	**NEGATIVE**
Impact Description	The presence on and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged. The presence of construction workers on the site over a period of ~ 18-24 months increases the exposure of farming operations and livestock to the outside world also increases the potential risk of stock theft and crime. The farming operations in the area are based on livestock farming (cattle). Stock theft was therefore raised as key concern.		

	The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction on the site workers during the construction phase. Mitigation measures to address these risks are outlined below.			
Impact Source(s)	Construction of the facility			
Receptor(s)	Local and Regional communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
1DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-4**	Preferred Alternative:	**-1**
	No-Go Alternative:	**-1**	No-Go Alternative:	**-1**
CUMULATIVE IMPACTS	No, provided losses are compensated for			
CONFIDENCE	low			
MITIGATION MEASURES	See mitigation measures under section 19			

12.1.12.5 *Social Impact 5: Increased risk of veld fires*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Potential risk to safety of scholars, farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site**		**STATUS**	**NEGATIVE**
Impact Description	The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could, in turn pose, a threat to livestock, crops, wildlife and farm infrastructure. Grass fires were identified as a key concern by the local farmers interviewed and poses a threat to livestock and game farming operations. The potential risk of grass fires is heightened by the windy conditions in the area, specifically during the dry, windy winter months from May to October. In terms of potential mitigation measures the option of constructing a firebreak around the perimeter of the site prior to the commencement of the construction phase should be investigated. In addition, a fire-fighting vehicle should be always present on the site during the construction phase			
Impact Source(s)	Construction of the facility			
Receptor(s)	Local and Regional communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
1DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-4**	Preferred Alternative:	**-1**
	No-Go Alternative:	**-1**	No-Go Alternative:	**-1**
CUMULATIVE IMPACTS	No, provided losses are compensated for			

CONFIDENCE	low
MITIGATION MEASURES	See mitigation measures under section 19

12.1.12.6 *Social Impact 6: Impact of construction activities and vehicles*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Potential noise, dust and safety impacts associated with movement of construction related traffic to and from the site**		**STATUS**	**NEGATIVE**
Impact Description	Construction activities, including the movement of heavy construction vehicles, have the potential to create noise, dust, and safety impacts and damage roads, specifically unsurfaced farm roads. The preparation of the site and associated levelling and clearing of vegetation will expose the soil to wind and result in dust. The dust impacts will be exacerbated during windy periods. Movement of construction vehicles along the N12 may also poses safety risks to other road users.			
Impact Source(s)	Construction of the facility			
Receptor(s)	Local and Regional communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
1DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
	Preferred Alternative:	-2	Preferred Alternative:	-1

INTENSITY OR MAGNITUDE (D)	No-Go Alternative:	-2	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-4**	Preferred Alternative:	**-2**
	No-Go Alternative:	**-1**	No-Go Alternative:	**-1**
CUMULATIVE IMPACTS	If damage to local farm roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were not responsible for the damage. Dust impacts to vineyards could also impact on future contracts.			
CONFIDENCE	low			
MITIGATION MEASURES	See mitigation measures under section 19			

12.1.12.7 *Social Impact 7: Loss Farmland*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the SEF and power lines will damage farmlands and result in a loss of farmlands for grazing.**	**STATUS**	**NEGATIVE**
Impact Description	The activities associated with the construction phase have the potential to result in the loss of land available for farming and grazing. The affected farm owners have entered into lease / purchase agreements with the proponent for the use of the land for the proposed SEFs. The impact on farm income due to the loss of grazing will therefore be offset by the income from the SEFs. The owners of the properties affected by the proposed PV SEFs, Mr Nel and van Vuuren, also indicated that they intended to retire from farming if the projects are approved (Nel, van Vuuren, pers. comm). The impact of the proposed SEFs on the future farming operations will therefore be limited. The final disturbance footprint can also be reduced by careful site design and management of operation. This requires a commitment from the proponent and careful		

	monitoring. The impact on farmland associated with the construction phase can therefore be mitigated by minimising the footprint of the construction related activities and ensuring that disturbed areas are fully rehabilitated on completion of the construction phase. Recommended mitigation measures are outlined below.			
Impact Source(s)	Construction of the facility			
Receptor(s)	Local and Regional communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
1DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-16**	Preferred Alternative:	**-3**
	No-Go Alternative:	**-1**	No-Go Alternative:	**-1**
CUMULATIVE IMPACTS	Overall loss of farmland could affect the livelihoods of the affected farmers, their families, and the workers on the farms and their families. However, disturbed areas can be rehabilitated.			
CONFIDENCE	low			
MITIGATION MEASURES	See mitigation measures under section 19			

12.1.13 State Opportunity Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.1.13.1 *State Opportunity Impact*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Opportunity Loss State Owned Enterprise**		**STATUS**	**POSITIVE**
Impact Description	The project facilitates renewable energy distribution for the country.			
Impact Source(s)	Construction of Dominion 3 Solar Park and associated infrastructure			
Receptor(s)	The immediate site and surrounds			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	4
	No-Go Alternative:	2	No-Go Alternative:	3
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**108**	Preferred Alternative:	**108**
	No-Go Alternative:	**-36**	No-Go Alternative:	**-36**
CUMULATIVE IMPACTS	The Dominion 3 Solar park is expected to have a positive cumulative impact on renewable energy distribution in South Africa.			
CONFIDENCE	High			
MITIGATION MEASURES	None required			

12.2 POTENTIAL OPERATIONAL IMPACTS:

Based on the information assessed within this Basic Assessment Report the following operational impacts are likely to be prevalent during the operational phase of the Project.

The Preferred Alternative will be comparatively assessed against the No-Go Alternative as this is the most feasible and reasonable alternative, in terms of the impacts assessed by the Professional Team, considering all necessary mitigation measures, which ensure the least impact on the environment.

The potential operational impacts, have been assessed and all mitigation measures pertaining to the impacts identified, are detailed in the Environmental Management Programme (EMPr), which is attached for ease of reference as Appendix F.

In furtherance the potential impacts have been assessed in terms of the required criteria which requires the assessment of "positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects".

12.2.1 Agricultural Impacts

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.1.1 *Agricultural Impact 1 – Soil Erosion*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact Nature - Soil Erosion**		**STATUS**	**NEGATIVE**
Impact Description	The proposed development footprint is located on a moderately sloping terrain, which increases the erosion hazard. While the identified soils display a moderate susceptibility to erosion under current conditions, their susceptibility to erosion is likely to increase once the land is cleared for construction activities, and the soils will inevitably be exposed to wind and stormwater.			
Impact Source(s)	• Frequent disturbances of soils, resulting in risk of erosion			
Receptor(s)	Soil, Land use and Land Capability Assessment			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	2

	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-27**	Preferred Alternative:	**-8**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.			
CONFIDENCE	Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.2.1.2 *Agricultural Impact 2 – Soil Compaction*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact Nature - Soil Compaction**		**STATUS**	**NEGATIVE**
Impact Description	Heavy equipment traffic during construction and activities is anticipated to cause soil compaction. The severity of this impact is anticipated to be moderately high for most soils under cultivation and moderately low for soils characterised by the presence of rocky outcrops			
Impact Source(s)	• Disturbances of soils, resulting in risk of compaction.			
Receptor(s)	Soil, Land use and Land Capability Assessment			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1

DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-12**	Preferred Alternative:	**-2**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.			
CONFIDENCE	Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.2.1.3 *Agricultural Impact 3 – Potential Soil Contamination*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact Nature - Soil Contamination**	**STATUS**	**NEGATIVE**
Impact Description	Contamination sources are mostly unpredictable and often occur as incidental spills or leaks during both the construction and operational phase. Thus, all the identified soils are considered equally predisposed to potential contamination. The significance of soil contamination is considered to be medium for all identified soils without mitigation, largely depending on the nature, volume and/or concentration of the contaminant of concern as well as the rate at which contaminants are transported by water in the soil.		
Impact Source(s)	• Leaching of hydrocarbons chemicals into the soils from maintenance equipment, leading to alteration of the soil chemical status as well as contamination of ground water • Potential disposal of hazardous and non-hazardous waste, including waste material spills and refuse deposits into the soil.		
Receptor(s)	Soil, Land use and Land Capability Assessment		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-18**	Preferred Alternative:	**-8**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.			
CONFIDENCE	Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.2.1.4 *Agricultural Impact 4 – Loss of Agricultural Land Capability*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	Impact Nature - Loss of Agricultural Land Capability	STATUS	NEGATIVE
Impact Description	The study area is largely characterised by soils of restricted potential due to the shallow nature of the soils mixed intimately with rocky material and the high clay content. Also, considering the climatic conditions of the area with limited rainfall and the absence of any irrigation scheme this renders the study area not suitable for any large-scale agricultural cultivation and have little bearing on agricultural productivity, with limited contribution to the regional and provincial as well as national food production		

Impact Source(s)	• Land Capability Agriculture and Grazing environments changed • The Low impact with mitigation measures takes in to account the recommendation that the possibility for any agricultural activity concurrently with solar generation was investigated			
Receptor(s)	Soil, Land use and Land Capability Assessment			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-18**	Preferred Alternative:	**-4**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with few to no constraints provided that any development that is to occur will implement site specific mitigation measures.			
CONFIDENCE	Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.2.2 Terrestrial Impacts (Floral)

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.2.1 *Terrestrial Impact 1 – Impact on Habitat and Diversity*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Secondary Grassland, Transformed habitat, wet response habitat and south eastern wetland habitat, wetland habitat (north-western UCVB and north-eastern seep) Vachellia

erioloba Veld. Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Habitat and Diversity**		**STATUS**	**NEGATIVE**
Impact Description	The direct impact of the Dominion 3 Solar Park's activities on the floral ecology is not anticipated to result in significant or high residual negative impacts to floral ecology. Without mitigation measures implemented, the impact significance low (planning and operational phases) for the Degraded Grassland and Secondary Grassland. For the Rocky Grassland, the impact significance medium-low (operational and maintenance phase). For the Transformed Habitat, the impact significance remains very low for all phases. For the Wetland Habitat, the impact significance varies and medium-high (long-term edge effect impacts during operational and maintenance phases). With mitigation measures adequately implemented, impact significance can be reduced for all habitat units. The impact significance can be reduced to very low (operational phases) levels for the Degraded Grassland and Secondary Grassland. For the Rocky Grassland, the impact significance can be reduced to low (operational and maintenance phases), For the Transformed Habitat, the impact significance remains very low for all phases. For the Wetland Habitat, the impact significance can be reduced to medium-low levels (long-term edge effect impacts during operational and maintenance phases).			
Impact Source(s)	Direct impacts through clearance of vegetation will result in the loss of approximately 238 ha of vegetation. Of this, approximately 173 ha will be clearance of moderately low (Degraded and Secondary Grassland) and low sensitivity habitat (Transformed Habitat), and 60 ha of intermediate sensitivity habitat (Rocky Grassland). No direct loss of Wetland Habitat (of intermediate to moderately high sensitivity) will take place given the proposed layout.			
Receptor(s)	Floral habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	AIPs are reported to be one of the greatest threats to biodiversity and are closely associated with disturbance; these species are able to colonise disturbed areas rapidly. Several sections of Dominion 3 Solar Park are already associated with AIP proliferation and bush encroachment (i.e., Seriphium plumosum encroachment) and, if not controlled, these species can continue to spread across the landscape, resulting in a cumulative loss of indigenous floral species and potential permanent displacement of protected species and their habitat. The spread and encroachment of Seriphium			

	plumosum, specifically is of concern as the densification of these species in the landscape results from intense grazing pressures, which may result in an increase in encroachment within the land adjacent to Dominion 3 Solar Park, as domestic species would need to be moved to new grazing lands. Grasslands are particularly sensitive to Seriphium plumosum encroachment.
CONFIDENCE	Medium - Low
MITIGATION MEASURES	As described in section 19 of this report

12.2.2.2 *Terrestrial Impact 2 – Impact on Floral SCC*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Rocky Grassland, Secondary Grassland, Wetland Habitat and Transformed habitat). Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Floral SCC**		**STATUS**	**NEGATIVE**
Impact Description	The direct impact of the Dominion 3 Solar Park's activities on the floral SCCs is not anticipated to result in the loss of significant SCCs. Without mitigation measures implemented, the impact significance (operational and maintenance phases) for the Degraded Grassland and Secondary Grassland. For the Rocky Grassland, the impact significance to low (operational and maintenance phases). For the Wetland Habitat, impact significance medium-low (operational and maintenance phases where edge effects are anticipated). For the Transformed Habitat, the impact significance remains very low for all phases. With mitigation measures adequately implemented, impact significance can be reduced for all habitat units. The impact significance can be reduced to very low operational and maintenance phases) levels for the Degraded Grassland. For the Rocky Grassland, the impact significance can be reduced to low (operational and maintenance phases), levels. For the Secondary Grassland and Transformed Habitat, impact significance can be reduced to very low levels for all project phases. For the Wetland Habitat, the impact significance can be reduced to low levels (edge effect impacts during operation and maintenance phase anticipated).			
Impact Source(s)	No floral SCC of increased significance is anticipated to be lost due to habitat clearance (no RDL species anticipated, one NT species may be present, and only commonly occurring and widespread protected species were recorded). The proposed activities can attempt to avoid destruction of floral SCC through footprint walkdowns and planning of a rescue and relocation plan (where feasible).			
Receptor(s)	Floral habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1

PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-24**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The proposed project could further impact on the floral habitat and diversity as well as floral SCC through fragmentation of habitat within the landscape. That being said, the landscape surrounding Dominion 3 Solar Park is already significantly fragmented and much thereof either is actively cultivated or has been in the past. The cumulative impact from additional fragmentation to the landscape is not anticipated to be significant in the long-term.			
CONFIDENCE	Low			
MITIGATION MEASURES	• The relocation success of floral SCC or protected floral species (where applicable) must be monitored during the construction phase to ensure immediate actions can be taken if it becomes evident that relocation is not successful; • No collection of floral SCC must be allowed by construction personnel; and • Edge effect control needs to be implemented to prevent further degradation and potential loss of floral SCC or protected floral species outside of the proposed development footprint area.			

12.2.3 Terrestrial Impacts (Fauna)

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.3.1 *Terrestrial Impact 1 – Impact on Habitat and Diversity*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Rocky Grassland, Secondary Grassland, Wetland Habitat and Anthropogenic Landscape) Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Habitat and Diversity**	**STATUS**	**NEGATIVE**
Impact Description	Medium high impacts to the Vachellia erioloba Veld and Secondary Grassland habitat are anticipated without mitigation as a result of the scale of vegetation that will be removed and the resultant loss of faunal habitat. Leading to a reduction in faunal opportunities for shelter and forage and higher competition for resources within the remaining assemblage of fauna. Currently the project areas supports a modest variety of faunal classes, and although mostly common herbivorous species are anticipated to utilise the project boundary on a permanent basis, 5 SCC do occur within the project boundary and habitat for these species will be reduced. Large predators are absent while mesopredators will intermittently pass through while foraging.		

Impact Source(s)	The proposed development activities within the project areas will reduce the current levels of diversity within the faunal community and will lead to the local reductions in faunal abundances, especially for faunal classes with poor dispersal abilities, such as terrestrial invertebrates and herpetofauna. Impacts to the more sensitive Vachellia erioloba Veld Habitat will likely be responsible for a reduction in diversity within the project areas as this provides the highest diversity of flora and opportunities for faunal species with a unique rockier nature.			
Receptor(s)	Faunal habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The most prominent threat to the faunal ecology within the project areas is the scale of the development without the consideration of faunal corridors to maintain faunal movement. Increased human presence and activity in the area, during construction and once the development is operational, could potentially lead to general disturbance, illegal harvesting and persecution of fauna in or adjacent to the project areas. There is also an increased risk of fire frequency, which could negatively impact faunal communities outside the development footprint. Littering and dumping of other waste material in sensitive areas within or surrounding the project areas, is another cumulative impact that could increase substantially over the operations of the development.			
CONFIDENCE	Medium Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.2.3.2 *Terrestrial Impact 2 – Impact on Fauna SCC*

The below table indicates the perceived risks to the floral ecology of the receiving environment (Degraded Grassland, Rocky Grassland, Secondary Grassland, Wetland Habitat and Anthropogenic Landscape) Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	Impact on Fauna SCC		STATUS	NEGATIVE
Impact Description	All habitat units, except the Anthropogenic Habitat, have the potential to be utilised from a faunal SCC perspective, however, for the most part the habitats are not considered ideal habitat for Orycteropus afer (Aardvark) and Pyxicephalus adspersus (Giant African Bullfrog). Opistophthalmus pugnax (Pugnacious Burrower), Harpactira hamiltoni and Opistophthalmusc arinatus (Radiant Burrower) do potentially have habitat suitable for breeding within the Grassland Habitats, notably the Rocky Grassland. Medium high impacts from the development are therefore without mitigation as the proposed PV footprint encroaches on habitats known to support faunal SCC. Species with reduced mobility such as arachnids and amphibians are at increased risk of mortality and habitat loss resulting in fragmentation in the landscape. As such, a faunal corridor should be planned within the designs of Dominion 3 Solar Park			
Impact Source(s)	Prior to vegetation clearing activities, the site should be inspected for the presence of SCC, including burrowing scorpion and baboon spider burrows as well as the burrows of Orycteropus afer (Aardvark). If located, these species should be carefully rescued and relocated as per an approved rescue and relocation plan that must be developed. Permits are to be obtained from DFFE and North West Department: Economic Development, Environment, Conservation and Tourism (NWDEDECT) prior to the relocation of any faunal SCC.			
Receptor(s)	Fauna habitats			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The proposed activities will lead to the loss of faunal habitat within the development footprints and to a reduction in the abundance of fauna and a potential for local reductions in SCC presence. This will lead to the displacement of faunal species currently inhabiting these areas, driving them out into the surrounding vegetated areas, leading to increased competition for territories and breeding sites. Moreover, there is likely to be a knock-on dispersal effect, leading to increased resource competition and possible increased mortality rates as the carrying capacity is impacted, resulting in a decreased species abundance, decreased breeding potential and possible further loss of species diversity.			
CONFIDENCE	Medium Low			
MITIGATION MEASURES	As described in section 19 of this report			

12.2.4 Avifaunal Impacts

Based on the available information and the Avifaunal Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.4.1 *Avifaunal Impact 1 – Bird Collisions and electrocution mortalities*

It is reasonable to suggest that this impact has a medium negative impact significance.

IMPACT NATURE	**Direct mortality through collision and electrocution**		**STATUS**	**NEGATIVE**
Impact Description	Mortality from collision and electrocution is an ever-present risk at solar PV farms. This risk is likely to be highest in situations where PV panels and electrical transmission infrastructure is placed closer to areas of higher habitat complexity and resource availability where bird abundances are higher (e.g. the wetlands, rocky grassland and *Vachelia erioloba* veld). From an electrocution point of view, few, potentially occurring SCC or priority species are likely to occur in the project area that have a wingspan large enough (>1.5 m) to bridge gaps between live and earthed components or between phases of powerlines. However electrocution of birds within the substations/switching areas cannot be ruled out, although this is unlikely to involve SCC. This impact can be reduced to a Low residual impact significance through appropriate planning of the infrastructure layout based on the SEI data provided. At this stage Enviro-Insight has not yet been provided information on exactly where and how long the electrical transmission lines will be or where the grid connection tie in will be and as such the confidence associated with this impact rating is Low.			
Impact Source(s)	Solar PV and electrical transmission infrastructure			
Receptor(s)	All birds but particularly water birds, raptors and other large-bodied species with low power to weight ratios and in-flight manoeuvrability.			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	Regional (2)	Preferred Alternative:	Local (1)
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	Permanent (4)	Preferred Alternative:	Long-term (3)
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	Definite (4)	Preferred Alternative:	Probable (2)
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	High (-3)	Preferred Alternative:	Medium (-2)
	No-Go Alternative:	1	No-Go Alternative:	1
	Preferred Alternative:	**High (-96)**	Preferred Alternative:	**Low (-12)**

SIGNIFICANCE RATING (F) = (A*B*D)*C	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Considering the low prevalence of raptors, large-bodied and / or waterbird SCC it is unlikely that projects of this nature in this area are likely to adversely impact upon bird assemblages in the region.			
CONFIDENCE	Low (without layout depicting grid connection routes and infrastructure)			
MITIGATION MEASURES	• The grid connection route alternatives have not yet been provided. It is recommended that wherever possible existing electrical transmission infrastructure is utilised. Where the creation of new transmission lines is necessary attempts should be made to minimise the route length to the closest existing substation and that the route be aligned with existing powerlines as far as possible. Additionally, the route should seek to as far as possible avoid or minimise wetland crossings. • Install Eskom-approved bird flight diverters (flappers or coils) on new transmission lines (particularly the earth wire). This can help to increase the visibility of transmission lines especially the thinner earth line with which most collisions tend to be associated. If the transmission lines are long or if budget is constraining then prioritise portions of the transmission lines that pass near to or cross wetlands or through Medium SEI habitat. • All power cables within the project area should be thoroughly insulated and preferably buried in demarcated corridors. • White strips or simply the exposed (lustrous) aluminium frames along the edges of the panels appear to help to increase visibility and deter birds and are recommended as far as practically feasible. • Install bird deterrent devices around panels and on transmission line poles, pylons and / or monopoles to limit collision risk. • The BESS must be covered in non-reflective surfaces and protected against thermal discharge and the risk of veld fires as a result.			

12.2.4.2 *Avifaunal Impact 2 – Attraction of birds*

IMPACT NATURE	**Attraction of birds**		**STATUS**	**NEGATIVE**
Impact Description	Certain (mainly commensal species) are often attracted by the establishment of the PVSEF and associated infrastructure as it presents additional resources in the form of perches, nesting habitat, shade and often food availability (increased rodents and weedy annual plants). This artificial increase in the abundance of some species has the effect of augmentation of the natural abundance and species composition of birds but more importantly places these opportunistic species at risk of collision and electrocution.			
Impact Source(s)	PVSEF and associated infrastructure.			
Receptor(s)	Commensal and opportunistic species.			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	Regional (2)	Preferred Alternative:	Local (1)

	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	Long-term (3)	Preferred Alternative:	Long-term (3)
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	Highly Probable (3)	Preferred Alternative:	Probable (2)
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	Medium (-2)	Preferred Alternative:	Low (-1)
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**Low (36)**	Preferred Alternative:	**Low (-6)**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Low on account of the low to moderate avifaunal abundances and diversity in the South African context.			
CONFIDENCE	Medium			
MITIGATION MEASURES	• Install bird deterrent devices around panels and on transmission line poles, pylons and / or monopoles to limit perching and minimise collision and electrocution risk.			

12.2.4.3 *Avifaunal Impact 3 – Ecotoxicity*

IMPACT NATURE	**Ecotoxicity**		**STATUS**	**POSITIVE/NEGATIVE**
Impact Description	The surfactants, dust suppressants and other chemicals that may be used to keep the PV panels clean may cause poisoning and or exacerbate habitat loss.			
Impact Source(s)	Chemicals			
Receptor(s)	All avifauna			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	Regional (2)	Preferred Alternative:	Local (1)
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	Long-term (3)	Preferred Alternative:	Long-term (3)
	No-Go Alternative:	1	No-Go Alternative:	1

PROBABILITY (C)	Preferred Alternative:	Highly Probable (3)	Preferred Alternative:	Improbable (1)
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	High (-3)	Preferred Alternative:	Medium (-2)
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**Medium (-54)**	Preferred Alternative:	**Low (-6)**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	The regular use of cleaning detergents by a large number of solar farms in a region has the potential to adversely affect water quality of regional watercourses. However, the extent, regularity and intensity of this impact on a regional level is difficult to assess and impacts of this nature from solar developments on avifauna are poorly studied. Thus the significance of such an impact remains largely uncertain. However given the very limited occurrence of wetlands throughout the project area and in the region as a whole this is unlikely to be a pressing concern in the immediate future.			
CONFIDENCE	Medium			
MITIGATION MEASURES	• Avoid or minimise the use of chemical surfactants and dust suppressants on site; and • Where necessary ensure that none of the cleaning water enters nearby watercourses through runoff and do not clean before an imminent rain storm.			

12.2.5 Freshwater Impacts

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.5.1 *Freshwater Impact 1 – Freshwater Ecosystems – Operation and maintenance*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Freshwater Ecosystems**	**STATUS**	**NEGATIVE**
Impact Description	• Disturbance to soil, vegetation, biota and potentially water quality as a result of periodic maintenance activities; and • Potential spillage and ingress of hydrocarbons from maintenance vehicles.		
Impact Source(s)	• Operation and maintenance of the proposed Dominion 3 Solar Park. • Potential indiscriminate movement of maintenance vehicles along or through the freshwater ecosystems; and		

	• Potential siltation and erosion of the development footprint area and potentially the freshwater ecosystems as a result of vegetation clearing activities.			
Receptor(s)	Identified Freshwater Ecosystems			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-9**	Preferred Alternative:	**-9**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	No cumulative impacts are anticipated from the project and other known projects in the area which are of unacceptably high significance.			
CONFIDENCE	Low			
MITIGATION MEASURES	• Maintenance vehicles must make use of dedicated access roads and no indiscriminate off-road driving or movement unless authorised for maintenance activities may be permitted; • During periodic maintenance activities of the surface infrastructure, monitoring for erosion should be undertaken with specific mention of investigating the support structures and areas accessed to facilitate maintenance activities; • Should erosion be noted at the base of the support structures the areas must be rehabilitated by infilling and resurfacing of disturbed areas and revegetating these areas with suitable indigenous vegetation; • Monitoring for the establishment of AIPs within the development footprint and along access roads must be undertaken. Should AIPs be identified, they must be removed and disposed of as per an approved AIP control plan and the area must be revegetated with suitable indigenous vegetation; and' • • An operational stormwater management plan must be developed and potential siltation and erosion as a result of the vegetation clearing activities must be considered.			

12.2.5.2 *Freshwater Impact 2 – Freshwater Ecosystems – Discharge of water*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Freshwater Ecosystems**		**STATUS**	**NEGATIVE**
Impact Description	• Altered runoff patterns and increased water inputs to the freshwater ecosystems, resulting in altered flow regime, erosion and incision; and • Altered flow regime may lead to possible impacts on vegetation (increased growth of wetland vegetation).			
Impact Source(s)	• Discharge of water from the access roads and bare soil into the surrounding landscape. • Increased impermeable surface areas adjacent to the freshwater ecosystems, resulting in increased volume of stormwater entering the systems.			
Receptor(s)	Identified Freshwater Ecosystems			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-9**	Preferred Alternative:	**-9**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	No cumulative impacts are anticipated from the project and other known projects in the area which are of unacceptably high significance.			
CONFIDENCE	Low			
MITIGATION MEASURES	• The design criteria of the stormwater management structures are important to mitigate the operational impacts of the release of stormwater into the surrounding landscape and potentially the freshwater ecosystems; • Regular inspection of the stormwater outlet structures associated with the internal roads as well as the general development footprint area must be undertaken (specifically after large storm events) in order to monitor the occurrence of erosion. If erosion has occurred, it must immediately be rehabilitated through stabilisation of embankments and revegetation; and • Only indigenous vegetation species may be used as part of the rehabilitation process and invasive plant species should be eradicated.			

12.2.6 Visual Impacts

Based on the available information and the Avifaunal Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.6.1 *Visual Impact 1: Impact on Landscape Character and Sense of Place*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Landscape Character and Sense of Place**		**STATUS**	**NEGATIVE**
Impact Description	• During the Operational Phase of the PVSEF, overall visual character and sense of place of the area as a result of the proposed PVSEF is considered to be Medium High during the construction and operational phases. A temporary change in landscape character and sense of place is likely to occur as the proposed construction and operational activities will alter the land use.			
Impact Source(s)	• The sense of place associated with the Dominion 3 Solar Park is related to the landscape character type, described above and even though the Dominion 3 Solar Park is situated directly adjacent to the N12 road, the footprint area itself can be described as calm, tranquil and peaceful, with limited development and movement, with the exception of the shepherds moving with the livestock and large herbivores. The sense of place is however not unique to the Dominion 3 Solar Park as it extends to the larger region.			
Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-16**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and			

	visual character in the broader region The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..
CONFIDENCE	Medium - High
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.

12.2.6.2 *Visual Impact 2: Visual Intrusion and VAC impacts*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact on Landscape Visual Intrusion and VAC impacts**		**STATUS**	**NEGATIVE**
Impact Description	• The altered visual environment during the operational phase, may lead to moderately high levels of visual intrusion and lead to increased visual contrast, this will however be a temporary visual intrusion and contrast. Furthermore, a visual impact will only be experienced if there are receptors in the area present to experience it, and with the limited potential sensitive receptors present in the area, the proposed visual impact is therefore reduced to moderately low levels.			
Impact Source(s)	• Visual Absorption Capacity (VAC) refers to the inherent ability of a landscape to accommodate change without degeneration of the visual quality and without resulting in an overall change of the identified landscape character type. • Sources / Factors :Vegetation, Soil contrast, Visual variety, topographical diversity, recovery time.			
Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	1
	Preferred Alternative:	**-48**	Preferred Alternative:	**-27**

SIGNIFICANCE RATING (F) = (A*B*D)*C	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..			
CONFIDENCE	Moderate – Low			
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.			

12.2.6.3 *Visual Impact 3: Visual Intrusion and VAC impacts*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Visual Exposure and Visibility Impacts**		**STATUS**	**NEGATIVE**
Impact Description	• Direct visual exposure will take place as a result of infrastructure construction and operations and associated lighting, glaring, an increased amount of human activity within the area and indirectly through fugitive dust generated by construction related activities. In addition to physical infrastructure, impacts from clearing of vegetation, potential erosion as a result of bare soils, maintenance activities and the alteration of local topography will also create contrast in the landscape and may be visible to receptors.			
Impact Source(s)	• This impact relates directly to the perception of sensitive visual receptors towards the proposed project. Potential sensitive visual receptors have been determined to primarily comprise isolated farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users. Direct visual exposure will take place as a result of infrastructure construction and operations and associated lighting, glaring, an increased amount of human activity within the area and indirectly through fugitive dust generated by construction related activities			
Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1

DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-18**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..			
CONFIDENCE	Moderate – Low			
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.			

12.2.6.4 *Visual Impact 4: Impacts due to Night time Lighting*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impacts due to Night time Lighting**	**STATUS**	**NEGATIVE**
Impact Description	• Development of the proposed PVSEF may potentially be a source of light pollution during the construction and operational phases, due to security lighting on the perimeter fence and especially at the buildings (substation, BESS and O&M Buildings). Due to the nature of a PVSEF which would primarily be operational during sunlit (daylight) hours, lighting at night is not a major operational component of such facilities. Possible maintenance activities conducted at night, such as mirror or panel washing or replacement might require vehicle-mounted lights, which could contribute to light pollution.		
Impact Source(s)	• Security lights associated with the BESS, Substation and O&M Buildings may potentially contribute somewhat to the effects of skyglow and artificial lighting in the region. This can, however be easily mitigated by installing security lighting no higher than 5 meters above the ground and through appropriate planning of illumination direction.		

Receptor(s)	Farmsteads, offices, a small informal settlement and portions of the Alabama and Jouberton townships, thus residents, people at their place of work as well as local road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region..			
CONFIDENCE	Moderate – Low			
MITIGATION MEASURES	• Mitigation measures for the Visual Impact of the proposed project is discussed in section 19 of this report.			

12.2.7 Traffic Impacts

Based on the available information and the Traffic Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.7.1 *Traffic Impact 1 – Transportation activities during operations*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Transportation activities during operations**		**STATUS**	**NEGATIVE**
Impact Description	Impact of transportation activities during operations			
Impact Source(s)	Staff vehicles on roads and access roads			
Receptor(s)	-			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-12**	Preferred Alternative:	**-12**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	None			
CONFIDENCE	High			
MITIGATION MEASURES	Encourage environmentally friendly transportation alternatives for operational staff			

12.2.8 Noise Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.8.1 *Noise Impact 1 – Noise from the BESS activities*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise generated by the BESS.**		**STATUS**	**POSITIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the BESS site			
Impact Source(s)	Extract and impelling ventilation fans.			
Receptor(s)	Farm-houses in the vicinity of Dominion Solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**8**	Preferred Alternative:	**4**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the power generation activities will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Ensure that there is a buffer zone between the BESS at Solar park 1, 2 and 3 between the BESS and the abutting farmhouses and that the fans be assessed on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA.			

12.2.8.1 *Noise Impact 2 – Noise generated by the Central inverter*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise generated by the Central inverter.**		**STATUS**	**POSITIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the Central inverter			
Impact Source(s)	Extract and impelling ventilation fans.			
Receptor(s)	Farm-houses in the vicinity of Dominion Solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**8**	Preferred Alternative:	**4**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the power generation activities will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Assessment on an annual basis for of the fans for it not to exceed the prevailing ambient noise level by more than 7.0dBA.			

12.2.8.1 *Noise Impact 3 – Noise generated by the Sub – station*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise generated by the Sub-station.**		**STATUS**	**POSITIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the Sub-station			
Impact Source(s)	Extract and impelling ventilation fans.			
Receptor(s)	Farm-houses in the vicinity of Dominion Solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**8**	Preferred Alternative:	**8**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the power generation activities will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Assessment on an annual basis of the fans for it not to exceed the prevailing ambient noise level by more than 7.0dBA.			

12.2.8.1 *Noise Impact 4 – Noise generated by the O&M building*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact**	**STATUS**	**POSITIVE**

	Noise generated by the Sub-station.			
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the O&M building			
Impact Source(s)	Extract and impelling ventilation fans.			
Receptor(s)	Farm-houses in the vicinity of Dominion Solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**8**	Preferred Alternative:	**4**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the power generation activities will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Assessment of the fans on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA.			

12.2.8.1 *Noise Impact 5 – Noise generated by the PV Modules*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise generated by the PV panels**	**STATUS**	**POSITIVE**

Impact Description	Change in the prevailing ambient noise levels in the vicinity of the solar park site			
Impact Source(s)	Power generating activities.			
Receptor(s)	Farm-houses in the vicinity of Dominion Solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**8**	Preferred Alternative:	**4**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the power generation activities will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Assessment of the PV modules assessed on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA			

12.2.8.1 *Noise Impact 6 – Roads to and from site*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise generated by the roads to and from the site.**	**STATUS**	**POSITIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of the solar park site		

Impact Source(s)	Corona type noise.			
Receptor(s)	Farm-houses in the vicinity of Dominion Solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**8**	Preferred Alternative:	**4**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the power generation activities will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Assessment of the PV modules assessed on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA			

12.2.8.1 *Noise Impact 7 – Maintenance activities*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Noise generated by the maintenance activities.**	**STATUS**	**POSITIVE**
Impact Description	Change in the prevailing ambient noise levels in the vicinity of maintenance sites		
Impact Source(s)	Noise from maintenance machinery and/or equipment.		

Receptor(s)	Farm-houses in the vicinity of Dominion Solar Cluster			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**8**	Preferred Alternative:	**4**
	No-Go Alternative:	**-24**	No-Go Alternative:	**-16**
CUMULATIVE IMPACTS	The noise impact during the maintenance activities will be below the threshold value of 7.0dBA.			
CONFIDENCE	High			
MITIGATION MEASURES	Assessment of the maintenance activities on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA.			

12.2.9 Climate Impact 1 – Generation of electricity

Vehicle and trucks and a diesel-powered generator could result in Low significance on climate change. The generation of electricity using PV Modules and battery storage could result in Low significance on climate change

IMPACT NATURE	**Impact – Nature of Impact** **Climate change impacts due to Project operations**	**STATUS**	**NEGATIVE**
Impact Description	Generation of electricity		
Impact Source(s)	PV Modules, BESS		

Receptor(s)	N/A			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	(a)	Preferred Alternative:	(a)
	No-Go Alternative:	(a)	No-Go Alternative:	(a)
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	3
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-3
	No-Go Alternative:	1	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-36**
	No-Go Alternative:	**4**	No-Go Alternative:	**4**
CUMULATIVE IMPACTS	Assuming that the gas to power facility replaces generative capacity from other fossil fuel sources, the facility could lower South Africa's GHG emissions from the Energy sector since Solar PV facility will have a lower emission per unit compared with the Eskom which is largely dependent on coal fired power stations.			
CONFIDENCE	High			
MITIGATION MEASURES	• Develop and implement management programs and procedures.			

Note: (a) The extent of climate change impact is always national or wider and therefore can result in an overly conservative significance, and since the overall consequence and significance are not influenced by the extent, but rather by the intensity of emissions, "extent" was not included in the significance rating.

12.2.10 Climate Impact 2 – Generation of electricity

Vehicle and trucks and a diesel-powered generator could result in Low significance on climate change. The generation of electricity using PV Modules and battery storage could result in Low significance on climate change

IMPACT NATURE	**Impact – Nature of Impact**	**STATUS**	**POSITIVE**

	Climate change impacts due to Project operations			
Impact Description	Generation of electricity			
Impact Source(s)	PV Modules, and associated Infrastructure			
Receptor(s)	N/A			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**72**	Preferred Alternative:	**72**
	No-Go Alternative:	**-72**	No-Go Alternative:	**-72**
CUMULATIVE IMPACTS	Assuming that the gas to power facility replaces generative capacity from other fossil fuel sources, the facility could lower South Africa's GHG emissions from the Energy sector since Solar PV facility will have a lower emission per unit compared with the Eskom which is largely dependent on coal fired power stations.			
CONFIDENCE	High			
MITIGATION MEASURES	• Develop and implement management programs and procedures.			

12.2.11 Geotechnical Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.11.1 *Geotechnical Impact 1 – Soil erosion*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Geological Impact – soil erosion**		**STATUS**	**NEGATIVE**
Impact Description	Soil erosion, contamination and destabilisation			
Impact Source(s)	Concentration of runoff due to hard surfaces, i.e. paved areas, PV tables, and support structures. Creating access roads in areas of open veld resulting in increased runoff. Concentration of natural drainage (and increasing runoff) due to paved areas. Increased siltation within natural water courses due to increased runoff and soil erosion.			
Receptor(s)	Soil, biota and vegetation			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-8**	Preferred Alternative:	**1**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	Low			
CONFIDENCE	Medium			
MITIGATION MEASURES	• Design appropriate drainage around photovoltaic tables, access roads and support structures.			

	• Only designated access roads should be used during operation, driving in vegetated areas will flatten and remove vegetation over time inducing increased runoff resulting in soil erosion. • Implement erosion control measures, where appropriate, e.g. erosion control mats. • Natural drainage in the region should be designed and managed appropriately. • Vehicles should be well maintained, parked over drip trays/hard-surfaced areas, and parked within designated areas.

12.2.12 Social Impacts

Based on the available information and the Social Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.12.1 *Social Impact 1 – Promotion of renewable energy projects*

Based on the available information it is reasonable to suggest that this impact has a low positive impact.

IMPACT NATURE	**Impact – Nature of Impact** **Development of infrastructure to generate clean, renewable energy**		**STATUS**	**POSITIVE**
Impact Description	The primary goal of the proposed project is to improve energy security in South Africa by generating additional energy. The proposed SEF also reduces the carbon footprint associated with energy generation. The project should therefore be viewed within the context of the South Africa's current reliance on coal powered energy to meet the majority of its energy needs, and secondly, within the context of the success of the REIPPPP.			
Impact Source(s)	Operational phase of the renewable energy facility			
Receptor(s)	Surrounding communities and South Africa as a whole			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3

	No-Go Alternative:	3	No-Go Alternative:	3
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	-3	No-Go Alternative:	-3
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**81**	Preferred Alternative:	**108**
	No-Go Alternative:	**-81**	No-Go Alternative:	**-81**
CUMULATIVE IMPACTS	Overall reduction in CO2 emission, reduction in water consumption for energy generation, contribution to establishing an economically viable commercial renewables generation sector in the Northern Cape and South Africa.			
CONFIDENCE	Medium			
MITIGATION MEASURES	See mitigation measures under section 19			

12.2.12.2 *Social Impact 2 – Creation of employment and business opportunities*

Based on the available information it is reasonable to suggest that this impact has a low positive impact.

IMPACT NATURE	**Impact – Nature of Impact** **Creation of employment and business opportunities associated with the operational phase**	**STATUS**	**POSITIVE**
Impact Description	The operational phase will create ~ 20-30 permanent employment opportunities for over a 20 year period. Additional temporary employment opportunities will also be created, linked to maintenance and cleaning of solar panels etc. Most of the employment opportunities associated with the operational phase is likely to benefit HD members of the community. It will also be possible to increase the number of local employment opportunities through the implementation of a skills development and training programme linked to the operational phase. Such a programme would support the strategic goals of promoting llocal employment and skills development contained in the CoMLM IDP. The local hospitality industry is also likely to benefit from the operational		

	phase. These benefits are associated with site visits by company staff members and other professionals (engineers, technicians etc.) who are involved in the company and the project but who are not linked to the day-to-day operations.			
Impact Source(s)	Operational phase of the renewable energy facility			
Receptor(s)	Surrounding communities and South Africa as a whole			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	3
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	3
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	3
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	3
	No-Go Alternative:	-1	No-Go Alternative:	-3
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**12**	Preferred Alternative:	**18**
	No-Go Alternative:	**-1**	No-Go Alternative:	**-1**
CUMULATIVE IMPACTS	Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area			
CONFIDENCE	Medium			
MITIGATION MEASURES	See mitigation measures under section 19			

12.2.12.3 *Social Impact 3 – Establishment of Community Trust*

Based on the available information it is reasonable to suggest that this impact has a low positive impact.

IMPACT NATURE	**Impact – Nature of Impact** **Establishment of a community trust funded by revenue generated from the sale of energy. The revenue can be used to fund local community development**		**STATUS**	**POSITIVE**
Impact Description	The establishment of Community Trusts projects do therefore create significant benefits for local rural communities. However, Community Trusts can also be mismanaged. This is an issue that will need to be addressed when setting up the trust			
Impact Source(s)	Operational phase of the renewable energy facility			
Receptor(s)	Surrounding communities and South Africa as a whole			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	2	No-Go Alternative:	3
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	1	Preferred Alternative:	3
	No-Go Alternative:	-1	No-Go Alternative:	-3
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**12**	Preferred Alternative:	**48**
	No-Go Alternative:	**-18**	No-Go Alternative:	**-12**
CUMULATIVE IMPACTS	Promotion of social and economic development and improvement in the overall well-being of the community			
CONFIDENCE	Medium			
MITIGATION MEASURES	See mitigation measures under section 19			

12.2.12.4 *Social Impact 4 – Generate income for affected landowner/s*

Based on the available information it is reasonable to suggest that this impact has a low positive impact.

IMPACT NATURE	**Impact – Nature of Impact** **The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.**		**STATUS**	**POSITIVE**
Impact Description	The proponent has entered into rental / purchase agreements with the affected landowners for the use of the land for the establishment of the proposed SEFs. The additional income will reduce the risk to farm livelihoods posed by droughts and fluctuating market prices for livestock and farming inputs, such as fuel, feed etc. This represents a significant benefit for the affected landowner. In addition, as indicated above, the affected landowners have indicated that they planned to retire from farming is the proposed SEF projects are approved.			
Impact Source(s)	Operational phase of the renewable energy facility			
Receptor(s)	Surrounding communities and South Africa as a whole			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	4
	No-Go Alternative:	1	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	1
	No-Go Alternative:	-1	No-Go Alternative:	-2
	Preferred Alternative:	**6**	Preferred Alternative:	**12**

SIGNIFICANCE RATING (F) = (A*B*D)*C	No-Go Alternative:	**-18**	No-Go Alternative:	**-12**
CUMULATIVE IMPACTS	Support for local agricultural sector and farming			
CONFIDENCE	Medium			
MITIGATION MEASURES	See mitigation measures under section 19			

12.2.12.5 *Social Impact 5 – Impact on property values*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Potential impact of the SEF on property values**		**STATUS**	**NEGATIVE**
Impact Description	The potential visual impacts associated with the proposed SEF have the potential to impact on surrounding property values. Based on the results of a literature review undertaken for wind farms the potential impact on property values in rural areas is likely to be limited			
Impact Source(s)	Operational phase of the renewable energy facility			
Receptor(s)	Surrounding communities and South Africa as a whole			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	3	No-Go Alternative:	2

INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-6**	Preferred Alternative:	**-6**
	No-Go Alternative:	**-3**	No-Go Alternative:	**-2**
CUMULATIVE IMPACTS	N/A			
CONFIDENCE	Medium			
MITIGATION MEASURES	See mitigation measures under section 19			

12.2.12.6 *Social Impact 6 – Impact on tourism*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Potential impact of the SEF on property values**		**STATUS**	**NEGATIVE**
Impact Description	Potential impact of the SEF on local tourism operations and visitors. The impact will be linked to the potential visual impacts and the perception of people visiting the area			
Impact Source(s)	Operational phase of the renewable energy facility			
Receptor(s)	Surrounding communities and South Africa as a whole			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	1	No-Go Alternative:	1

INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-6**	Preferred Alternative:	**-6**
	No-Go Alternative:	**-1**	No-Go Alternative:	**-1**
CUMULATIVE IMPACTS	N/A			
CONFIDENCE	Medium			
MITIGATION MEASURES	See mitigation measures under section 19			

12.2.13 Country Opportunity Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.13.1 *Country Opportunity Impact*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Country Opportunity**		**STATUS**	**POSITIVE**
Impact Description	A number of National, Regional and Local Policies and Plans recognise the importance of developing infrastructure to improve the distribution of electricity. It is also a national and regional priority to ensure increased access to electricity.			
Impact Source(s)	Construction of Dominion 3 Solar Park and associated infrastructure			
Receptor(s)	The immediate site and surrounds			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3

DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	3	No-Go Alternative:	3
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**108**	Preferred Alternative:	**108**
	No-Go Alternative:	**-54**	No-Go Alternative:	**-54**
CUMULATIVE IMPACTS	The Dominion 3 Solar park is expected to have a positive cumulative impact on renewable energy distribution in South Africa.			
CONFIDENCE	High			
MITIGATION MEASURES	None required			

12.2.14 State Economic Opportunity Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.14.1 *State Economic Opportunity Impact*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Country Opportunity**		**STATUS**	**POSITIVE**
Impact Description	The project facilitates renewable energy distribution for the country.			
Impact Source(s)	Construction of Dominion 3 Solar Park and associated infrastructure			
Receptor(s)	The immediate site and surrounds			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**

EXTENT (A)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
DURATION (B)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	2
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	3	No-Go Alternative:	3
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	-2	No-Go Alternative:	-2
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**108**	Preferred Alternative:	**108**
	No-Go Alternative:	**-36**	No-Go Alternative:	**-36**
CUMULATIVE IMPACTS	The Dominion 3 Solar park is expected to have a positive cumulative impact on renewable energy distribution in South Africa.			
CONFIDENCE	High			
MITIGATION MEASURES	None required			

12.2.15 Renewable Energy Impacts

Based on the available information and the Noise Impact Assessment, the following impacts have been assessed in this Basic Assessment Report:

12.2.15.1 *Renewable Energy Impacts*

Based on the available information it is reasonable to suggest that this impact has a low negative impact.

IMPACT NATURE	**Impact – Nature of Impact** **Contribution to Renewable Energy Goals of South Africa**	**STATUS**	**POSITIVE**

Impact Description	The establishment of additional renewable energy facilities is considered significant in light of the renewable energy targets set by South Africa			
Impact Source(s)	Operation of the facility and associated infrastructure.			
Receptor(s)	The Site and Regional			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	3	No-Go Alternative:	3
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	3	No-Go Alternative:	3
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	3	No-Go Alternative:	3
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**144**	Preferred Alternative:	**144**
	No-Go Alternative:	**-27**	No-Go Alternative:	**-27**
CUMULATIVE IMPACTS	The Dominion 3 Solar park is expected to have a positive cumulative impact on renewable energy distribution in South Africa.			
CONFIDENCE	High			
MITIGATION MEASURES	None required			

12.3 SUMMARY OF POTENTIAL IMPACTS

*In accordance with **Appendix 3 Regulation 3(i)of GN No. R. 982 of the NEMA EIA Regulations (2014)**, the following information is presented in Section 10:*

***3(i)** – A full description of the process undertaken to identify, assess and rank the impacts the activity and associated infrastructure will impose on the preferred location through the life of the activity; including:-*

- ***(i)*** *A description of all the environmental issues and risk that were identified during the environmental impact assessment process; and*
- ***(ii)*** *An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by adoption of mitigation measures*

Table 2.3.1: Condensed Impact Rating Summary showing Total Score for Each Alternative with Mitigation

SUMMARY TABLE OF IMPACT OF EACH CRITERIA (WITH MITIGATION MEASURES)		
POTENTIAL IMPACT	**PREFERRED ALTERNATIVE**	**NO-GO ALTERNATIVE:**
Construction and Decommissioning		
Agricultural Impact 1: Soil Erosion	-12	1
Agricultural Impact 2: Soil Compaction	-12	1
Agricultural Impact 3: Potential Soil Contamination	-12	1
Agricultural Impact 4: Loss of Agricultural Land Capability	-8	1
Terrestrial (Floral) Impact 1: Habitat and Diversity	-18	1
Terrestrial (Floral) Impact 2 on Floral SCC	-8	1
Terrestrial (Fauna) Impact 1 Habitat and Diversity	-18	1
Terrestrial (Fauna) Impact 2 on Fauna SCC	-18	1
Avifaunal Impacts 1: Direct loss of avifaunal habitat	-12	1
Avifaunal Impacts 2: Sensory disturbance	-6	1
Freshwater Impacts 1:Site Clearing	-18	1
Freshwater Impacts 2: Installation of Solar Panels	-12	1
Visual Impacts 1: Impact on the sense of Place	-18	1
Visual Impacts 2: Impact on Landscape Visual Intrusion and VAC Impacts	-27	1

Visual Impacts 3: Visual Exposure and Visibility Impacts	-12	1
Visual Impact 4: Impacts due to Night time Lighting	-8	1
Heritage Impact 1: Loss of Recent Structures	-12	1
Heritage Impact 2:Loss of Historic structures	-8	4
Heritage Impact 3 Loss of Burial Ground	-12	4
Heritage Impact 4: Loss of Fossil Heritage	-8	1
Traffic Impact 1:Transportation activities during construction	-4	1
Noise Impact 1: Noise from site clearing and grubbing	-2	-8
Noise Impact 2: Noise from the construction activities at the PV modules per solar park	-2	-8
Noise Impact 3: Noise from the construction activities of the infrastructure such as the BESS, O&M building sub-station and roads	-2	-8
Noise Impact 4 Construction of the roads to and from the sites	-2	-16
Climate Impact:1 Climate change impacts due to construction activities	-12	4
Geotechnical Impact 1: Geological Impact – soil erosion	1	1
Social Impact 1: Creation of employment and business opportunities	18	-6
Social Impact 2: Presence of construction workers and potential impacts on family structures and social networks	-2	-2
Social Impact 3: Influx of job seekers	-8	-8
Social Impact 4: Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	-1	-1
Social Impact 5: Increased risk of veld fires	-1	-1
Social Impact 6: Impact of construction activities and vehicles	-2	-1
Social Impact 7: Loss of farmland	-3	-1
Opportunity Loss State Owned Enterprise	108	-36
Operational Impacts		
Agricultural Impact 1: Soil Erosion	-8	1
Agricultural Impact 2: Soil Compaction	-2	1
Agricultural Impact 3: Potential Soil Contamination	-8	1

Agricultural Impact 4: Loss of Agricultural Land Capability	-4	1
Terrestrial (Floral) Impact 1: Habitat and Diversity	-12	1
Terrestrial (Floral) Impact 2 on Floral SCC	-12	1
Terrestrial (Fauna) Impact 1 Habitat and Diversity	-18	1
Terrestrial (Fauna) Impact 2 on Fauna SCC	-18	1
Avifaunal Impacts 1: Direct mortality through collision and electrocution	-12	1
Avifaunal Impacts 2: Attraction of birds	-6	1
Avifaunal Impact 3: Ecotoxicity	-6	1
Freshwater Impacts 1:Site Clearing	-9	1
Freshwater Impacts 2: Installation of Solar Panels	-9	1
Visual Impacts 1: Impact on the sense of Place	-16	1
Visual Impacts 2: Impact on Landscape Visual Intrusion and VAC Impacts	-27	1
Visual Impacts 3: Visual Exposure and Visibility Impacts	-18	1
Visual Impact 4: Impacts due to Night time Lighting	-12	1
Traffic Impact 1:Transportation activities during operations	-12	1
Noise Impact 1: Noise generated by the BESS.	4	-16
Noise Impact 2: Noise generated by the Central inverter.	4	-16
Noise Impact 3: Noise generated by the Sub-station.	8	-16
Noise Impact 4: Noise generated by the O&M Builiding	4	1
Noise Impact 5 Noise generated by the PV panels	4	-16
Noise Impact 6:Roads to and from site	4	-16
Noise Impact 7:Noise generated by the maintenance activities.	4	-16
Geotechnical Impact 1: Geological Impact – soil erosion	1	1
Climate Impact:1 Climate change impacts due to Project operations	-36	6
Climate Impact:2 Climate change impacts due to Project operations (positive)	72	-72

Social Impact 1: Promotion of renewable energy projects	108	-81
Social Impact 2: Creation of employment and business opportunities	18	-1
Social Impact 3: Establishment of Community Trust	48	-12
Social Impact 4: Generate income for affected landowner/s	12	-12
Social Impact 5: Impact on property values	-6	-2
Social Impact 6: Impact on tourism	-6	-1
Country Opportunity	108	-54
Opportunity Loss State Owned Enterprise	108	-36
Renewable Energy Impact	144	-27
TOTAL	221	**-432**

12.4 CUMULATIVE IMPACT

Based on the requirements of the DFFE in their Acceptance of Basic Assessment report dated 17 October 2016 and the NEMA EIA Regulations (2014, as amended), the EAP is required to assess the cumulative impact associated with the activity.

As defined by the NEMA EIA Regulations (2014 as amended), a cumulative impact refers to: *in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.*

Thus, based on the above definition, it is the understanding of the EAP that the activity must be assessed in relation to the carrying capacity of the region which takes into account all other similar and/or diverse activities.

As detailed in Section 8 of this Report the Professional Team have provided statements and assessed the cumulative impacts of their respective areas of expertise. Therefore, the cumulative impacts per each area of expertise can be summarised as follows:

12.4.1 Agricultural Specialist:

The study area is dominated by soils more suited for grazing, which account for 71% of the study area and thus areas used for grazing may be impacted. The Bainsvlei soils accounts for 3.5% of the study area and although these soils are considered to be highly arable, the footprint of these soils within the study area is small and thus these soils are not likely to contribute significantly to the agricultural productivity on a local and regional sphere, thus more suited for subsistence use. Some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. Although agricultural studies under the CARA Act 1983 prioritise crop cultivated agriculture, it is imperative that land with grazing capability is also conserved where feasible. The study area can be considered for development from a soil, land use and land capability point of view, with

few to no constraints provided that any development that is to occur will implement site specific mitigation measures.

12.4.2 Terrestrial Biodiversity (Floral) Impacts

The proposed project could further impact on the floral habitat and diversity as well as floral SCC through fragmentation of habitat within the landscape. That being said, the landscape surrounding Dominion 3 Solar Park is already significantly fragmented and much thereof is either actively cultivated or has been in the past. The cumulative impact from additional fragmentation to the landscape is not anticipated to be significant in the long-term from a floral ecological and resource management perspective.

AIPs are reported to be one of the greatest threats to biodiversity and are closely associated with disturbance; these species are able to colonise disturbed areas rapidly. Several sections of Dominion 3 Solar Park are already associated with AIP proliferation and some bush encroachment and, if not controlled, these species can continue to spread across the landscape, resulting in a cumulative loss of indigenous floral species and potential permanent displacement of protected species and their habitat. Loss of grazing land to Dominion 3 Solar Park may result in additional grazing pressure on lands adjacent to the PV facility, since livestock would need to be moved. This could result in cumulative loss to habitat integrity in surrounding lands.

The Dominion 3 Solar Park forms part of the Dominion PV Cluster, comprising also the Dominion 1 Solar Park and 2 projects. As such, if the project is authorised, there will be a cumulative loss of habitat in the area. The proposed Dominion 3 Solar Park activities (as well as the overall Dominion PV Cluster) are located within the REDZ 10 Klerksdorp and STC (Central Corridor). The REDZs support the responsible implementation of the Integrated Resource Plan (IRP) (2019) that was recently gazetted by the Minister of Mineral Resources and Energy on 17 October 2019. In this regard, Dominion 3 Solar Park is not situated in any significant biodiversity features from a floral perspective and is therefore fairly ideally placed within the landscape (especially given that Wetland Habitat is actively being avoided in the current footprints). No cumulative impacts are anticipated from the project and other known projects in the area which is of unacceptably high significance.

12.4.3 Terrestrial Biodiversity (Fauna) Impacts

Based on the general landscape and habitat within the project areas the site has the potential to host moderately low to intermediate assemblages of fauna and potentially 5 SCC. Several Three SCC have foraging and breeding habitat within the project footprint, as such, the development will result in the loss of breeding or foraging habitat for these species. One mammal and an amphibian SCC may lose breeding habitat within the project areas as a result of the developments. While SCC potentially breed within the project areas it is not considered an important breeding locality for these SCC and the development is not likely to result in changes to breeding productivity, however, reductions in abundance within the project areas are likely. As a result of the extent over which the project area is proposed faunal dispersal corridors are likely to be impacted. It is suggested that portions of the Vachellia erioloba Veld are retained to retain a small portion of higher diversity habitat promoting

habitat resistance and service provision. The increased human activity may however result in animals avoiding the broader area due to consistent human activity.

The proposed activities will lead to the loss of faunal habitat within the development footprints and to a reduction in the abundance of fauna and a potential for local reductions in SCC presence. This will lead to the displacement of faunal species currently inhabiting these areas, driving them out into the surrounding vegetated areas, leading to increased competition for territories and breeding sites. Moreover, there is likely to be a knock-on dispersal effect, leading to increased resource competition and possible increased mortality rates as the carrying capacity is impacted, resulting in a decreased species abundance, decreased breeding potential and possible further loss of species diversity.

The most prominent threat to the faunal ecology within the project areas is the scale of the development without the consideration of faunal corridors to maintain faunal movement. Increased human presence and activity in the area, during construction and once the development is operational, could potentially lead to noise disturbance, illegal harvesting and persecution of fauna in or adjacent to the project areas. There is also an increased risk of fire frequency, which could negatively impact faunal communities outside the development footprint. Littering and dumping of other waste material in sensitive areas within or surrounding the project areas, is another cumulative impact that could increase substantially over the operations of the development

12.4.4 Avifaunal Specialist:

Cumulative impacts of a development project may be defined as "impacts resulting from incremental actions from the project, by addition with other past, present or future impacts resulting from other actions/project reasonable predictable" (Walker & Johnston 1999). This assumes the knowledge of other projects or actions whose effects could be cumulative to the ones resulting from the project being assessed. Since it is not reasonably viable to consider in the analysis all the existing or proposed projects for a certain region the analysis should focus on (Masden et al. 2010):

- *The projects known for the area and its surroundings and for which there's information readily available;*
- *The projects mentioned above and that could be relevant in terms of the expected impacts, in relation to the project under assessment;*
- *Like the overall impact assessment analysis, on the sensitive species more relevant and/or susceptible to the expected impacts.*

Even where fatality rates may appear low, adequate attention should be given to the situation. The cumulative effects of several facilities on the same species could be considerable, particularly if these are sited in the same region and impact on the same regional population of the species. In addition, most long lived slow reproducing Red List species may not be able to sustain any additional mortality factors over and above existing factors.

The main known activities or projects, relevant for the cumulative impacts analysis, known in the broader area of Dominion 3 Solar Park is the presence of additional solar energy facilities.

The three combined proposed PVSEF developments represents the only such development for a radius of 12 km and there are eight known PVSEFs within a 30 km radius (Figure 12.4.4.1). Given the low number of renewable energy facilities within a 30 km radius it is highly unlikely that any major cumulative impacts to avifauna can be expected from such developments

Potential cumulative impacts may materialise if the bird species using the Dominion 3 Solar Park also use the above referred sites and in that case, they will suffer an increased reduction in available habitat and increased collision risk with the solar panels, wind turbines and associated infrastructure. For migratory species and/or species with wide home ranges, those impacts can translate into consequences at population level, being these particularly relevant for long-lived low rate reproduction species, generally also with a conservation status of concern. This is particularly relevant for some sensitive species such as African Marsh Harrier, Black Harrier, Secretarybird and Blue Crane which have a conservation status of concern and may further reduce their populations.

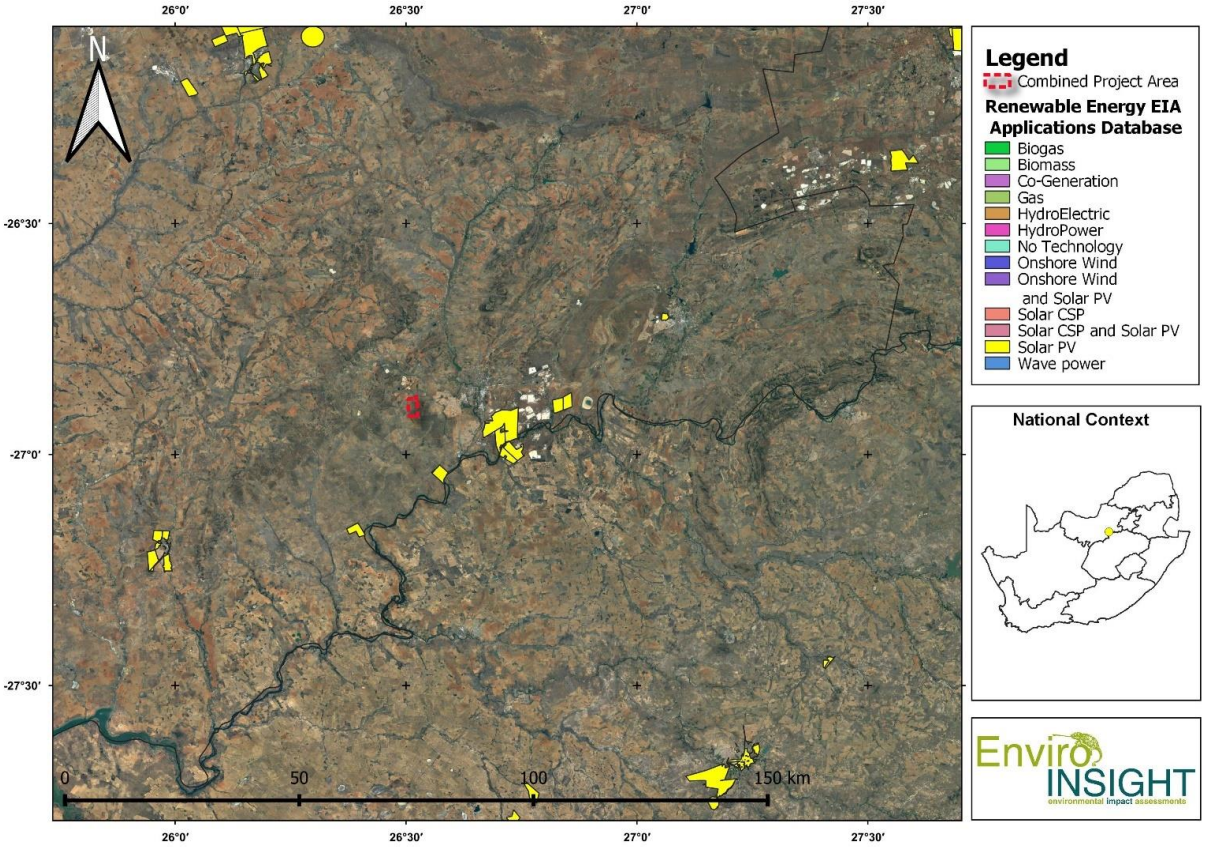

Figure 12.4.4.1 – Other Renewable Energy projects currently proposed or operational in the surrounding area to the Dominion 3 Solar Park.

12.4.5 Heritage Specialist:

Cumulative impacts that are identified during the heritage specialist for Dominion 3 Solar Park:

- The potential cumulative impact due to the impact on burial ground identified in Dominion Solar Cluster project can have an elevated impact on the combined projects

12.4.6 Visual Specialist

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction Dominion 2 Solar Park and Dominion 3 Solar Park and the six approved applications of PVSEF within a 50 km radius, as well as any future renewable energy facilities (wind and solar facilities) in the Klerksdorp REDZ, must be considered. Renewable energy facilities have

the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region.

The cumulative impact of additional traffic in the area on the local and regional roads as well as combined impacts from night-time lighting of the substations will also affect the sense of place of the larger region.

12.4.7 Freshwater Specialist

Freshwater ecosystems within the region are under continued threat due to rapid agricultural activities, alien invasive vegetation encroachment and development of infrastructure. Direct and indirect impacts identified within freshwater ecosystems bordering solar facilities include an increase in alien and invasive species entering the system due to regular disturbance of soil and removal of indigenous vegetation. This results in greater inputs of sediment, and nutrients from runoff that are of higher concentrations.

The proposed Dominion 3 Solar Park forms part of the Dominion PV Cluster, comprising also of the proposed Dominion 2 Solar Park and 3 Parks. As such, if the project is authorised, there will be cumulative impacts on the freshwater habitats in the area. The proposed Dominion 3 Solar Park activities (as well as the overall Dominion PV cluster) are located within the REDZ 10 Klerksdorp and STC (Central Corridor). The REDZs support the responsible implementation of the Integrated Resource Plan (IRP) (2019) that was recently gazetted by the Minister of Mineral Resources and Energy on 17 October 2019. In this regard, the proposed Dominion 3 Solar Park is not located within any significant biodiversity features from a freshwater ecosystem perspective and is therefore fairly ideally placed within the landscape (especially given that the freshwater ecosystems are actively being avoided in the current development.

12.4.8 Social Specialist

The following is a summary of the cumulative impacts of Dominion 3 Solar Park from a social perspective, please refer to Appendix B for a full description of each cumulative impact

Cumulative impact on sense of place

The site is located within the Klerksdorp REDZ. The potential for cumulative impacts associated with combined visibility (whether two or more solar facilities will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more solar facilities along a single journey), therefore exists. The cumulative impact on the areas sense of place is therefore rated as Moderate Negative. However, the area has been identified as suitable for the establishment of large scale renewable energy facilities.

Cumulative impact on services

The establishment of the proposed SEF and the other REFs in the CoMLM may place pressure on local services, specifically medical, education and accommodation. This pressure will be associated with the potential influx of workers to the area associated with the construction and operational phases of renewable energy projects proposed in the area, including the proposed SEF. The potential impact on

local services can be mitigated by employing local community members. With effective mitigation the impact is rated as Low Negative.

In addition, as indicated below, this impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of renewable energy as an economic driver in the area.

Cumulative impact on local economies

In addition to the potential negative impacts, the establishment of the proposed SEF and other renewable energy projects in the area also has the potential to create a number of socio-economic opportunities for the CoMLM, which, in turn, will result in a positive social benefit. The positive cumulative impacts include creation of employment, skills development and training opportunities, creation of downstream business opportunities. The Community Trust associated with the project will also create significant socio-economic benefits. These benefits should also be viewed within the context of the limited economic opportunities in the area and the impact of the decline in the mining sector in recent years. This benefit is rated as High Positive with enhancement.

EAP Conclusion

Based on the above information and the statements and assessments provided by the Professional team regarding the cumulative impact, it is reasonable to suggest that the establishment of the proposed Dominion 3 Solar Park will have a **low to medium cumulative impact**, which is acceptable and is within the carrying capacity of the region.

Despite this statement it is the opinion of the EAP that going forward any further such renewable energy facilities must be quantified cumulatively in relation to this PVSEF, should it be authorised by the Competent Authority.

13 BULK SERVICES (E.G. SEWAGE, WATER, ELECTRICITY AND SOLID WASTE)

13.1 Roads

Based on the available information and site assessments undertaken by the EAP and the Professional Team it is reasonable to suggest that the access to the site is currently possible via the provincial roads in the site vicinity the site is located to the South of the N12. D837: Is a provincial gravel road and is located to the east of the proposed development. This road serves as the link between the N12 and farm portions to the north of the N12. The Traffic Specialist has advised that, access to the proposed development is proposed from the N12 freeway via an access road. The location of the new intersection will in the future form part of the planned road network as per the latest roads masterplan. The spacing requirements of the proposed intersection are acceptable as per the Committee of Transport Officials (COTO) South African Road Classification and Access Management Manual (TRH 26).

13.2 Water

Water supplies required during the construction phase will be brought on site by Licensed Contractors.

13.3 Electricity

Electricity required during the construction phase will be sourced from generator sets that will be placed on site.

13.4 Sewage

Portable toilets required during construction phase; sufficient hygienic facilities will be made available for all workers employed on the site.

13.5 Solid Waste

Solid waste accumulated during construction will be removed off site by a Licensed Contractor and disposed at a Licensed Landfill site.

14 PUBLIC PARTICIPATION PROCESS

*In accordance with **Appendix 1 Regulation 2(h)(ii, iii) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**), the following information is presented in Section 12:*

***2(h) ii** – Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs*
***2(h) iii** – A summary of the issues raised by interested and affected parties and an indication of the manner in which the issues were incorporated or the reasons for not including them.*

14.1 OBJECTIVES OF THE PUBLIC PARTICIPATION PROCESS

The public consultation process is required by the NEMA Regulations (2014, as amended) GNR 326 Regulation 41 to 44. The Regulation aims to ensure that all information pertaining to this Environmental Permitting Process is adequately circulated to all Interested and Affected Parties (I&APs) and further provides the I&APs with timeframes within which to provide feedback throughout the Basic Assessment process. This PPP thus aims at providing organisations and individuals with an opportunity to raise concerns and make comments and suggestions regarding the proposed Project. By being part of the assessment process, stakeholders have the opportunity to influence the Project layout and design as well as the plan of study of the BAR.

The principles for the BAR that determine communication with all I&APs at large are included in the principles of the National Environmental Management Act (NEMA) (Act 107 of 1998, as amended) The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner. The public participation process affords I&APs opportunities to provide input into and receive information regarding the BA process. The public participation process is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner.

<u>To enable I&APs to:</u>

- Understand the context of the Basic Assessment Report.
- Become informed and educated about the proposed project and its potential impacts.
- Raise issues of concern and suggestions for enhanced benefits.
- Contribute relevant local information and traditional knowledge to the environmental assessment.

14.2 STEPS TAKEN TO NOTIFY POTENTIALLY INTERESTED AND AFFECTED PARTIES

Identification of Stakeholders

Identification of Stakeholders

After obtaining the relevant site information, the Landowner, Competent and Commenting Authorities were contacted to obtain owner/occupant details for directly adjacent erven as well as key stakeholders for this Project. In terms of the NEMA EIA Regulations (2014, as amended), notification of directly adjacent landowners and occupiers is required. The EAP is satisfied that the Public Participation Process will be consistent with the requirements of Regulations.

Communication with Stakeholders

- In terms of the NEMA EIA Regulations (2014 as amended), potential Interested, and Affected Parties (I&AP's) must be given **30 calendar days** within which to register as an I&AP (initial notification) and provide comment.
- Further, registered I&AP's must be given an opportunity to comment on reports that will be submitted to the relevant authority.
- The initial commenting period will commence on 14 November 2022 and will conclude on 13 December 2022
- One local and Regional newspaper advert was published in the *Klerksdorp Record* 10 November 2022.
- Six site notices were placed at highly visible locations at the subject site on 11 November 2022.
- Please refer to Appendix E for a full account of Stakeholders notified as part of this Public Participation Period.
- All issues and concerns raised by I&APs during the above-mentioned initial commenting period will be recorded and addressed in the Comments and Responses Report; this will be submitted with the final BAR to the Competent Authority for decision making.

14.3 AUTHORITY CONSULTATION

The following Commenting Authorities have been consulted with on the project as part of the BAR for the PPP:

- Birdlife SA
- Department of Forestry, Fisheries and the Environment (DFFE)
- Department of Local Government & Housing: Provincial Disaster Management Centre
- Department of Water & Sanitation (DWS)
- Department of Mineral Resources and Energy (DMRE)
- Department of Agriculture, Land Reform and Rural Development (DALRRD)
- ESKOM
- National Energy Regulator of South Africa (NERSA)
- SANPARKS
- SANRAL
- South African Civil Aviation Authority (CAA)
- South African Heritage Resource Agency (SAHRA)
- South African National Roads Agency Limited (SANRAL)
- Telkom
- Upper Breede Catchment Management Agency
- Upper Breede Contingency Group
- North West Department of Economic Development, Environment, Conservation and Tourism (dedect)
- North West Department of Community Safety and Transport Management
- North West Department of Public Works and Roads
- North West Provincial Heritage Resources Agency (NWPHRA)
- Endangered Wildlife Trust (EWT)
- Wildlife and Environment Society of South Africa (WESSA)
- Dr Kenneth Kaunda District Municipality
- City of Matlosana Local Municipality

15 NEXT STEPS IN THE ENVIRONMENTAL APPLICATION PROGRAMME

Once the statutory 30-day Public Participation Process (PPP) has completed for this draft Basic Assessment Report for Comment, the Basic Assessment Report for Decision will be finalised and will contain a Comments and Responses Report, which addresses and registers all comments raised during this initial PPP. The Basic Assessment Report for Decision will be submitted for a decision to the Competent Authority.

This Basic Assessment Report is anticipated to be submitted to the Competent Authority for decision in January 2023

16 REQUIRED INFORMATION REQUESTED BY THE COMPETENT AUTHORITY

In accordance with ***Appendix 1 Regulation 3(t) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended****):*

Any specific information that may be required by the competent authority

No specific information request has been received to date from the competent authority for inclusion in this section.

17 ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

In accordance with ***Appendix 1 Regulation 3(o) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended****):*

A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;

Based on the available information assessed during the basic assessment, it is reasonable to suggest that the following assumptions and limitations have been used throughout this Report:

- That the information provided by the Specialists, Applicant and Developer are true and correct.
- That the applicant will act in a responsible manner and take appropriate and prompt action when incidents occur at the site, in order to (1) determine the cause of the incident and, (2) rectify the cause of the problem.
- That the development will be used for the activities proposed.
- That the information provided by the applicant and the specialists are deemed accurate and unbiased.
- That the applicant will adhere to the mitigation measures presented in this Basic Assessment Report and EMPr.
- That the full recommendations of the specialist studies are implemented.
- That the monitoring and auditing programmes suggested are implemented.
- That decommissioning activity, should this be required, will be conducted by experienced person/s (contractors and principle agents).
- That an experienced independent environmental control officer (ECO) will be appointed for the construction phase of this project and that regular ECO site visits will occur to ensure that the EMPr is complied with and that every effort is made to minimise environmental impacts.

18 EAP OPINION ON PROPOSED ACTIVITY

*In accordance with **Appendix 1 Regulation 3(n), 3(p) and 3(q) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**):*

> ***3(n)** - Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation*
>
> ***3(p)** - A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;*
>
> ***3(q)** - Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;*

18.1 EAP OPINION AND RECOMMENDATION

Based on the information presented in this Report, as informed by the statutory requirements, and the associated independent specialist studies, the findings of this draft Basic Assessment indicate that the Project, in the form of the preferred alternative, (read strictly in conjunction with the mitigation measures stipulated in Section 19.1 of this Basic Assessment Report as well as the attached EMPr, which must form part of the Conditions of the Environmental Authorisation) will not result in unacceptable negative impacts.

The Preferred Alternative for this Project is described as follows:

- From the assessment of the Preferred Layout (Facility Layout 1) is deemed a reasonable and feasible site alternative, which can be implemented on the site.
- The construction of the proposed Dominion 3 Solar Park and associated infrastructure addresses a national and regional need for the generation of clean, renewable energy and greater access to electricity through the construction of necessary infrastructure. This goal is reflected in national plans and policies as well as regional SDF's, IDP's and Development Programmes.

The preferred layout has been developed to exclude not preferred development areas to ensure that the Dominion 3 Solar Park is the most reasonable or feasible development footprints identified and therefore, the Preferred Layout (Facility Layout 1) has been assessed together with the 'no-go' alternative.

This layout is deemed to be implementable by the Professional Team and no fatal flaws have been identified. However, all the Professional Team's recommendations and mitigation measures are required to be adhered to and form part of the Environmental Management Programme (EMPr) for the site.

The Preferred Alternative is the most feasible and reasonable alternative and has been comparatively assessed against the no-go alternative in this Report. Please kindly refer to Section 12 for the impact assessment.

Therefore, the **Preferred Alternative** for the purposes of this Report refers to a Project alternative that takes into consideration and implements the findings and recommendations of the professional team, which have been noted above in terms of operational, layout and technology alternatives considered to date, and which have all been informed through independent expert assessments.

In conclusion and based on:

i. the Specialist Study Findings undertaken by the Professional Team appointed to this this Project and represented in Section 8 of this Basic Assessment Report;
ii. the assessment undertaken by the EAP in conjunction with the Specialist Findings and represented in Sections 8 and 12 of the Basic Assessment Report;
iii. the motivation of Alternatives in Section 9.

It is reasonable to suggest the overall impact associated with the Proposed Dominion 3 Solar Park and associated infrastructure will be mitigated to an acceptable environmental level and **therefore it is reasonable to suggest that there is no reason why the Competent Authority should not authorise the preferred alternative.**

18.2 Conclusion

Based on the environmental permitting process and rigorous professional assessments undertaken for this project to date, **there is no reason to suggest that the Preferred Alternative cannot be authorised for implementation.**

Further, this BAR and supporting documentation is considered to be adequate in meeting the requirements of the relevant legislation and those of the Competent Authority and the EAP believes that sufficient information is presented for the purposes of decision-making.

In this regard, no further studies are envisaged

19 CERTAIN CONDITIONS TO FORM PART OF THE ENVIRONMENTAL AUTHORISATION

General recommendations that should be considered by the relevant authority are listed below:

- The recommendations and mitigation measures as highlighted in the Specialist Section 8 and 18 of this report must be carefully integrated into the Conditions of Authorisation.
- The Environmental Management Programme (EMPr) contained in Appendix F must be followed for the lifecycle of the development and the decommissioning phase must be monitored by a suitably experienced Environmental Control Officer.
- Regular auditing (e.g., every 12 months) by an experienced, suitably qualified, independent environmental professional must be undertaken to ensure that the conditions of the EMPr, which are related to the key findings of the specialists and this EIA, are implemented. This will ensure that the design intent of the development is carried through the lifecycle of the development. This should include, but not necessarily be limited to, provision for specialist consultation in the case of water quality monitoring, visual impact monitoring and wetland environments monitoring.

19.1 Recommended Mitigation Measures to form part of the Conditions of the EA and EMPr:

19.1.1 Agricultural Impact Mitigation Measures

Based on the findings of the soil, land use and land capability assessment, mitigation measures have been developed to minimise the impact on the soil resources of the area, should the proposed project proceed:

These include:

Soil Erosion and Dust Emission Management

- *Bare soils within the access roads can be regularly dampened with water to suppress dust during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast;*
- *All disturbed areas adjacent to the proposed development areas should be re-vegetated with an indigenous grass mix, if necessary, to re-establish a protective cover, to minimise soil erosion and dust emission;*
- *Temporary erosion control measures should be used to protect the disturbed soils during the construction phase until adequate vegetation has established.*

Soil Contamination Management

- *Contamination prevention measures should be addressed in the Environmental Management Programme (EMP) for the proposed development, and this should be implemented and made available and accessible at all times to the contractors and construction crew conducting the works on site for reference;*
- *A spill prevention and emergency spill response plan, as well as dust suppression, and fire prevention plans should also be compiled to guide the construction works;*

- *An emergency response contingency plan should be put in place to address clean-up measures should a spill and/or a leak occur, as well as preventative measures to prevent contamination; and*
- *Burying of any waste including domestic waste, empty containers on the site should be strictly prohibited and all construction rubble waste must be removed to an approved disposal site.*

Loss of Land Capability Management

- *The proposed Solar Photovoltaic (PV) Facilities development within the study area should aim to minimise the impact on soils with used for grazing activities;*
- *Revegetate the disturbed soils with an indigenous grass mix, to re-establish a protective cover, in order to minimise soil erosion and dust emissions; and*
- *The footprint areas should be lightly ripped to alleviate compaction*

19.1.2 Terrestrial Biodiversity (Floral) Impact Mitigation Measures

Appropriate mitigation measures should form an important part of the planning process, to minimise impacts on terrestrial biodiversity.

Construction Phase- Impact on Habitat and Diversity

Development footprint

- *The construction footprint must be kept as small as possible to minimise the impact on the surrounding environment (edge effect management);*
- *Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved development footprint;*
- *Vehicles must be restricted to travelling only on designated roadways to limit the ecological footprint of the construction activities. Additional road construction must be limited to what is absolutely necessary, and the footprint thereof kept to a minimal;*
- *Informal fires by construction personnel should be prohibited, and no uncontrolled fires must be allowed. Ensure fire management is in place. Use of firebreaks is recommended;*
- *Care must be taken during the construction of the proposed development to limit edge effects to surrounding natural habitat. This can be achieved by:*
- *Demarcating all footprint areas during construction activities;*
- *No construction rubble or cleared AIP species are to be disposed of outside of demarcated areas, and/or should be taken to a registered waste disposal /garden refuge facility;*
- *All soils compacted because of construction activities should be ripped and profiled and reseeded;*
- *Suppress dust to mitigate the impact of dust on flora within a close proximity of construction activities;*
- *Minimise the risk of erosion by limiting the extent of disturbed vegetation and exposed soil; and*
- *Manage the spread of AIP species, which may affect remaining natural habitat within surrounding areas;*
- *Appropriate sanitary facilities must be provided during the construction of the development and must be removed to an appropriate waste disposal site;*
- *No dumping of litter, rubble or cleared vegetation on site must be allowed outside of designated areas, especially when the vegetation cuttings include AIPs. Infrastructure and rubble removed because of the construction activities should be disposed of at an appropriate registered dump site away from the development footprint. No temporary dump sites allowed in areas with natural vegetation. Waste disposal containers and bins must be provided during the construction phase for all construction rubble and general waste. Vegetation cuttings must be carefully collected and disposed of at a separate waste /garden refuge facility or in a designated and demarcated area outside of any natural vegetation; If any*

spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line. Spill kits should be kept on-site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practised, preventing the ingress of hydrocarbons into the topsoil; and

- *Upon completion of construction activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed area. Where landscaping is planned, use of indigenous species is recommended.*
-

Alien vegetation management:

- *Edge effects arising from the proposed development, such as erosion and AIP proliferation, which may affect adjacent natural areas, must be strictly managed. Specific mention in this regard is made of Category 1b AIP species (as listed in the NEMBA Alien species lists, 2020), in line with the NEMBA Alien and Invasive Species Regulations (2020);*
- *Ongoing AIP monitoring and clearing/control should take place throughout the construction phase of the development; and*
- *Alien vegetation that is removed must not be allowed to lay on the unprotected ground as seeds might disperse upon it. All cleared AIP material to be disposed of at a licensed waste facility that complies with legal standards or garden refuge facilities, or within designated and demarcated areas as long as it is outside of any natural habitat.*

Operational and maintenance Phase- Impact on Habitat and Diversity

Development footprint

- *• Disturbed areas outside of the approved footprints must be rehabilitated to a similar state as that of pre-disturbance conditions. Where this is not possible due to planned landscaping, it is recommended that indigenous species be used for such purposes;*
- *Ensure sound erosion control and stormwater control measures are in place during the operation and maintenance phase of the project;*
- *Fire management should be in place;*
- *Monitor the Wetland Habitat to ensure that floral communities are not degraded; and*
- *No vehicles are allowed to indiscriminately drive through any remaining sensitive habitat and natural areas. All vehicles must stick to designated roads and no additional roads may be developed unless absolutely necessary.*
-

Alien Vegetation Management

- *Edge effects arising from the operational and maintenance activities of the proposed development, such as erosion and AIP proliferation, which may affect adjacent natural areas, need to be strictly managed. Specific mention in this regard is made of Category 1b AIP species (as listed in the NEMBA Alien species lists, 2020), in line with the NEMBA Alien and Invasive Species Regulations (2020) (see also section 3.3 of this report); and*
- *Ongoing AIP monitoring and clearing/control should take place throughout the operational phase, and the project perimeters as well as the Wetland Habitat must be checked, regularly, for AIP establishment to prevent spread into and degradation of surrounding natural areas.*

19.1.3 Terrestrial Biodiversity (Fauna) Impact Mitigation Measures

Appropriate mitigation measures should form an important part of the planning process, to minimise impacts on terrestrial biodiversity.

Construction Phase- Impact on Habitat and Diversity

- *The development footprint should be demarcated, and it should be ensured that no development related activities take place outside of the demarcated footprint. This final footprint area should be reviewed by specialist to ensure no detrimental impacts to faunal assemblages occur;*
- *No development should occur within the Wetland Habitat or within the relevant zones of regulation around these features;*
- *Construction equipment should be restricted to travelling only on designated roadways or within the intended development footprint to limit the ecological footprint of the development activities. Additional road construction should be limited to what is absolutely necessary, and the footprint thereof kept to a minimum;*
- *No dumping of litter or human refuse/waste on site should be allowed;*
- *No hunting/trapping or collecting of faunal species is allowed;*
- *No informal fires by construction personnel are allowed;*
    - *Care should be taken during the construction and operation of the proposed development to limit edge effects to surrounding natural habitat. This can be achieved by:*
    - *Demarcating all footprint areas during construction activities;*
    - *No construction rubble or cleared alien invasive species are to be disposed of outside of demarcated areas, and should be taken to a registered waste disposal facility;*
    - *All soil compacted as a result of construction activities (outside of the development footprint) should be ripped, profiled and reseeded; and*
    - *Manage the spread of AIP species, which may affect remaining natural habitat within surrounding areas.*
- *Should any lights be installed they should face downwards to reduce the abundance of insects attracted to the night lights, this prey source may attract insects to the project areas and may increase bat collisions or electrocutions. Furthermore increased lighting will impose upon the nights darkness altering invertebrate movement. Lights should not be LED or white light;*
- *Faunal habitat beyond the demarcated area should not be cleared or altered;*
- *No dumping of litter, rubble or cleared vegetation on site should be allowed. As such it is advised vegetation cuttings (especially AIP) to be carefully collected and disposed of at a separate waste facility;*
- *If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line and faunal recolonization. In the event of a breakdown, maintenance of vehicles must take place with care, and the collection of spillages should be practised preventing the ingress of hydrocarbons into the topsoil;*
- *No hunting/trapping or collecting of faunal species is allowed;*
- *No illicit fires must be allowed during the construction phase of the proposed development;*
- *A rehabilitation plan should be compiled by a suitable specialist. This rehabilitation plan should consider all development phases of the project indicating rehabilitation actions to be undertaken during, and once construction has been completed as well as ongoing rehabilitation during the operational phase of the project to ensure habitat for fauna is restored;*
- *Any natural areas beyond the development footprint, that have been affected by the construction activities, must be rehabilitated using indigenous plant species;*
- *All soils compacted as a result of construction activities falling outside of the project area should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas;*
- *Revegetation of disturbed areas should be carried out in order to restore habitat availability and minimise soil erosion and surface water runoff; and*
- *When rehabilitating a footprint site, it is imperative that as far as possible the habitat that was present prior to disturbances is recreated, so that faunal species that were displaced by vegetation clearing activities are able to recolonize the rehabilitated area.*
- *Smaller species of invertebrates and reptiles are likely to be less mobile during colder periods, as such should any be observed in the footprint areas during clearing and operational activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Construction and Operational personnel are to be educated about these species and the need for their conservation. Harmless reptiles should be carefully relocated by a suitably nominated construction*

person. For larger venomous snakes, a suitably construction official should be contacted to affect the relocation of the species, should it not move off on its own;

- *Maintain habitat connectivity; greenspace and corridors for species movement;*
- *All faunal species rescued must be relocated to a suitable area, with similar habitat adjacent to the footprint area or within the property;*
- *Excavated topsoil must be stored with associated native vegetation debris for subsequent use in rehabilitation;*
- *Edge effect control needs to be implemented to ensure no further degradation and potential loss of faunal SCC outside of the proposed project footprint area. An on-site Environmental Control Officer (ECO) should monitor and mitigate any edge effects throughout the life of the operation;*
- *No additional habitat is to be disturbed outside of the approved footprints areas. Weekly (recommended) to monthly (minimum requirement) monitoring and recording of the footprint areas must be done during the construction phase by the ECO and photographic records kept – special attention should also be paid to potential increase and spread of AIPs;*
- *No dumping of waste on site should take place. As such it is advised that waste disposal containers and bins be provided during the construction phase for all dilapidates, rubble and general waste; and*
- *If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder faunal rehabilitation later down the line. Spill kits should be kept on site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practised preventing the ingress of hydrocarbons into the topsoil.*

Operational and maintenance Phase- Impact on Habitat and Diversity

-
- *All vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the development activities;*
- *It is recommended that the natural landscape be retained as far as possible;*
- *No dumping of litter should be allowed to remain on-site. As such it is advised that garden vegetation cuttings to be carefully collected and disposed of at a separate waste facility;*
- *No hunting/trapping or collecting of faunal species is allowed;*
- *Lights should face downwards to reduce the abundance of insects and any other fauna attracted to light. Invertebrates may attract bats to the project areas and may increase bat collisions or electrocutions while increasing fire risk. Furthermore increased lighting will impose upon the nights darkness altering invertebrate movement. Lights should not be LED or white light;*
- *Ongoing alien and invasive plant monitoring and clearing/control should take place throughout the operational phase, and the project perimeters should be regularly checked for AIP establishment to prevent spread into surrounding natural areas which may alter the suitability of the habitat to faunal species;*
- *Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licensed waste facility, which comply with legal standards;*
- *No illicit fires must be allowed;*
- *Where bare soils are left exposed as a result of construction activities, they should be immediately rehabilitated. Rehabilitated efforts should continue to be monitored throughout the operational phase, until natural processes will allow the ecological functioning and biodiversity of the area to be re-instated;*
- *Rehabilitation must proceed in accordance with the approved rehabilitation plan and must aim to achieve more than rehabilitation but must ensure that the veld is restored, at least, to a point where natural processes can re-instate the environment to a state that has the majority of the elements of biodiversity can be re-instated and supported;*
- *Ongoing alien and invasive vegetation and bush encroachment monitoring and control should take place throughout the rehabilitation phase of the project;*
- *Preserve, enhance, restore or replace faunal movement corridors and habitat;*
- *The best technology and cautionary actions should be taken to sufficiently clean up and remediate any soils that may become contaminated;*
- *Maintain habitat connectivity; greenspace and corridors for species movement;*

- *Edge effect control needs to be implemented to ensure no further degradation and potential loss of faunal SCC outside of the proposed project footprint area. An on-site Environmental Control Officer (ECO) should monitor and mitigate any edge effects throughout the life of the operation;*
- *No additional habitat is to be disturbed outside of the approved footprints areas. Monthly (minimum requirement) monitoring and recording of the footprint areas must be done during the operational and maintenance phase by the ECO and photographic records kept – special attention should also be paid to potential increase and spread of AIPs;*
- *If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder faunal rehabilitation later down the line. Spill kits should be kept on site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practised preventing the ingress of hydrocarbons into the topsoil; and*
- *Rehabilitation should only cease once a suitably qualified team of ecologists sign off that the rehabilitation and restoration is adequate.*

Construction phase – Impact on Fauna SCC

- *Edge effect control needs to be implemented to prevent further degradation and potential loss of faunal SCC habitat outside of the proposed development footprint;*
- *Should any other faunal species protected under the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) or the Northern Cape Nature Conservation Act (schedule 1) be encountered, construction should be halted and authorisation to relocate such species must be obtained from the DFFE or NWDEDECT;*
- *Prior to vegetation clearing activities in the natural vegetation unit (Rocky Grassland, Degraded Grassland and Wetland Habitat), the site should be inspected for the presence of burrowing SCC scorpions and baboon spiders. If located, these species should be carefully excavated ensuring no harm to the specimens and relocated to similar surrounding habitat outside of the footprint area. A night-time survey utilising UV lights is recommended to aid in the collection of potential scorpion SCC. The survey should be undertaken in summer where these arachnids are more active;*
- *Smaller species such as scorpions and reptiles are likely to be less mobile during the colder period, as such should any be observed in the study site during clearing and operational activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Construction personnel are to be educated about these species and the need for their conservation. Harmless scorpion or reptiles should be carefully relocated by a nominated construction person or staff member. For venomous snakes or scorpions, a suitably trained official or specialist should be contacted to affect the relocation of the species, should it not move off on its own;*
- *No collection of faunal SCC within the project areas may be allowed by construction personnel;*
- *A suitable rescue and relocation plan should be developed and overseen by a suitably qualified specialist should SCC be identified within the project areas in order to ensure that species loss during construction activities is kept to a minimum.*
- *The relevant permits are to be obtained from DFFE and NWDEDECT prior to the relocation of any faunal SCC. All faunal species rescued must be relocated to a suitable, representative habitat outside the footprint;*
- *No collection or hunting of any fauna species is to be allowed by personnel during the construction phase, especially with regards to faunal SCC (if encountered and not part of a rescue/relocation plan);*
- *Minimise loss of indigenous vegetation where possible through the planning of suitable faunal corridors. As far as possible layouts must avoid placement within habitat of increased sensitivity; and*
- *The development footprint is to be located outside the Wetland Habitat and as well as a 32 m buffer zone. Edge effect control needs to be implemented to ensure no further degradation and potential loss of faunal habitat and SCC outside of the footprint area. An on-site ECO should monitor and mitigate any edge effects throughout the operation*

Operational and maintenance Phase – Impact on Fauna SCC

- *Rehabilitation schemes should aim to recreate the current habitat units as far as possible, such as appropriate woody areas, rocky outcrops and re-planting food plants relied on by invertebrate SCC;*
- *Edge effect control needs to be implemented to prevent further degradation and potential loss of faunal SCC habitat outside of the proposed development footprint;*

- *No collection or hunting of any fauna species is to be allowed by personnel, especially with regards to faunal SCC (if encountered and not part of a rescue/relocation plan);*
- *All footprints should be rehabilitated as close to their pre-development conditions as possible, with indigenous vegetation re-instated to support faunal recolonisation of the area; and*
- *Rehabilitation efforts must be implemented for a period of at least five years after decommissioning and closure.*

19.1.4 Avifaunal Impact Mitigation Measures

Recommended mitigation measures include:

- Use the SEI spatial layers to appropriately position all surface infrastructure so as to minimise loss of Medium sensitivity avifaunal habitat and avoid encroaching on wetlands and their prescribed buffers.
- Demarcate such areas on the ground during construction and sign post them as environmentally sensitive areas keep out.
- Ensure that the BESS and non-solar panel infrastructure occur in Low SEI portions of the project area.
- Rehabilitate all areas that may have been disturbed immediately after construction.
- Prioritise existing roads for access routes.
- Develop and implement an Alien and Invasive Plant Control Plan.
- The grid connection route alternatives have not yet been provided. It is recommended that wherever possible existing electrical transmission infrastructure is utilised. Where the creation of new transmission lines is necessary attempts should be made to minimise the route length to the closest existing substation and that the route be aligned with existing powerlines as far as possible. Additionally, the route should seek to as far as possible avoid or minimise wetland crossings.
- Install Eskom-approved bird flight diverters (flappers or coils) on new transmission lines (particularly the earth wire). This can help to increase the visibility of transmission lines especially the thinner earth line with which most collisions tend to be associated. If the transmission lines are long or if budget is constraining then prioritise portions of the transmission lines that pass near to or cross wetlands or through Medium SEI habitat.
- All power cables within the project area should be thoroughly insulated and preferably buried in demarcated corridors.
- White strips or simply the exposed (lustrous) aluminium frames along the edges of the panels appear to help to increase visibility and deter birds and are recommended as far as practically feasible.
- Install bird deterrent devices around panels and on transmission line poles, pylons and / or monopoles to limit collision risk.
- The BESS must be covered in non-reflective surfaces and protected against thermal discharge and the risk of veld fires as a result.
- Adopt temporal avoidance strategies. Attempt, as far as possible to conduct the majority of the high intensity earthmoving and building activities during winter (June to September) to minimize disturbance of avifauna during sensitive life stages such as lekking, courting, nesting and fledging.
- Minimise light pollution and fit external lighting with downward facing hoods.
- Demarcate natural areas beyond the surface infrastructure footprint and restrict access of personnel into these areas through education and signposting.
- Train staff and contractors on the importance of birds and other biodiversity and the sensitive areas for these species which should be avoided.

- Introduce and enforce a speed limit (40 km/h)
- Install bird deterrent devices around panels and on transmission line poles, pylons and / or monopoles to limit perching and minimise collision and electrocution risk.
- Avoid or minimise the use of chemical surfactants and dust suppressants on site; and
- Where necessary ensure that none of the cleaning water enters nearby watercourses through runoff and do not clean before an imminent rain storm.

19.1.5 Aquatic Impact Mitigation Measures

Mitigation Measures to be Implemented

The overall outcome of the risk assessment indicates that the proposed activities pose a low risk significance to the identified freshwater ecosystems. A manual adjustment was made for instance where activities score within the low-medium sensitivity (56-81), in accordance with GN 509 of 2016, provided that the following key mitigation measures are implemented:

- The proposed Dominion 3 Solar Park Park and all associated infrastructure has been acceptably designed to best avoid the identified freshwater ecosystems and associated 24 m construction and operational phase buffer, which is deemed the minimum mitigation measure to minimise potential impacts on the freshwater ecosystems. However, for the manual adjustment to be implemented to define this risk as low and to allow authorisation by means of a confirmation of General Authorisation in terms of the requirement of Regulation GN509 of 2016, it was deemed necessary to increase the development setback from the freshwater ecosystems to 32 m. This is deemed necessary to best ensure increased protection from the risk of the potential increase in sedimentation and erosion from the removal and clearing of natural terrestrial vegetation in close proximity to the freshwater ecosystems. This is deemed particularly pertinent since bi-facial solar panel technology is being proposed;
- Vegetation clearing must be restricted to the approved development footprint., be done in a phased manner as the development of the proposed Dominion 3 Solar Park Park progresses and as much indigenous vegetation as possible is to be retained; and
- Drifts fences/silt curtains must be placed along the 24 m or 32 m construction and operational phase buffers (whichever is decided upon) to mitigate against potential sediment deposition and erosion control.

19.1.6 Heritage and Archaeology Impact Mitigation Measures

Mitigation measures to avoid impacts on archaeological occurrences should be implemented where possible.

Recommended mitigation measures include:

- General Project Area
  - Implement a chance to find procedures in case where possible heritage finds are uncovered.
- Burial grounds and graves
  - All burial grounds and graves should be retained and avoided with a buffer zone of 50m as per SAHRA guidelines. If this is not possible, the graves could be relocated after completion of a detailed grave relocation process, that includes a thorough stakeholder engagement component, adhering to the requirements of s36 of the NHRA and its regulations as well as the National Health Act and its regulations.
- Historical Structures
  - Avoid the identified structures with a 30-meter no-go buffer

  - If this is not possible a stakeholder engagement process must be initiated to investigate the possible presence of infant and still born burials for the identified sites
  - If the presence of such burial is confirmed a comprehensive grave relocation process must be implemented and managed by a competent and experienced grave relocation professional..
- Palaeontological resources
  - If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist

19.1.7 Traffic Impact Mitigation Measures

Mitigation measures to avoid impacts on traffic and road networks should be implemented.

- Adherence to OHSA regulations during the construction phase.
- Encourage environmentally friendly transportation alternatives for construction staff.
- Encourage environmentally friendly transportation alternatives for operational staff

19.1.8 Visual Mitigation Measures

Mitigation measures to mitigate visual impacts should be implemented.

These include:

General housekeeping

- *All construction areas must be kept in a neat and orderly condition at all times;*
- *Any areas for temporary material storage and other potentially intrusive activities must be screened from view as far as possible;*
- *An efficient removal system of waste and rubble must be ensured during the construction phase; and*
- *All operational infrastructure must be actively maintained to avoid degradation and becoming untidy, especially with the proposed infrastructure located within such close proximity to the N12 road.*

Development footprint

- *The duration of the construction phase should be reduced as far as possible through careful planning, to reduce the exposure of bare ground;*
- *The development footprint and disturbed areas associated with the construction phase of the project should be kept as small as possible, with as little indigenous vegetation being cleared as possible with specific mention tall trees which provides increased screening ability;*
- Construction boundaries should be clearly demarcated to minimise areas of surface disturbance;
- Direct loss of or damage to valuable natural visual resources such as the freshwater ecosystems in the area should be actively avoided;
- As far as possible, existing roads are to be utilised for construction and maintenance purpose, to limit cumulative impacts from roads and traffic, as well as to limit the extent of the vegetation cleared for the purpose of the project;
- Excavation and earthmoving activities are to be kept to a minimum and limited to foundation areas for substations and support structures of the PV panels;
- Site offices and temporary structures should be limited to single storey and situated at such a location so as to reduce visual intrusion; and

- The height of any temporary structures such as soil stockpiles should be kept as low as possible.

Infrastructure placement

- Based on the SEAS document the visual buffer of 500m should be applied along arterial and scenic routes. However, the field assessment indicated that the landscape is homogenous with no prominent topographical features and is quite common throughout the North West Province. Furthermore, as the town of Klerksdorp does not have any prominent tourist attractions, this portion of the N12 is not considered as important as other stretches of the N12, therefore a 250m buffer was recommended. Hence no PV panels must be developed within the 250 m from the N12. The substation or any other associated infrastructure may be developed within the 250 m buffer provided that screening / partial screening thereof is implemented, i.e. a row of trees along the side of the N12 road or on the periphery of the infrastructure area;
- With the three farmsteads located directly north of PV 3, the visual intrusion and visual exposure is expected to be potentially significant at these receptors, therefore to reduce the potential visual impact a 300m buffer around the periphery of the buildings associated with the farmsteads were adhered to. It is further recommended that the proponent liaise with the farmer to investigate in planting more trees on the side of the farm that is in view of the Dominion 3 Solar Park project area, to reduce the visual impacts on the farmer; and
- The proposed PV Panels must avoid visually sensitive resources such as the freshwater ecosystems in the Dominion 3 Solar Park area.

Infrastructure appearance

- A transparent fence, such as a clear VU fence or equally approved, should be muted in colour and located as close as possible around the PVSEF, to avoid impeding visibility and ensure that it is visually pleasing to observers;
- The use of highly reflective material for storage, BESS and security facilities should be avoided. Lighter tones attract an observer while darker shades recede from the viewer, therefore pure whites and bright colours should be avoided;
- The use of permanent signage and project construction signs should be minimised and visually unobtrusive;
- Recent studies indicated that an extra layer of anti-reflective material on the outer surface of the glass can further limit sunlight reflection (Sreenath et. al., 2019);
- Another design feature to limit glint and glare is to roughen the protective glass surface, reducing specular reflection (Sreenath et. al., 2019);
- A possible mitigatory technique that can be employed is possible adjustment in the tilt and orientation angle of PV modules. These changes can alter the direction of solar reflection and hence the degree of glare impact. The Solar Glare Hazard Analysis Tool (SGHAT) can be used to check the glare potential for the proposed PV system design values. SGHAT has the capability to identify PV configurations that produce no glare and the design with maximum energy production can be selected (Sreenath et. al., 2019);
- It must be ensured that all buildings / containers and other structures fit its surroundings through the appropriate use of colour and material selection in order to lower the visibility of the proposed infrastructure; and
- Natural colours should be used in all instances and the use of highly reflective material should be avoided. Any metal surfaces should be painted to fit in with the natural environment in a colour that blends in effectively with the background. White structures are to be avoided as these will contrast significantly with the natural surroundings;

Screening

- It must be ensured that existing vegetation is retained as far as possible during the construction and operational phases of the project to act as visual screens with particular reference to existing tall trees; and

- It must be ensured, wherever possible, that existing natural vegetation is incorporated into the concurrent site rehabilitation especially in line of sight from sensitive receptors, such as the N12 road. The planting of tall trees along a stretch of the N12 road is therefore recommended, to reduce the visual intrusion of the associated infrastructure (BESS, O&M Building and substation).

Erosion

- Erosion, which may lead to high levels of visual contrast and further detract from the visual environment, must be prevented throughout the lifetime of the project by means of putting soil stabilisation measures in place where required and through concurrent rehabilitation.

Dust

- During the construction phase all dirt and access roads, as well as other areas cleared of vegetation for construction purposes will require effective dust suppression such as regular watering;
- Internal access roads must be suitably maintained to limit erosion and dust pollution; and
- Vehicle speed on unpaved roads must be reduced to limit dust creation. The following speed is recommended: 40km/h for normal vehicles and 30km/h for heavy vehicles.

Lighting

- As far as possible, construction activities should be restricted to daylight hours, in order to limit the need of bright floodlighting and the potential for skyglow and to avoid the use of additional night-time lighting for security purposes;
- Night lighting of construction sites and camps, the BESS, substation and O&M Building should be minimised as far as possible, taking into consideration that due to safety requirements a certain level of lighting may be necessary;
- It must be ensured that routine maintenance and cleaning of PV modules, especially after a rainfall event, should occur during the daylight hours, to reduce the potential of night lighting and potential temporary contribution to skyglow;
- Where security lighting is used during the construction phase and operational phase, the following management measures should be implemented
    - • Making use of motion detectors on security lighting, at the substation, BESS and O&M Building, ensures that the site will remain in relative darkness, until lighting is required for security and maintenance purposes;
    - • Placement of lights should consider the location of surrounding receptors and as far as possible be screened from view;
    - • The use of high light masts and high pole top security lighting should be avoided. Any high lighting masts should be covered to reduce glow;
    - • Up-lighting of structures must be avoided, with lighting installed at downward angles that provide precisely directed illumination beyond the immediate surroundings of the infrastructure, thereby minimising the light spill and trespass;
- Care should be taken when selecting luminaries to ensure that appropriate units are chosen and that their location will reduce spill light and glare to a minimum;
- Minimum wattage light fixtures should be used, with the minimum intensity necessary to accomplish the light's purpose;
- The use of low-pressure sodium lamps, yellow LED lighting, or an equivalent should be considered to reduce skyglow (BLM, 2013)

Rehabilitation

- Concurrent/ progressive rehabilitation of temporary cleared areas, including reshaping and revegetation, must be implemented as soon as possible;
- Upon completion of construction, the project area should be left in a condition that protects the soil surface against erosion and instability;

- Indigenous and locally occurring plant species selected for use in re-vegetation should be selected taking quick growth rates into consideration in order to cover bare areas and prevent soil erosion; and
- Upon decommissioning, it is important that vegetation be reinstated to blend with the natural environment.

19.1.9 Climate Impact Mitigation Measures

Project adaptation and mitigation measures

Climate change management includes both mitigation and adaptation. The main aim of mitigation is to stabilise or reduce GHG concentrations as a result of anthropogenic activities. This is achievable by lessening sources (emissions) and/or enhancing sinks through human intervention. Mitigation measures are typically the focus of the energy, transport, and industry sectors (Thambiran & Naidoo, 2017). Adaptation measures focus on the minimising the impact of climate change, especially on vulnerable communities and sectors. Inclusion of the climate change adaptation in business strategic implementation plans is one of the outcomes defined in the Draft National Climate Change Adaptation Strategy (Government Gazette No.42466:644, May 2019).

Project specific mitigation measures, may include:

- GHG emissions from vehicles and equipment:
  - Maintain vehicles and machinery in accordance with manufacturers standard specifications.
- GHG emissions from generators:
  - Minimization of events that require the use of a diesel powered generator

19.1.10 Social Impact Mitigation Measures

Employment

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the construction phase commences the proponent should meet with representatives from the CoLM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.
- The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- The proponent should liaise with the CoLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.
- Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

Potential impacts on family structures and social networks associated with the presence of construction workers:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.
- Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.
- The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase that representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP.
- The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP.
- The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP.
- The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

Potential impacts on family structures, social networks and community services associated with the influx of job seekers:

It is impossible to stop people from coming to the area in search of a job. However, as indicated above, the proponent should ensure that the employment criteria favour local residents in the area. In addition:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The proponent, in consultation with the LM, should investigate the option of establishing a MC to monitor and identify potential problems that may arise due to the influx of job seekers to the area. The MC should also include the other proponents of solar energy projects in the area.
- The proponent should implement a "locals first" policy, specifically with regard to unskilled and low skilled opportunities.
- The proponent should implement a policy that no employment will be available at the gate.

Potential risk to safety of scholars, farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site:

- The proponent should prepare a Stakeholder Engagement Plan (SEP) and Community Health, Safety and Security Plan (CHSSP) prior to commencement of construction phase.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- Traffic and activities should be strictly contained within designated areas.
- Strict traffic speed limits must be enforced on the farm.
- All farm gates must be closed after passing through.
- Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties.
- The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct (CoC) for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site.
- The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below).
- The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.
- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires:

- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- The option of establishing a firebreak around the perimeter of the site prior to the commencement of the construction phase should be investigated.
- Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.
- Smoking on site should be confined to designated areas.
- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are effectively managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months.
- Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.
- Contractor to provide fire-fighting training to selected construction staff. No construction staff, with the exception of security staff, to be accommodated on site overnight.
- As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.

Potential noise, dust and safety impacts associated with movement of construction related traffic to and from the site:

The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:

- The movement of heavy vehicles associated with the construction phase should be timed to avoid times of the week, such as weekends, when the volume of traffic travelling along the N12 may be higher.
- Construction operations should be planned to minimise the total area cleared at any given time.
- Construction operations that have the potential to generate significant dust impacts, such as site clearance etc, should be timed to avoid harvesting times.
- Cleared areas should be rehabilitated once the construction phase has been completed.
- Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.
- All vehicles must be road-worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.

The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the SEF and power lines will damage farmlands and result in a loss of farmlands for grazing:

The potential impacts associated with damage to, and loss of farmland can be effectively mitigated. The aspects that should be covered include:

- The site for the proposed SEF should be fenced off prior to commencement of construction activities.
- The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised.
- An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase.
- All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase.

- The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be drawn up by the Environmental Consultants appointed to manage the EIA.
- The implementation of the Rehabilitation Programme should be monitored by the ECO.

Social impacts associated with retrenchment including loss of jobs, and source of income:

- The proponent should ensure that retrenchment packages are provided for all staff retrenched when the SEFs are decommissioned.
- All structures and infrastructure associated with the proposed facilities should be dismantled and transported off-site on decommissioning.

20 OATH OF EAP UNDERTAKING ASSESSMENT

*In accordance with **Appendix 1 Regulation 3(r) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**), the following information is presented in Section 16.*

***R3(r)** – An undertaking under oath of affirmation by the EAP in relation to:*

***R3(r) (i)** – The correctness of the information provided in the reports*

***R3(r) (ii)** – The inclusion of comments and inputs from stakeholders and I&APs*

***R3(r) (iii)** – The inclusion of inputs and recommendations form the specialist reports where relevant; and*

***R3(r) (iv)** – Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.*