



**DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME
(EMPR) FOR THE PROPOSED DEVELOPMENT OF
DOMINION 2 SOLAR PARK AND ASSOCIATED
INFRASTRUCTURE NEAR KLERKSDORP, NORTH WEST
PROVINCE**

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NOVEMBER 2022

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Annexure A contains the Glossary

Annexure B contains the generic Method Statement

Annexure C contains design and planning documentation

Annexure D contains a detailed copy of the recommended Roles and Responsibilities of the Environmental Control Officer (ECO)

Annexure E contains the associated specialist studies for the project

Annexure F contains the alien invasive management plan

Annexure G contains the heritage management plan

Annexure H contains the EAP's Curriculum Vitae

IMPORTANT NOTE: ALL READERS TO PLEASE FAMILIARIZE THEMSELVES WITH THE RELEVANT TERMINOLOGY CONTAINED IN THE GLOSSARY (ANNEXURE A) PRIOR TO READING THIS DOCUMENT.

Appendix 4 Regulation 1 of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended) stipulates that an Environmental Management Programme (EMPr) must comply with Section 24N of the NEMA and must include the following:

Regulation	Content of Environmental Management Programme (EMPr)	Reference
A4 R1 (a)	Details of:	
	(i) <i>The EAP who prepared the report; and</i>	Section 3
	(ii) <i>The expertise of the EAP, including a curriculum vitae</i>	Section 3
A4 R1 (b)	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1 and 4
A4 R1 (c)	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;	Section 1
A4 R1 (d)	A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	Section 4
	(i) <i>Planning and design;</i>	Section 1 and 4
	(ii) <i>Pre-construction activities;</i>	Section 4
	(iii) <i>Construction activities;</i>	Section 4
	(iv) <i>Rehabilitation of the environment after construction and where applicable post closure; and</i>	Section 4
	(v) <i>Where relevant, operation activities;</i>	Section 4
A4 R1 (e)	a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 4
A4 R1 (f)	a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to -	Section 4 and Annexures
	(i) <i>Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</i>	Section 4
	(ii) <i>Comply with any prescribed environmental management standards or practices;</i>	Section 4
	(iii) <i>Comply with any applicable provisions of the Act regarding closure, where applicable; and</i>	Section 4
	(iv) <i>comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;</i>	Section 4
A4 R1 (g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6
A4 R1 (h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6
A4 R1 (i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 6
A4 R1 (j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6
A4 R1 (k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 6
A4 R1 (l)	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 6
A4 R1 (m)	An environmental awareness plan describing the manner in which-	Section 6
	(i) <i>The applicant intends to inform his or her employees of any environmental risk which may result from their work; and</i>	
	(ii) <i>risks must be dealt with in order to avoid pollution or the degradation of the environment;</i>	
A4 R1 (n)	Any specific information that may be required by the competent authority.	Section 1

1. INTRODUCTION

1.1 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 2 Solar Park (Pty) Ltd is one of the three proposed PVSEF projects. The solar parks are named as follows:

- Dominion 1 Solar Park
- Dominion 2 Solar Park – The focus of this EMP
- Dominion 3 Solar Park

Dominion 2 Solar Park (Pty) Ltd. (hereinafter referred to as the "Applicant") intends to develop a Photovoltaic Solar Energy Facility (PVSEF) of up to 160MW megawatts (million watts MW) and associated infrastructure (also interchangeably referred to as Dominion 2 Solar Park) on portion 8 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 160MW and Battery Energy Storage Systems ("BESS") of 800MWh. Tier 1 bi-facial, single axis trackers will be utilised for the panels. An on-site substation with a capacity of 200MVA, 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) (200MVA) and an O&M Building.

Please note, the site is interchangeably referred to as Dominion 2 Solar Park in this Report and all Specialist Reports. The Applicant is Red Rocket (Pty) Ltd

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 be approximately 18km in length and 8m wide. 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 separate Basic Assessment Report.

The site consists of approximately 334 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.

The Dominion 2 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 2 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.

Micro-siting of the preferred PV Panels, BESS, and substations will determine optimal sizes and positions of the structures should an Environmental Authorisation be granted.

Please note that the transmission line requirements have not been finalised between ESKOM and the Applicant and this will be finalised at a later stage. Should a new transmission line be required to be constructed then the Applicant will undertake a separate Environmental Permitting Process to assess this transmission line.

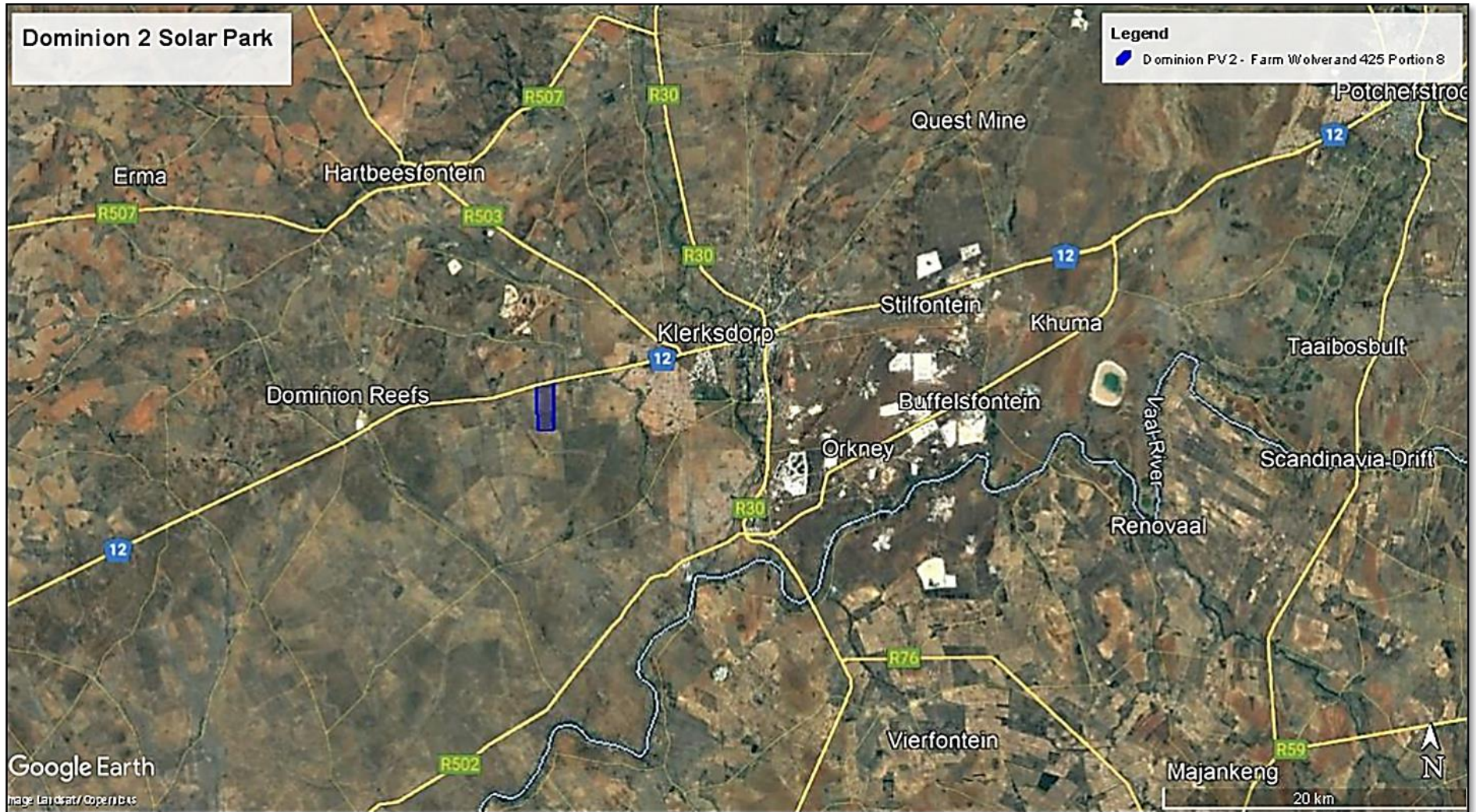


Figure 1: This figure shows the location of the proposed Dominion 2 Solar Park within a broad geographical context

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED DOMINION SOLAR PARK 2

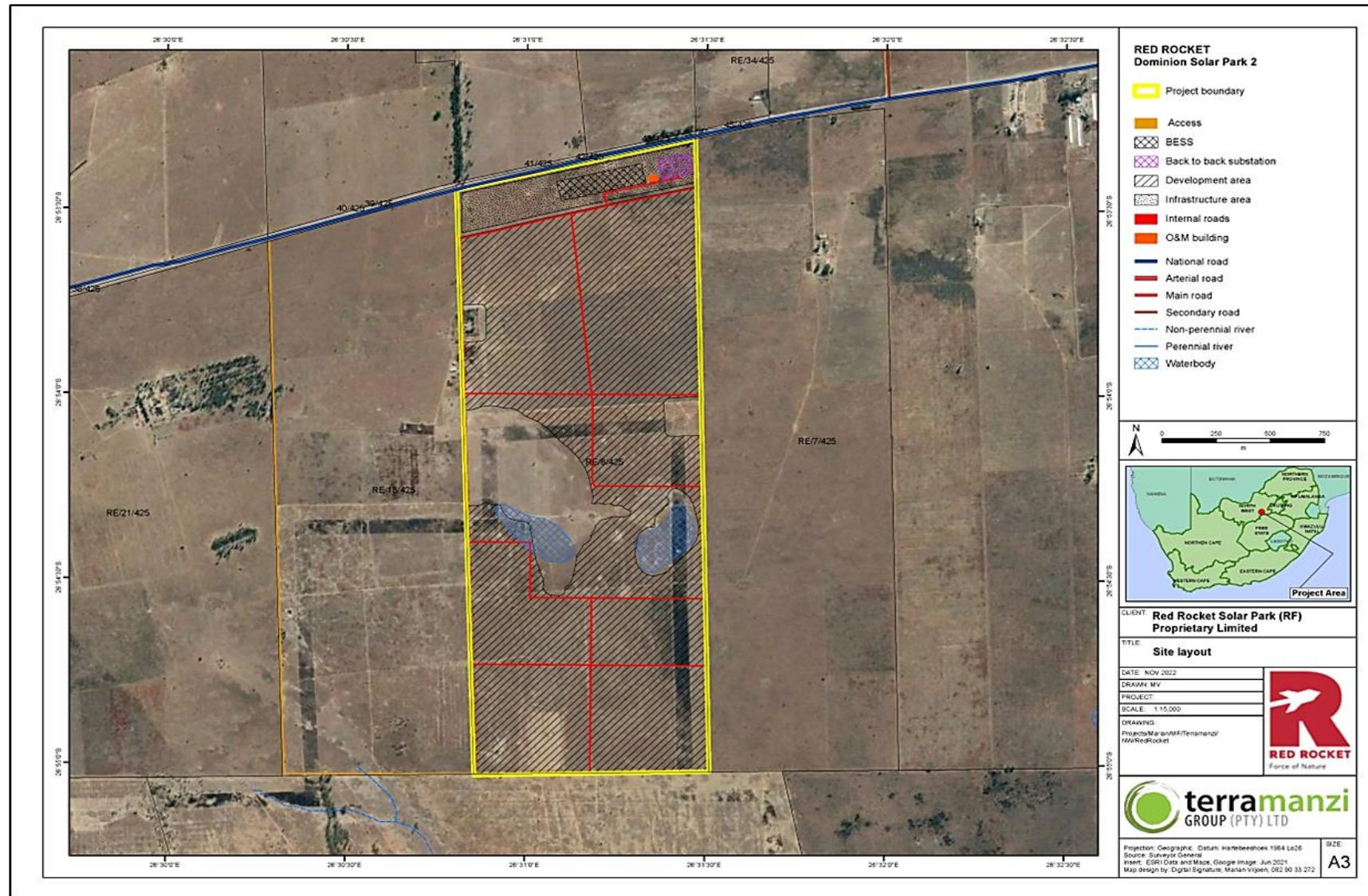


Figure 2: Proposed Facility Layout 1 for the Dominion 2 Solar Park

1.2 ENVIRONMENTAL PERMITTING PROCESS: SUMMARY TO DATE

EIA Phase Layout Design:

The affected property of this project was assessed by independent specialists and Developable and non-Developable areas were identified as part of this Environmental Authorisation Process to guide the Applicant and Professional Team to accommodate the most acceptable and implementable layout for Dominion 2 Solar Park and the associated infrastructure. An Opportunities and Constraints Map has been developed (refer to **Figure 3**) and was presented to the Applicant and Professional team during the process for optimal placement of Dominion 2 Solar Park and associated infrastructure.

Based on the above, the Applicant has investigated and presented a development footprint and facility layout (hereinafter referred to as the Preferred Alternative) which is presented in the accompanying draft Basic Assessment Report.

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED DOMINION SOLAR PARK 2

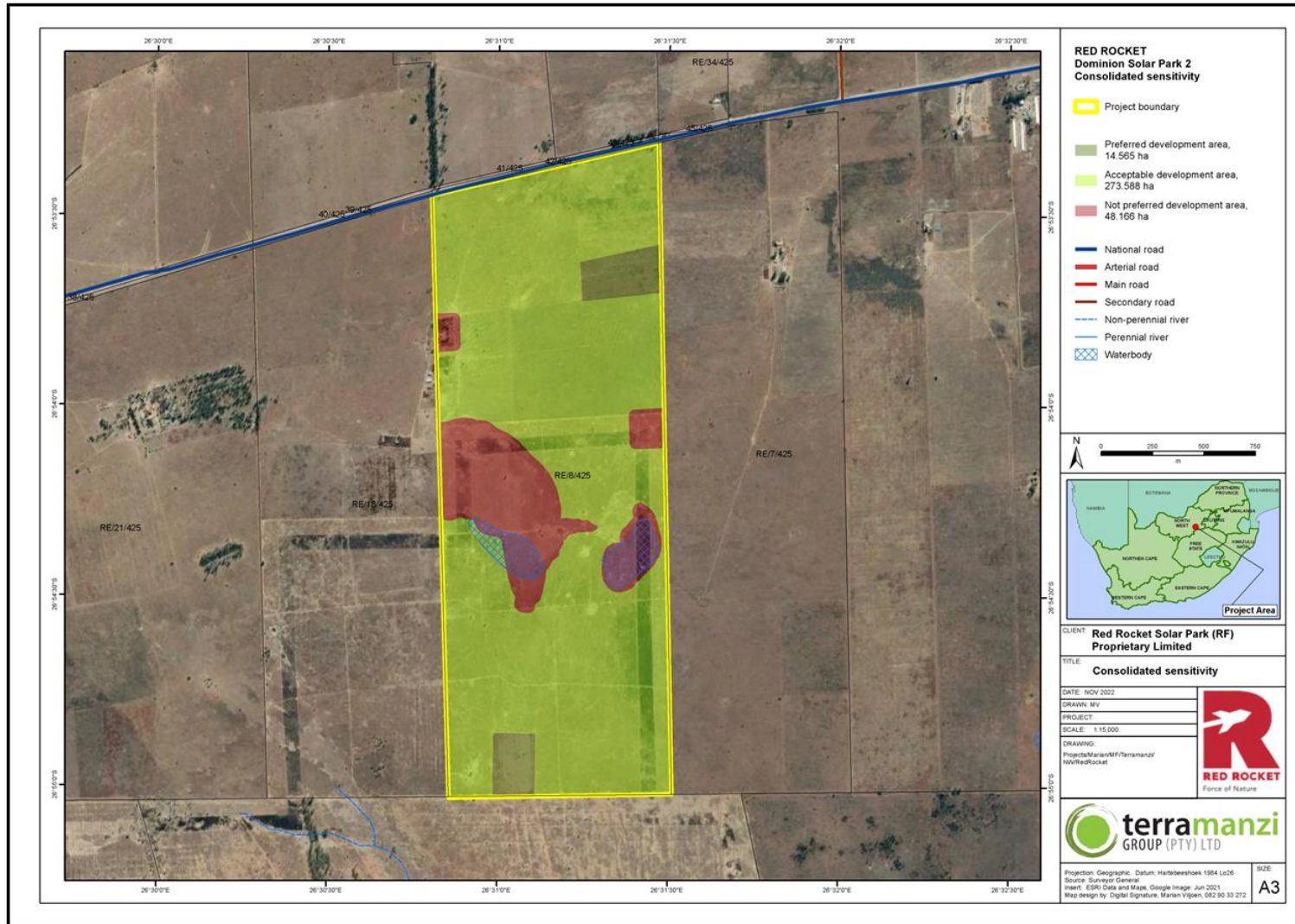


Figure 3: This figure depicts the overall sensitivity areas (Preferred, Acceptable and Not Preferred development areas)

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED DOMINION SOLAR PARK 2

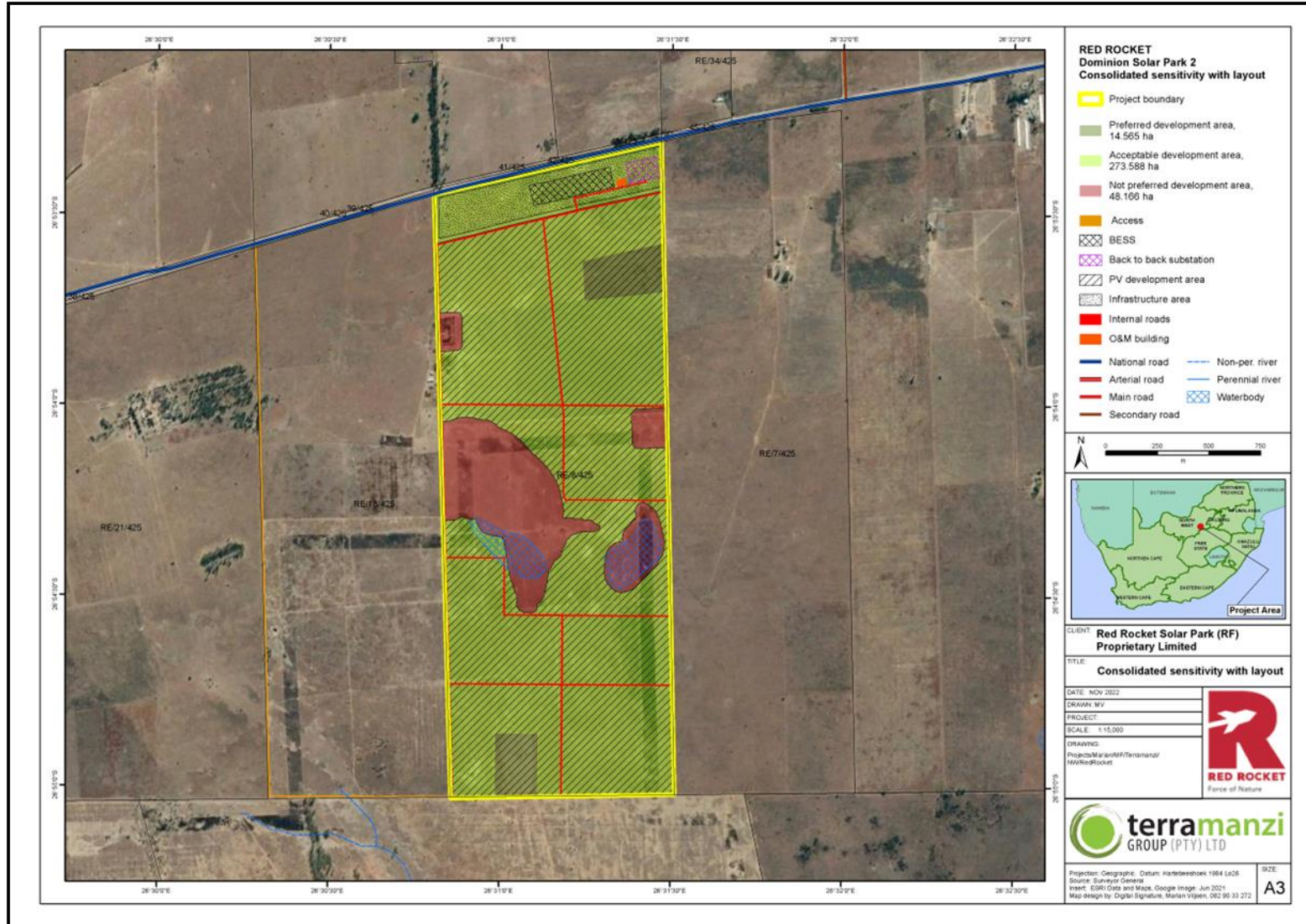


Figure 4: This figure depicts the overall sensitivity areas and the proposed layout of the facility (Preferred, Acceptable and Not Preferred development areas)

1.3 PROJECT COMPONENTS

Design of a photovoltaic (PV) solar park for the Dominion 2 Solar Park

The data below was utilized to inform the design of the proposed Dominion 2 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 2 Solar Park	Access Road	8m wide roads (18 km)
	Back to Back Substation (Including facility substation, Eskom collector station with feeder bays)	15000 m ² 200MVA
	BESS	Storage Capacity (800MWh)
	Paved areas	2 200 m ²
	O&M building	1 500 m ²
	PV Modules	300Ha Tier 1 bi-facial, single axis Trackers Max Height: Up to 6m

The Project will have a contracted capacity of up to 160MW 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 2 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: 600MWh 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.

1.4 SUMMARY OF INDEPENDENT SPECIALIST ASSESSMENTS UNDERTAKEN DURING THE BASIC ASSESSMENT PROCESS

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

Table 1: List of Specialist assessments carried out for the Proposed Dominion 2 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. All specialist studies can be reviewed under Annexure E of this Draft EMPr.

1.4.1 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 2 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 2 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 2 Solar Park is acceptable from a Town Planning perspective.*

1.4.2 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 2 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 Mispah/Glenrosa and Arcadia. Of these identified soils, Mispah/Glenrosa soil forms were the most dominant within the study area

*The majority of the study area is characterised by soils of restricted potential due to the shallow nature of the soils mixed with rocky material and the high clay content. However, some areas used for grazing will potentially be impacted, which will ultimately impact on the local and regional livestock production. In addition, considering the climatic conditions of the area which is associated with limited rainfall as per the review of desk based data sources and the absence of any irrigation scheme, this renders the **study area not suitable for any large-scale agricultural cultivation**. 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 post development.*

*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 2 Solar Park is acceptable from an Agricultural perspective.*

1.4.3 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 2 Solar Park is acceptable and implementable from a terrestrial (flora) perspective.

*Direct impacts through clearance of vegetation will result in the loss of approximately 287 ha of vegetation. Of this, approximately 177 ha will be clearance of moderately low (Degraded and Secondary Grassland) and low sensitivity habitat (Transformed Habitat), and 110 ha of intermediate sensitivity habitat (Rocky Grassland and Wet-response Habitat). No direct loss of Wetland Habitat (of intermediate sensitivity) will take place with the proposed layout. Given the above, **the proposed activities will avoid loss of significant impacts to floral ecology**, and all impacts are anticipated to be restricted a local-scale loss of habitat only. 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.*

The exact impact on floral SCC will only be determined after the floral walkdown of the authorised footprints have been undertaken. However, following the site assessment, **no floral SCC of increased significance is anticipated to be lost due to habitat clearance** (no RDL species anticipated, and only commonly occurring and widespread protected species were recorded). The proposed activities can attempt to avoid destruction of floral SCC through planning of a rescue and relocation plan. For TNCO-protected and NFA-protected trees, the Rocky Grassland, Wet-response Habitat and Degraded Habitat must be targeted for the floral walkdown (to take place during the rainy season: December - February). Floral SCCs are not anticipated to occur in the Transformed Habitat and Secondary Grassland sub-unit.

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-high	Medium-low	Low	Very low
Rocky Grassland	Low	Low	Medium-high	Medium-low	Low	Low
Secondary Grassland	Low	Very low	Medium-low	Medium-low	Low	Very low
Wet-response Habitat	Low	Very low	Medium-high	Medium-low	Low	Very low
Wetland Habitat	Very low	Very low	Low	Very low	Medium-low	Low
Transformed Habitat	Very low	Very low	Very low	Very low	Very low	Very low

IMPACT ON FLORAL SCC						
	PLANNING		CONSTRUCTION		OPERATIONAL AND MAINTENANCE	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Degraded Grassland	Medium-low	Low	Very low	Very low	Low	Very low
Rocky Grassland	Medium-low	Medium-low	Low	Very low	Low	Low
Secondary Grassland	Low	Very low	Very low	Very low	Low	Very low
Wet-response Habitat	Medium-low	Medium-low	Low	Very low	Low	Very low
Wetland Habitat	Very low	Very low	Low	Very low	Low	Low
Transformed Habitat	Very low	Very low	Very low	Very low	Very low	Very 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 2 Solar Park is acceptable from a Flora perspective.

1.4.4 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 2 Solar Park is acceptable and implementable from a terrestrial fauna perspective.

Following the field assessment, five faunal habitats (5 SCC) were noted, Dry Highveld Grassland, Moist Grassland and Transformed Habitat which comprised of the following subunits; Degraded Grassland, Rocky Grassland, Secondary Grassland, Wetland Habitat, Wet Response 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 Rocky Grassland and Wetland habitat are considered the most important habitat unit. The Wetland habitat functions as an

irreplaceable ecological system while the Rocky habitat includes niche habitat for most faunal classes. These largely intact units with higher floral richness increases habitat for many fauna and the rocky nature of the Rocky Grassland provides valuable niche habitat. Due to existing grazing within the Degraded Grassland this unit is of reduced sensitivity from a faunal perspective, however is still important supporting habitat with an increased diversity of common and resilient and small bodied invertebrate and vertebrate fauna. Although suitable habitat for foraging and shelter do occur for most common 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 Secondary Grassland and Wet-Response sub-units obtained a “moderately low” sensitivity, while the Wetland Habitat, Degraded Grassland sub-unit and the Rocky Grassland 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 medium high to very low. **Following mitigation, it is anticipated that most impacts will be reduced to lower levels**. Similar scores are anticipated for the impacts on SCC. In order to reduce medium high impact scores some habitat for fauna should be left untouched and a corridor for faunal movement should be included in the design of the PV facility. 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 2 Solar Park is acceptable from a Fauna perspective.

1.4.5 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 2 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 2 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 2 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:

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- 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 2 Solar Park is acceptable from an Avifauna perspective.

1.4.6 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 2 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 one (1) depression wetland and three (3) seep wetlands were identified within the Proposed Dominion 2 Solar Park and associated investigation area (defined as a 500m radius around the Proposed Dominion 2 Solar Park). The results of the field assessment are as follows:

Freshwater ecosystem	Present Ecological State (PES)	Ecoservices	Ecological Importance and Sensitivity (EIS)	REC / RMO / BAS
Depression wetland located in the central portion of Dominion 2 Solar Park.	Category C (Moderately Modified)	Very Low - Low	Low/marginal	REC Category: C BAS Category: C RMO: Maintain
Seep wetland located in the eastern portion of Dominion 2 Solar Park.	Category C (Moderately Modified)	Very low to moderately high	Moderate	REC Category: C BAS Category: C RMO: Maintain
Seep wetland located in the western portion of Dominion 2 Solar Park.	Category C (Moderately Modified)	Very low to low	Moderate	REC Category: C BAS Category: C RMO: Maintain
Seep wetland located in the south western portion of the investigation area.	Category B (Largely natural with few modifications)	Very low to high	Moderate	REC Category: B BAS Category: B 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 2 Solar Park on the receiving freshwater environment. **The proposed Dominion 2 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 2 Solar Park is acceptable from a Fresh water perspective.

1.4.7 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 2 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 2 Solar Park are offices. The above mentioned sensitive receptors do however have existing tree lines which may potentially screen the view towards Dominion 2 Solar Park. Furthermore, there are scattered tree clumps across the landscape as well which may partially obscure the view of the Dominion 2 Solar Park.

As the Dominion 2 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 2 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 2 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 2 Solar Park is acceptable from a Visual perspective.

1.4.8 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 2 Solar Park is acceptable and implementable from a Heritage perspective

Heritage features

During the fieldwork a total of three heritage features and resources were identified:

- A single burial ground consisting of approximately 15 graves were identified at site D2-002. The site was identified on the 1968 map and subsequently located just outside the N12 road reserve. Most of the graves have stone packed grave dressing with a number having concrete headstones with no inscriptions. Due to the cultural and religious significance of burial grounds the site is graded as Grade 3A. The impact on the recent historic structure (D2-003) identified during the fieldwork is calculated as having a **LOW significance** before and after the implementation of the proposed mitigation measures.
- The recent historic structure at (D2-001) identified during the archival research and fieldwork was, however, 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**.
- The two recent historic structures consist of the remains of a workers farmstead (D2-002) visible on the 1944 aerial photographs as two distinct structures and the original farm house constructed after 1963 (D2-003). The structure and remains of structures are not conservation worthy and contain no cultural or scientific value and are consequently graded as not conservation worthy. The impact on the recent historic structures identified during the fieldwork is calculated as having a **LOW significance** before and after the implementation of the proposed mitigation measures.

Palaeontology

The proposed Dominion 2 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 2 Solar Park is acceptable from a Heritage perspective.*

1.4.9 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 2 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 2 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 2 Solar Park is acceptable from a Traffic perspective.*

1.4.10 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 2 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 2 Solar Park is acceptable from a Noise perspective.*

1.4.11 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 2 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 2 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 2 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 2 Solar Park cannot be attributed directly to any particular climate change effects. In addition, GHG emissions from the

proposed Dominion 2 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 2 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 2 Solar Park is acceptable from a Climate perspective.*

1.4.12 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 2 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 2 Solar Park is acceptable from a Geotechnical perspective.*

1.4.13 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 2 Solar Park is acceptable and implementable from a Geotechnical perspective

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 establishment of the Dominion 2 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 2 Solar Park is acceptable from a Social perspective*

1.5 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.

1.5.1 Potential Construction and Decommissioning Impacts

Construction and Decommissioning impacts have been assessed by the Professional Team and the EAP and are detailed in the draft BAR.

- 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

1.5.2 Potential Operational Impacts

Operational impacts have been assessed by the Professional Team and the EAP and are detailed in the draft BAR.

- 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

1.5.3 Overall Findings for the Draft BA Phase of the Project

Based on the information presented in this Report, inclusive of independent expert studies, the findings of the draft Basic Assessment indicate that the Project, in the form of the preferred alternative, (read strictly in conjunction with this draft EMP, 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 (15000 m²) (200MVA)
- Battery Energy Storage System (BESS) - Storage Capacity (800MWh)
- An operations and maintenance Building (O&M Building) approximately 1 500m²

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

- Internal Access Road 8m wide roads (18 km)
- PV Modules

The preferred alternative has been assessed in the 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 2 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.

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;
- II. The assessment undertaken by the EAP in conjunction with the Specialist Findings; and
- III. The motivation of Alternatives

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: 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

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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 Heritage Structures	-12	1
Heritage Impact 2: Loss of historic structures	-8	1
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	-8
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		

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Agricultural Impact 1: Soil Erosion	-8	1
Agricultural Impact 2: Soil Compaction	-6	1
Agricultural Impact 3: Potential Soil Contamination	-8	1
Agricultural Impact 4: Loss of Agricultural Land Capability	-8	1
Terrestrial (Floral) Impact 1: Habitat and Diversity	-12	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 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 Building	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

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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	217	-427

It is important to highlight, that an extensive collaborative process was undertaken by the Applicant, the EAP and the Professional Team to arrive at the preferred alternative above, which based on the process followed, represents best practice.

The development is subject to the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations (2014, as amended) and as such is subject to an Environmental Application process to the Competent Authority (Department of Forestry, Fisheries and the Environment – DFFE) who will ultimately make a decision on the application. One of the requirements of the application process was that an Environmental Management Programme (EMPr) be prepared that incorporates aspects as per the associated Draft BAR and further complies with Annexure 4 of Government Notice Number R.982 of the NEMA EIA Regulations (2014, as amended) is produced. This Draft EMPr must address the potential lifecycle environmental impacts of the proposed activity.

The EMPr should also adhere to the local authority by law requirements as well as any other obligatory environmental and other legal requirements.

This EMPr is a practical and achievable plan to ensure that environmental risks and opportunities (i.e., opportunities to provide environmentally friendly alternatives) are identified and addressed during the various stages of the Project life cycle (namely pre-construction, construction, operation, pre-decommissioning and decommissioning).

This document is dynamic and can be amended during the project life cycle in order to continue adapting the document to the requirements of the environmental management on site. Changes to this EMPr can only occur with the written approval of all parties (including the local authority and the DFFE) involved and an updated version should also be forwarded to all parties once agreed.

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It is understood that the client or any future development entity (where transfer of ownership occurs) will be fully responsible for this EMPr and its requirements including any environmental rehabilitation that may be needed. This is required in terms of Section 28 (*Duty of Care and Remediation of Damage*) of the National Environmental Management Act, (Act No. 107 of 1998).

2. STRUCTURE OF THIS EMPR

Annexure A contains the Glossary

Annexure B contains the generic Method Statement

Annexure C contains design and planning documentation

Annexure D contains a detailed copy of the recommended Roles and Responsibilities of the Environmental Control Officer (ECO)

Annexure E contains the associated specialist studies for the project

Annexure F contains the alien invasive management plan

Annexure G contains the heritage management plan

Annexure H contains the EAP's Curriculum Vitae

3. TERMS OF REFERENCE

This EMPr was designed and produced in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations (2014, as amended). This EMPr also includes the best practice provisions recommended in Section 3 of the New South Wales (Australia) Environmental Management System Guidelines (2009) which are recognized as International Best Practice and based on the ISO 14001 system, as well as any applicable statutory environmental requirements.

In terms of NEMA (as amended), an independent Environmental Assessment Practitioner (EAP) must be appointed in terms of section 12 to 14 of the EIA Regulations (2014, as amended). Terramanzi Group (Pty) Ltd (TMG) has been appointed to undertake this Application for Environmental Authorisation on behalf of the Applicant.

Fabio Venturi, the independent EAP, responsible for this Report, has a wealth of strategic environmental assessment and environmental management expertise in both government and the private sectors, stretching over a decade within the industry. Fabio Venturi is a **certified Environmental Scientist** registered with the Southern African Institute of Ecologists and Environmental Scientists (“SAIEES”), served on the Western Cape **Committee** Branch of the South African Affiliate of the International Association for Impact Assessment (“IAIASa”) and the National Executive, is a **founding member** of the Environmental Assessment Practitioners Association of South Africa (“EAPASA”), is a **Certified Carbon Footprint Analyst** and **Energy Efficiency Auditor** and is qualified as an **Accredited Professional** (“AP”) with the **Green Building Council of South Africa** (“GBCSA”).

Fabio Venturi was assisted and supported on this Project by Kristen Shaw and Roschel Maharaj.

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.

Roschel Maharaj is the co-author of this report. Roschel was involved in the compilation and review of this draft report. Roschel is an environmental consultant with more than 7 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.

Fabio Venturi, on behalf of Terramanzi Group (Pty) Ltd (“TMG”), the consulting firm appointed to undertake the environmental permitting process as detailed in this report, hereby declares that the EAP and the firm have no conflicts of interest related to the work of this Report. Specifically, the EAP and the firm declare 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. The EAP and the firm declare that the opinions expressed in this Report are independent and a true reflection of the professional expertise exercised.

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).

3.1 ENVIRONMENTAL IMPACT ASSESSMENTS

The proposed development is subject to a Basic Assessment Process in terms of the NEMA Environmental Impact Assessment Regulations (2014, as amended). This Lifecycle Environmental Management Programme (“EMPr”) is an appendix to the draft BA Report and is in compliance with the requirements of the Competent Authority in terms of Annexure 4 of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended).

3.2 DEVELOPMENT CONSENT CONDITIONS

Not Applicable

3.3 POLLUTION CONTROL APPROVALS

Not Applicable

3.4 STATUTORY OBLIGATIONS

The applicant should incorporate the following statutory and best practice requirements as part of any contract documentation related to the construction, operation and decommissioning (if required) of the proposed development:

- The National Environmental Management Act, Act 107 of 1998 (NEMA)
- National Environmental Management: Biodiversity Act 10 of 2004 (as amended)
- National Water Act, 1998 (Act No. 36 of 1998) (as amended)
- National Heritage Resources Act, Act 25 of 1999 (as amended)
- The National Environmental Management: Waste Act (March 2008)
- Relevant SANS codes

3.5 CONTRACT OBLIGATIONS

It is understood the all contract documentation related to the construction, operation and decommissioning (if required) of the proposed development will include the conditions of this EMPr. It is important to note that the contract obligations must include the recording of any complaints on the Project in the environmental register (defined below). Further, it is incumbent on the ECO to keep an accurate audit trail showing compliance with the EMPr during construction phase.

3.6 ENVIRONMENTAL RISKS

The following environmental risks have been identified based on the available information:

Potential Impact	EMP reference
PRE CONSTRUCTION	
Bulk Services Identification	Refer to Section 4.1
Permits	Refer to Section 4.1
Site Boundaries	Refer to Section 4.1
“No-Go” Areas	Refer to Section 4.1
Training	Refer to Section 4.1
Site Layout	Refer to Section 4.1
Working Hours	Refer to Section 4.1
Visual Management	Refer to Section 4.1
CONSTRUCTION PHASE	

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Social Considerations Management	Refer to Section 4.2
Socio-Economic Management	Refer to Section 4.2
Appropriate Machinery Management	Refer to Section 4.2
Waste Management	Refer to Section 4.2
Safety and First Aid	Refer to Section 4.2
Air Quality Management	Refer to Section 4.2
Water Quality Management	Refer to Section 4.2
Hazardous Material (Bitumen, Oils and Lubricants) Management	Refer to Section 4.2
Hazardous Material (Fuels and Oils) Management	Refer to Section 4.2
Workshop, Equipment Maintenance and Storage Management	Refer to Section 4.2
Noise Pollution Management	Refer to Section 4.2
Blasting/Drilling/Demolitions	Refer to Section 4.2
Concrete Mixing (Batching) Management	Refer to Section 4.2
Establishment of Construction Laydown Area	Refer to Section 4.2
Fire Management	Refer to Section 4.2
Traffic Control	Refer to Section 4.2
Wet Environments Management	Refer to Section 4.2
Storm water and Erosion Management	Refer to Section 4.2
Natural Vegetation Management	Refer to Section 4.2
Heritage (including Archaeological) Resource Management	Refer to Section 4.2
Faunal Management	Refer to Section 4.2
Avifaunal Management	Refer to Section 4.2
Visual Management	Refer to Section 4.2
Topsoil Management	Refer to Section 4.2
Agricultural Management	Refer to Section 4.2
OPERATIONAL PHASE	
Hazardous Waste Management	Refer to Section 4.3
Socio-Economic Management	Refer to Section 4.3
Wet Environment Management	Refer to Section 4.3
Storm water and Erosion Management	Refer to Section 4.2
Natural Vegetation Management	Refer to Section 4.3
Heritage (including Archaeological) Resource Management	Refer to Section 4.3
Faunal Management	Refer to Section 4.3
Avifaunal Management	Refer to Section 4.3
Visual Management	Refer to Section 4.3
Emergency Management	Refer to Section 4.3
Fire Management	Refer to Section 4.3
DECOMMISSIONING PHASE	
Please refer to the Construction Phase Impacts	

3.7 ENVIRONMENTAL OPPORTUNITIES

It would be responsible of the applicant to implement the principles below to minimise environmental risks and maximise environmental opportunities as defined above.

Sustainable development is best summarised by an extract from the United Nations World Commission on Environment and Development 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).

The NEMA Principles state 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.*

In this regard, **sustainable technology alternatives** that are technologically and environmentally superior to "standard" technologies should be promoted at all times which will assist in meeting compliance with the above Principles. All recommendations relating to the above and as contained in this EMPr should therefore be implemented.

4. ENVIRONMENTAL OBJECTIVES, TARGETS AND MEASURES

4.1 PRE-CONSTRUCTION PHASE IMPACTS

4.1.1 Bulk Services Identification

Objectives: To minimise any possible damage to bulk services as a result of pre-construction and construction related activities.

Targets: To comply with any local authority by laws regarding bulk services and to avoid additional costs and potential project delays due to damage to these services.

Measures:

- If any bulk services are required to be relocated and/or re-routed, then the appropriate permits/approvals must be sought.
- The location of existing bulk services must be determined to prevent accidental damage to these facilities.

4.1.2 Permits

Objectives: To ensure that the necessary permits regarding any activities related to construction activities are in place prior to construction starting.

Targets: To ensure that the construction works can proceed without possible delays and/or legal repercussions during building works as a result of outstanding permits and/or non-compliance with permits.

Measures:

- The client shall issue a list of applicable permitting conditions together with the respective permits/authorisations to the ECO prior to the start of construction works.
- Permits are to be acquired from the relevant authorities should protected or RDL floral species be removed or relocated.

4.1.3 Site Boundaries

Objectives: To ensure that site boundaries are agreed to by the ECO, Principal Agent and Contractor prior to the start of the site operations.

Targets: To contain construction activities to the development site/s and prevent unauthorised access (pedestrian or vehicular) and to demarcate potentially sensitive areas and or vegetation.

Measures:

- The Contractor must fence or clearly demarcate the area where construction activities are taking place.
- Access to the site must be restricted, to ensure that members of the public are not able to gain access other than via the designated, controlled access points.

4.1.4 “No-Go” Areas

Objectives: To minimise any potential impacts to identified sensitive areas.

Targets: To prevent possible impacts to any identified sensitive areas on site.

Measures:

- Before any work commences on site, sensitive areas must be demarcated in conjunction with the ECO;
- A construction site layout plan must be compiled and approved by the ECO, clearly stipulating where the ablutions, equipment, machinery, etc. are required to be placed, thereby not allowing any encroachments on the sensitive areas on site;
- Should additional working space be required at a later date, this must be agreed between the Principal Agent, Contractor, and ECO;
- Authorisation from the Principal Agent must only be given once the potential impacts have been assessed by the ECO;
- Any construction activities taking place prior to the above will constitute a serious violation of this EMPr and are liable to a fine as detailed within this EMPr;
- No vehicles should be allowed to drive through designated sensitive areas.

4.1.5 Training

Objectives: To ensure that all staff working on site are adequately trained on the requirements of this EMPr and are legally compliant with relevant legislation.

Targets: To ensure that the requirements of this EMPr are understood and implemented by all staff (as and when required) on site.

Measures:

- The ECO will provide for on-going training sessions (as required), to ensure that all staff working on site are familiar with the workings and requirements of this EMPr.
- An interpreter should be provided as required.

4.1.6 Construction phase site layout

Objectives: To designate areas on site for various types of construction related activities.

Targets: To ensure an efficient and orderly layout that promotes safe access.

Measures:

- The location of the Contractor’s camp, toilet facilities and storage areas must be agreed to by the ECO, Principal Agent and Contractor prior to the commencement of work at the site.
- A sketch diagram of the above is required by the ECO.
- These areas must all be kept tidy, sanitary and in good condition throughout the project.
- Any construction activities taking place prior to the above will constitute a serious violation of this EMPr and are liable to a fine as detailed within this EMPr.
- All development footprint areas should remain as small as possible and should not encroach onto no-go areas. It must be ensured that these areas are off-limits to construction vehicles and personnel unless these personnel are involved in rehabilitation activities. Very strict control of edge effects must be practiced.

4.1.7 Working Hours

Objectives: To designate working hours for construction related activities.

Targets: To ensure that the hours of operation shall be restricted to those stipulated by the local authority.

Measures:

- The Contractor shall at all times ensure that working hours are restricted to those stipulated by the local authority.
- Modifications to the above may only take place through the local authority and the ECO must be notified in writing.

4.1.8 Faunal Management

Objectives: To aid in the conservation of faunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna.

Measures:

Habitat and Species Diversity:

- Where possible, and feasible, all access roads should be kept to existing roads so to reduce fragmentation of existing natural habitat;
- Minimise loss of indigenous vegetation where possible through planning and adherence to suitable layouts;
- At all times, ensure that sound environmental management is in place during the planning phase;
- During the site-pegging phase of surface infrastructure, any faunal SCC that will be affected by surface infrastructure must be noted and recorded. Should the species need to be removed the relevant permits must be applied for from the North West Department: Economic Development, Environment, Conservation and Tourism (NWDETECT) or from the Department of Forestry, Fisheries and the Environment (DFFE) prior to construction;
- It is considered imperative that the development area be optimised and that all sensitive areas be avoided as far as possible (Wetland habitat and Rocky Grassland). This is in line with the DFFE (2013) mitigation hierarchy that stipulates high risk activities must be avoided first and foremost;
- Minimise loss of indigenous vegetation where possible through refining the final development footprint, optimising the design within project areas while avoiding sensitive Rocky Grassland habitat and Wetland habitat where possible;
- Design of infrastructure should be environmentally sound and all construction equipment to be utilised must be a good working condition, and all possible precautions taken to prevent potential faunal collisions or electrocutions, and mechanical spills and/or leaks;
- Prior to the commencement of proposed activities on site a Biodiversity Management Plans and an alien vegetation management plan should be compiled for implementation throughout all development phases.

Species of Conservation Concern (SCC):

- In terms of the DFFE (2013) mitigation hierarchy, avoidance should be undertaken first and foremost to avoid high impacts. As such, all areas indicated as highly sensitive from a faunal perspective should be avoided. Following this, and if not completely possible a search and rescue should be undertaken just prior to the vegetation clearing activities. This search and rescue should be focused on smaller, less

mobile SCC that will not be able to move away from the disturbances. This should be overseen by a suitably qualified specialist or capable and nominated staff member in order to ensure that species loss during construction activities is kept to a minimum;

- An authorised rescue and relocation plan must be compiled prior to commencement of construction and operational activities so all personnel are aware of the requirements should a SCC be encountered;
- Prior to vegetation clearing activities, the site should be inspected for the presence of SCC, including burrowing scorpion burrows, reptiles and baboon spiders. 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 NWDEDECT prior to the relocation of any faunal SCC;
- As far as possible footprints should not be placed within the Wetland habitat and its relevant zone of regulation; and
- As far as possible existing access roads are to be used for access.

4.1.9 Floral Management

Objectives: To aid in the conservation of floral resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of flora.

Measures:

Habitat and Species Diversity:

- Minimise loss of indigenous vegetation and natural habitat where possible through adequate planning and, where necessary, by incorporating the sensitivity of the biodiversity report as well as other specialist studies;
- It must be ensured that, as far as possible, all proposed infrastructure, including temporary infrastructure, is placed outside of habitat units with increased sensitivity (notably the Wetland Habitat sub-unit);
- Access roads and internal roads must be kept to existing roads as far as possible (several roads already exist) so as to reduce fragmentation of natural habitat outside of the authorised footprint;
- It is recommended that prior to the commencement of construction activities that the construction servitude be clearly demarcated to prevent footprint creep into areas beyond the authorised footprints;
- Develop a rehabilitation plan that will promote habitat reinstatement in disturbed sites and allow for increased habitat connectivity during the operation and maintenance phase of the project;
- Ensure sound stormwater management planning;
- Prior to the commencement of construction activities, an AIP Management/Control Plan should be in place for implementation:
 - Removal of alien invasive species should, as far as possible, commence during the planning phase and continue throughout all project phases. It is recommended that AIPs be cleared within the construction footprints before any vegetation clearing activities commence, thereby ensuring that no AIP propagules are spread with construction rubble or with native vegetation, or soils contaminated with AIP seeds during the construction phase. If this is not feasible, it will be of utmost importance to ensure that all vegetation cuttings with AIPs should be disposed of appropriately (refer to mitigation measures under the construction phase); and
 - An AIP Management/Control Plan should be implemented by a qualified professional. No uncertified chemical use for AIP control may take place. All required Personal Protective Equipment (PPE) to be used during chemical and mechanical AIP clearing and control.

Species of Conservation Concern (SCC) and Protected Flora:

- Floral SCC (i.e., TNCO- and NFA-protected flora) are associated with the habitat in which the proposed activities will take place (mainly within the Rocky Grassland, Wet-response Habitat, and Wetland Habitat). A walkdown of the footprint area must take place before construction activities commence, where all anticipated floral SCC are searched for and marked to determine the number of individuals that will be impacted. Based on the outcome of the walkdown, the appropriateness of rescue and relocation initiatives must be determined, and a rescue and relocation plan may be required. The following permit application will be necessary:
 - The triggered VU species is not anticipated to be on site, however, if a walkdown of the Rocky Grassland takes place and the species is encountered, guidance from the DFFE is required in terms of potentially relocating of the species (which would have to outside of Dominion PV 2 as no habitat in the site will remain that is suitable for relocation);
 - Where NFA-protected trees will be impacted (potentially occurring *Vachellia erioloba* within the Degraded Grassland), permits from DFFE will be required; and
 - Where TNCO-protected species will be impacted (potentially occurring *Ammocharis coronica* and confirmed *Gladiolus cf. crassifolius* and *Habenaria sp.* within the Rocky Grassland, Wet-response Habitat, and Degraded Grassland), permits from the North West DEDECT will be required. Species will be suitable for relocation. Only species within the Wet-response Habitat can be relocated to the Wetland Habitat within Dominion PV 2, whereas the rest would require relocation to outside of the property.
- For NFA-protected tree species, attempting to relocate mature individuals are often too expensive and/or result in unsuccessful re-establishment due to unavoidable damage to their root systems during their excavation. Where possible, seedlings of affected tree species should be targeted for relocation, and seeds must be harvested prior to vegetation clearance to use in rehabilitation activities or as part of vegetation maintenance surrounding the PV footprints. It is important that seedlings and seeds be harvested within a close proximity of an area to be impacted, so as to prevent alteration of population genetics; and
- Geophytes and succulents are good candidates for rescue and relocation, and these should be targeted for such initiatives.

4.2 CONSTRUCTION PHASE IMPACTS

Please note that upon completion of construction phase activities, all related structures, materials and waste must be removed from site.

4.2.1 Social Considerations Management

Objective: To minimise social impacts (e.g., nuisance factors) related to the construction of the site through effective communications with abutting neighbours.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to site construction and demolition impacts.

Measures:

- All abutting neighbours (or as required) must be notified of the proposed construction phase activities at least two weeks before they commence.
- The Contractor must record and repair any damage that the construction works may cause to neighbouring properties, to the satisfaction of the ECO.
- The ECO must be notified in writing of any incidents relating to the above.

4.2.2 Socio-economic Management:

Objective: To maximise impacts on employment in the area during the construction phase.

Targets: To ensure that employment for local people is ensured during the construction phase.

Measures:

Creation of local employment and business opportunities

In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented:

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 contractors 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 contractor 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 overnight 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:

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- 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 losses 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.

4.2.3 Appropriate Machinery Management

Objectives: To minimise possible nuisance effects and environmental damage through the use, storage and/or handling of machinery during the construction works.

Targets: To ensure that impacts and damage to the environment are minimised via the responsible use of appropriate machinery on site.

Measures:

- The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (no-go areas) required to comply with the specifications. The Contractor shall ensure that these delivery drivers are supervised during off loading and made well aware of the specification of the site.
- The Contractor shall at all times carefully consider what machinery is appropriate to the task in the context of this EMPr while minimising the extent of environmental impact.
- Materials shall be appropriately secured and/or covered to ensure safe transportation between destinations.
- Loads containing but not limited to, sand, stone, fine vegetation, chips, paper, cement sand and waste, must be appropriately covered to ensure that such materials do not spill during the transportation of such materials. The Contractor in charge is responsible for any required “clean-ups” resulting from failure by his employees or suppliers to properly cover the required materials.
- Construction machinery must be located away from sensitive areas when parked for extended periods of time.
- A dedicated parking area must be defined with drip trays beneath any leaking equipment and fuel/lubricant absorbing media (peat/moss type products) within these drip trays must be used to contain any spilled liquids.
- These materials must be replaced regularly to prevent over-saturation and potential spillage of free phase product. This material must be disposed of as hazardous waste and be collected by an approved Contractor/delivered to a suitable waste site.
- Chain of custody documentation must be provided as proof of final end recipient.
- All spills must be recorded in the Environmental Register, including any clean-up actions taken to remediate the spillage. Such actions must be agreed with the ECO prior to taking place.
- In the event of spillage on site, the ECO should contact the municipality to determine whether the spillage constitutes a NEMA Section 30 incident

4.2.4 Waste Management

Objectives: To minimise possible environmental damage through inappropriate waste management on site or related to the site.

Targets: To ensure that the handling of waste is in accordance with the statutory requirements of the local authority by laws and the NEM: Waste Act (2008).

Measures:

1) Liquid Waste:

- Storage areas that contain hazardous substances must be covered and bunded with an approved impermeable liner or have some form of secondary containment.
- The Contractor shall keep Material Safety Data Sheet (MSDS) on-site for all potentially hazardous materials used.
- Suitably trained personnel shall be available on the site during working hours so that in the event of human exposure to any hazardous materials that the correct first aid actions are taken. This training should also include environmental spill containment procedures.
- Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity.
- Chain of Custody documentation must be provided for any hazardous substances disposed of as proof of end recipient.
- No discharge of pollutants such as cement, concrete, chemicals, fuels or oils will be allowed into any water resource;
- The areas around fuel tanks must be bunded
- Only above ground temporary storage tanks must be allowed on site;
- Contaminated or potentially contaminated water must be kept separated from unpolluted storm water.

2) Solid Waste:

- Waste must be categorised by the Contractor and disposed of in a suitable manner into separate waste streams (this includes general and hazardous waste).
- The Contractor must provide an adequate number of waste receptacles for general waste at points around the construction site, and a single collection point for hazardous waste.
- The frequency of collections/emptying of waste receptacles must be at least once per week or at such a frequency that waste receptacles do not overflow.
- Particular care shall be taken with the disposal of materials that could be wind-borne or waterborne to ensure that the release of these materials is minimised (the latter is a requirement for hazardous waste). Alternatively, bins with weighted lids must be used.
- The use of netting covers or similar sealed containers must be implemented as and when required by the ESO.
- Areas demarcated for specific activities including food consumption must have suitable waste receptacles provided.
- Wherever possible recycling must be carried out.
- No dumping within the surrounding area is to be permitted.
- No burning of solid waste is allowed.
- All material used by the Contractor during the construction phase shall be managed in such a way that it does not cause pollution, or that minimises pollution. In the event of a spillage, the Contractor should have suitably trained personnel who can correctly clean up any spillage in an efficient and environmentally sound manner.

3) Hazardous Waste:

- All hazardous waste must be stored in a demarcated area and disposed of using professional waste disposal contractors. All documents relating to volumes and type of waste must be kept on site for inspection;

- Storage areas that contain hazardous substances must be covered and banded with an approved impermeable liner or have some form of secondary containment.
- The Contractor shall keep MSDS on-site for all potentially hazardous materials used.
- Suitably trained personnel shall be available on the site during working hours so that in the event of human exposure to any hazardous materials, the correct first aid actions are taken. This training should also include environmental spill containment procedures
- Any spills occurring on site must be cleaned up, removed and disposed of safely as soon after detection as possible to minimize pollution risk.
- Chain of Custody documentation must be provided for any hazardous substances disposed of as proof of end recipient.
- All significant spills of harmful product/waste into the soil or water resources that might lead to environmental degradation must be reported to all relevant authorities. This requirement is in terms of Section 30 (10) of the National Environmental Management Act, No. 107 of 1998 (NEMA).

4) Ablution Facilities

- Chemical toilet facilities are to be supplied and managed by the Contractor. These are to be located in a specific area agreed to by the ECO prior to placement and to be used by all personnel.
- The number of chemical toilets required on site (i.e., the ratio of persons working on site to number of toilets) must be determined in conjunction with the Competent Local Authority prior to works starting on site.
- These toilets are to be secured (e.g., held down with four separate cables or guy ropes) to ensure that they are not knocked over or blown over by the wind.
- Ablution facilities provided will include shelter, toilets and hand washing facilities;
- Toilets will be provided as required;
- Sanitation facilities shall be located within 100m of any point of work, but not closer than 50m from any water body, storm water channels and no-go areas; or according to the customer EMP;Pr;
- All temporary/portable toilets will be secured to the ground to prevent them toppling due to wind or any other cause;
- Entrances to toilets will be adequately screened from public view;
- Ablution facilities provided will be maintained in a hygienic state and serviced regularly to ensure proper operation;
- Toilet paper will be supplied at ablutions;
- No spillage will be allowed when the toilets are cleaned or serviced;
- The contents of chemical toilets must be removed by an approved contractor to an approved disposal site;
- The toilets must be serviced on a scheduled programme and cleaned accordingly.

4.2.5 Safety and First Aid Management

Objectives: To minimise any potential safety or health related incidents on site.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to health and safety on a construction site.

Measures:

- All people working on site are responsible for their own safety on site. Contractors and Principal Agent/s shall at all times comply with the relevant statutory requirements including the Occupational Health and Safety Act (Act 85 of 1993).
- A comprehensive site specific first aid kit must be available on site at all times.

- At least one person trained in safety and first aid and familiar with the first aid equipment on site must be present on the site at all times.
- Emergency procedures must also be established prior to the start of construction operations on site and appended to this EMPr.

4.2.6 Air Quality (Dust Impacts) Management

Objectives: To minimise potential air quality impacts during construction related activities.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements (specifically Western Cape Noise Control Regulations of 2013 (Provincial Notice 200/2013); and National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)) relating to air quality.

Measures:

- Wind-blown dust and sand may generate considerable negative impacts (e.g., reduced visibility for vehicles travelling along adjacent roads and nuisance to neighbours/adjacent erven). Therefore, the following is required to be taken into account:
 - The use of water bowsers and wetting down of loose soil areas, as well as the erection of shade netting screens to prevent off-site movement of dust.
 - The use of straw stabilisation or mulching of exposed sandy areas must also be considered in consultation with the ECO.
 - Speed limits for vehicles on unpaved roads and minimisation of haul distances should be implemented on site.
 - All material loads need to be properly covered during the transportation process.
 - Location and treatment of material stockpile must take into consideration the prevailing winds direction and location of sensitive receptors.
 - Adherence to ear duct loads and protective gear which is stipulated in the Occupational Health and Safety Act (Act No. 85 of 1993).
- In particular, no potable water may be used for dust suppression purposes.
- During the dry season and during the wind season, a water bower must be present on site at all times to ensure that all dust is wetted and managed appropriately.
- Dust abatement techniques must be used before and during surface clearing, excavation, or blasting activities.
- Appropriate dust suppression techniques must be implemented on all exposed surfaces during periods of high wind. Such measures may include wet suppression, chemical stabilisation, the use of a wind fence, covering surfaces with straw chippings and re-vegetation of open areas.

4.2.7 Water Quality Management

Objectives: To minimise any potential impacts on the water quality of the site and off site through indirect impacts.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to water quality.

Measures:

- Site staff shall not be permitted to use any stream, river, open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing, or for any construction or related activities.
- Bowser water (or another source approved by the Principal Agent and ECO) should instead be used for all activities such as washing of equipment, dust suppression, concrete mixing, compaction, etc. with the latter taking place well outside any identified sensitive areas and within a demarcated area approved by the ECO.
- In particular, no potable water may be used for dust suppression purposes.
- Before an operation occurs near a waterbody, vehicles should be checked for leaks, to reduce soil and water contamination from vehicle fluids.
- Re-fuelling areas for vehicles should be bunded and located away from water resources and sensitive environments to prevent any accidental spillage contaminating soil or seeping into groundwater aquifers. All servicing area run-off should be directed towards a fully contained collection sump for recovery and appropriate disposal.
- Old engine oil must NOT be thrown on the ground or down a storm water drain but rather collected in containers and recycled.
- If soil contamination occurs (such as due to a spill), the soil should be removed from the site and legally disposed of appropriately.
- Any spills that occur during all phases of the development must be recorded in the Environmental Register. All clean-up actions must also be recorded that was used to remediate the spillage. All actions need to be agreed in conjunction with the ECO prior to commencing any work.

4.2.8 Hazardous Material (Bitumen Oils and Lubricants) Management

Objective: To minimise any potential hazardous material from causing environmental damage through the use, storage and/or handling of such hazardous material during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- The Contractor shall ensure that all hazardous materials are stored within a bunded area.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.
- When hazardous materials are required to be dispensed, proper dispensing equipment should be used and made available on the site for such activities.
- The dispensing equipment is required to be stored in a waterproof container when not in use.
- Hazardous material should be used in moderation and dispensed at designated areas, which are controlled appropriately.
- The Contractor shall take all reasonable and necessary precautions to prevent accidental and incidental spillage during the use of such materials.
- In the event of a hazardous material spill, the Contractor must isolate and contain the hazardous material spillage.
- The Contractor shall clean up the spill, either by removing the contaminated soil and/or by the application of absorbent material in the event of a larger spill.
- Treatment and remediation of the spill will be undertaken to the reasonable satisfaction of the Engineer.
- The Contractor must advise that Engineers and the ECO of where any Bitumen is being stored.
- The storage area of hazardous waste should comprise of a smooth impermeable floor (concrete and/or 250um plastic cover).

- A spill kit is required to be present on the site at all times.

4.2.9 Hazardous Material (Fuels, Oils and Others) Management

Objective: To minimise any hazardous fuel and oil material from causing environmental damage through the use, storage and/or handling of such hazardous material during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- Fuel may be stored on site in an area which has been approved by an Engineer and the ECO.
- The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are firmly shut and/or in bowzers.
- The tanks or bowzers are required to be located on smooth impermeable surfaces (concrete or plastic) with an earth bund.
- The impermeable lining shall extend to the crest of the bund and the volume of the bund will be 130% of the total of the storage tanks and/or bowzers located on the site.
- The bunded area is required to be sheltered from the rain.
- Provisions shall be made for refuelling at the fuel storage area, by protecting the open soil with bunding.
- If fuel will be dispensed from 200 litre drums, only empty clean drums will be able to be stored on the bare ground.
- All empty dirty drums must be stored on a bunded area.
- Should the use of a 200l drum be required, proper dispensing mechanisms are required to be used and the drum will not be allowed to be tipped in order to dispense the fuel.
- The dispensing mechanism for the fuel drums must be stored in a waterproof container when it is not in use.
- The Contractor will be required to prevent unauthorised access to the fuel storage area.
- No smoking must be allowed within the vicinity of the fuel storage areas.
- The Contractor must ensure that adequate fire-fighting equipment is readily available at the fuel storage area.
- Where reasonable practical the plant shall be refuelled at the fuel storage area or at the workshop as applicable. If it is not possible then the surface under the refuelling area must be bunded with plastic and/or wooden pallets.
- The Contractor is required to ensure that absorbent materials are readily available in the vicinity of the refuelling areas to absorb and/or breakdown and where possible be designed to encapsulate minor hydrocarbon spills.
- This absorbent material must be able to absorb a minimum spill of 200l of hydrocarbons.
- The Contractor must obtain the Engineer's and ECO's approval for any refuelling or maintenance activities.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.
- Damaged solar panels are classified as hazardous waste and should be stored in a covered, impermeable area. These panels should be returned to the supplier for repairs or recycling, or supplied to a licensed recycling facility or licensed hazardous waste disposal facility where no recycling or re-use is possible.
- The storage of general waste in excess of 100m³ and/ or the storage of hazardous waste in excess of 80m³, excluding the storage of waste in lagoons or the temporary storage (i.e., less than 90 days) of such waste, requires the applicant to comply with GN No. 926 of 29 November 2013: National Norms and Standards for the Storage of Waste.

4.2.10 Workshop, Equipment Maintenance and Storage Management

Objective: To minimise any potential dangerous material from causing environmental damage through the use, storage and/or establishment of such areas during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to such storage and/or workshop and/or equipment maintenance areas.

Measures:

- Should any leaking equipment be present on this site, this equipment is required to be removed from the site immediately.
- All maintenance of equipment and vehicles on site should ideally be repaired off site or at a designated workshop area, which is appropriately bunded.
- Should emergency maintenance work be undertaken outside of the workshop area then this emergency work is required to be bunded appropriately and further such works must be approved by the Engineer and ECO prior to commencement.
- The Contractor must ensure that the workshop and/or any other maintenance areas (such as emergency maintenance areas) do not result in the contamination of the soil and/or vegetation.
- The workshop must have a smooth impermeable floor (concrete and/or plastic).
- The floor of the workshop is required to be angled towards an oil trap and/or sump to ensure that any dangerous spills are contained in the workshop area.
- Should servicing of equipment be required to be undertaken on the site then drip trays are required to be used to contain any waste oil and other lubricants.
- Drip trays are required to be used for all stationery equipment such as generator sets and compressors and all parked equipment such loaders, scrapers and vehicles on the construction site.
- All drip trays must be monitored and emptied on a daily basis.
- During rainy days and/or the rainy season the drip trays are required to be monitored continuously to ensure that they do not overflow. Where possible the Contractor is encouraged to place the drip trays and equipment during the rainy periods in sheltered areas, which will ensure that the drip trays do not overflow.
- The washing of any equipment on the site should be limited to urgent and/or preventative maintenance requirement only.
- Washing of any equipment should be undertaken off site and/or in the workshop area if necessary.
- The use of detergents for washing equipment should be restricted to detergents that have a low phosphate and nitrate content.
- The store man must be responsible for stacking and storage of material in the storage area at the site camp.
- Bricks, sandstone blocks, building sand, plaster sand and stone will be stored "open" on site but with special care that materials are not contaminated i.e. that different types of sand are not mixed;
- Cement must be stored in a lockable and water proof container and must be stacked; not more than 13 pockets high. Cement must be used, as far as possible, on a first-in first-out basis.
- Reinforcing bars must be stored in the open but must be placed on timber poles to avoid "contamination" by mud or soil.
- Steel door and window frames must be stored in the open but within a fenced-off secure area;
- Paint must be stored in a ventilated lockable store.

Natural Materials: Sourcing

- Materials must be sourced in a legal and sustainable way to prevent off-site environmental degradation;

- Where possible, a signed document from the supplier of natural materials should be obtained confirming that they have been obtained in a sustainable manner and in compliance with relevant legislation (legitimate source);
- Where materials are borrowed (mined), permit must be provided of authorization to mine these materials.

Stockpile Areas

- Sites for stockpile areas are to be agreed with the Principal Agent / Engineer and ECO;
- Materials are not permitted to be stockpiled underneath or against the trunks of trees, on streams, river banks or within floodplains;
- No material must be permitted to be stockpiled in drainage lines or where there is a potential for the stockpiled material to be washed away;
- Stockpiles must not obstruct natural water pathways;
- Stockpiles must not exceed 2m in height;
- Stockpiles to be kept clear of alien invasive weeds.

4.2.11 Noise Pollution Management

Objectives: To minimise any potential noise impacts related to the construction operations on site.

Targets: To ensure compliance with all legal requirements, including the local authority by laws and any other statutory requirements relating to noise impacts as well as the recommendations from the independent specialist

Measures:

- The Contractor must use modern, appropriate equipment, which produces the least noise.
- Any unavoidably noisy equipment must be identified and located in an area where it has least impact.
- The use of noise shielding screens must be considered and the operation of such machinery restricted to when it is actually required.
- Noise generating work can only take place within the hours stipulated by the local authority.
- The applicant must ensure that the National Noise Control Regulations and SANS 10103:2008 are adhered to and reasonable measures to limit noise from the work site are implemented.
- The applicant must ensure that the construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA must wear ear protection equipment.
- The applicant must ensure that all equipment and machinery are well maintained and equipped with silencers.
- The applicant must provide a prior warning to the community when a noisy activity e.g. blasting is to take place.
- In order to prevent noise impacts resulting from construction activities, working hours are to be limited as per the customer's requirements;
- If certain construction requires work outside of these hours, all adjacent landowners have to be informed prior to any construction outside of the specified hours;
- Preventative measures will be taken, where required, to minimize noise and vibration nuisance from sources such as power tools.
- Site clearing and grubbing to take place during daytime only.
- Construction activities to take place during daytime only.

4.2.12 Blasting/Drilling/Demolitions Management

Objectives: To minimise impacts associated with blasting/drilling/demolition on site during construction.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to blasting and/or drilling and/or demolitions and to minimise nuisance impacts.

Measures:

- The following recommendations must be implemented in addition to normal health and safety requirements as stipulated in the Occupational Health and Safety Act (Act No. 85 of 1993).
- These activities must only take place via a competent and appropriately qualified and legally compliant Contractor.
- The Contractor shall take all necessary precautions to prevent damage to special features and the general environment, which includes the prevention of any fly rock.
- Environmental damage caused by the above activities shall be repaired and/or rehabilitated at the Contractor's expense to the satisfaction of the ECO and Principal Agent.
- None of the above activities may be carried out on Sundays or Public Holidays without the approval of all relevant authorities.
- Careful sealing off of the site and surrounding area will be carried out to ensure that all personnel are removed from the site and its immediate surrounds.
- Adequate notification and warning of blasting activities must be provided to all adjacent and or affected parties.
- Borrow materials must be obtained only from authorized and permitted sites.
- Appropriate anti-erosion measures such as silt fences must be installed in disturbed areas.

4.2.13 Concrete Mixing (Batching) Management

Objectives: To ensure that appropriate and efficient measures are undertaken on site to manage concrete mixing areas during the construction phase.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to concrete mixing.

Measures

- Batching plants are to be located in areas of low environmental sensitivity;
- The batching plant area shall be operated in a way that prevents contaminated water run-off from the batching site and polluting nearby water bodies;
- Suitable measures, such as diversion berms, to be installed to direct the wastewater to a suitable catchment area;
- Suitable screening and containment must be in place to prevent wind-blown contamination from cement storage, mixing, loading and batching operations;
- Topsoil must be cleared from the area demarcated for the batching plant prior to establishment and stockpiled for later rehabilitation purposes;
- No batching / mixing activities may occur on the ground or on any permeable surface;
- Protect the batching plant on the up-slope side (where applicable) with an earth berm or sandbags to deflect clean surface run-off water away from the plant;
- Cleaning of equipment and flushing of mixers must occur in designated wash bays (with contaminated water collected, stored / contained) to ensure that contaminated wash water does not enter the environment;

- Aggregates (Stone, Crusher Sand and River Sand) will be stored in dedicated “bins”. The bins will have three walls each to contain the aggregates;
- All visible remains of excess concrete and aggregate must be removed from site and disposed of in an appropriate manner;
- Cement bags must not become litter after use. They must be disposed of in bins/skips (see waste management).
- Concrete Truck Drivers to adhere to the following:
 - Appropriate License Code;
 - Competence certificate;
 - Medical Examination;
 - Training given on daily checklists etc.

4.2.14 Establishment of Construction Lay Down Area

Objectives: To minimise impacts associated with the establishment and operation of construction site lay down area.

Targets: To ensure proper management of the construction site from a centralised point

Measures:

Establishment of Construction Sites

- The contractor shall not locate the site camps in any areas in which vegetation is pristine (as defined by each contract’s specifications), nor within 100m of any watercourse, nor in any area that could cause nuisance or safety hazards to surrounding landowners, inhabitants or the general public unless otherwise instructed by the Engineer and ECO;
- The site camp/office is to be clearly signposted and no unauthorized access is permitted. Relevant contact details are to be made easily visible and available to the public for the purposes of complaints/concerns or emergencies;
- A plan showing the construction site layout, including the positions of all buildings, fuel storage and hazardous materials storage areas, stockpiles, storm water management infrastructure, access points for deliveries and services, the position of site offices and ablutions and other infrastructure must be prepared and submitted to the Engineer and ECO for approval and a copy kept on site;
- The plan must detail all pollution control measures. The sites are demarcated by means of a security fence;
- Access to the sites must be limited to authorized persons and must be security controlled;
- The placement of buildings and equipment must be done to minimize the footprint and visual impact of the sites;
- Locate Materials and soil stockpile areas, fuels and chemical storage areas and batching areas away from environmentally sensitive areas;
- Down lighting must be used and it will be ensured that lighting on site does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other users of the area;
- Workers must be instructed to dispose of cigarette butts in designated areas.

Demarcation and Access Control

- Sound environmental principles must be followed whilst establishing access to the site;
- The construction sites must be properly identified and demarcated;
- The selected accesses must consider minimizing nuisance impacts on neighbors;

- Any new access tracks must be approved by the Customer/Engineer and ECO prior to construction. No roads or access tracks should be created on an ad-hoc basis;
- The utility and safety of any existing access shall not be compromised by use for the construction work or construction-related activities, nor shall spillage, littering, accelerated erosion, or other environmental impact, occur.

Clearing and Grubbing

- Prior to clearing the ECO must be notified in order to identify and demarcate any indigenous trees or plants, nesting sites or heritage sites that require protection or translocation;
- Areas of the construction site requiring clearance shall only be cleared immediately prior to construction activities commencing e.g., at the last practical stage;
- No indigenous trees or shrubs may be felled, lopped, pruned or removed without the prior permission of the ECO;
- Pruning of branches of indigenous trees must be done under direct competent supervision and sealant must be applied to cut surfaces in excess of 50mm in diameter.
- Site clearing and grubbing to take place during daytime only

4.2.15 Fire Management

Objectives: To ensure that fire as a result of the construction related activities are controlled and managed appropriately.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to fire management.

Measures:

- Preferentially no fire must be lit on the site, however if required, fires must be limited to use for cooking and heating use only within a designated area. This area must be at a suitable distance from any fuel source;
- No burning of waste must be permitted on site;
- Suitable precautions must be taken when working with welding or grinding equipment near potential sources of combustion;
- All staff on site must be made aware of general fire prevention and control methods, and the name of the responsible person to be alerted to the presence of a fire.
- 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 fire-break 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;
- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly 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 summer months;
- Contractor to provide adequate firefighting equipment on-site;
- Contractor to provide fire-fighting training to selected construction staff;
- No construction staff, with the exception of security staff, to be accommodated on site over night;

- 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 firefighting costs borne by farmers and local authorities.
- The Applicant must establish a 30-meter firebreak around the proposed PVSEF.

4.2.16 Traffic Control Management

Objectives: To ensure that traffic impacts as a result of the construction related activities are minimized.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to construction traffic. To ensure that the impacts on current traffic flows in the vicinity of the site are minimised and that complaints relating to traffic associated with the site's activities are minimised.

Measures:

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

4.2.17 Wet Environments Management

Objectives: To ensure that the best practice is followed with regards to wet environments rehabilitation, management and operations.

Targets: To ensure that the wet areas on site are not impacted during the establishment of the proposed development.

Measures:

- All development footprint areas should remain as small as possible and should not encroach into the freshwater areas unless absolutely essential and part of the proposed development. It must be ensured that the freshwater habitat is off-limits to construction vehicles and non-essential personnel.
- The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled.
- Planning of temporary roads and access routes should avoid freshwater areas and be restricted to existing roads where possible.
- Appropriate sanitary facilities must be provided for the life of the construction phase and all waste removed to an appropriate waste facility.
- All hazardous chemicals as well as stockpiles should be stored on bunded surfaces and have facilities constructed to control runoff from these areas.
- It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage.
- No fires should be permitted in or near the construction area.
- Ensuring that an adequate number of waste and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills.

Site clearing and set-up of contractor camps prior to commencement of construction activities outside the delineated extent of the freshwater ecosystems and the associated 24m construction phase buffer:

- The proposed Dominion PV 2 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;

- 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 PV 2 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.

Installation of the solar panels and associated support structures:

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 of rainfall (if applicable). As such, sediment traps should also be installed downstream/downgradient of the construction area. Sediment traps can be created by pegging an appropriate geotextile across the entire width of the work area at the specified support structure, held down by cobbles/boulders or by geotextile wrapped hay bales spanning the width of the work area and staked into position; and
- During excavation of the foundations to facilitate support structures, soil must be stockpiled upgradient of the excavated pits. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum. This soil must be used to close off the pits, immediately after installation of the support structures.

Closure of the proposed Dominion PV 2 Park and rehabilitation of the footprint area:

- All rehabilitation activities, including vehicle movement and miscellaneous activities by personnel, must not occur within the identified freshwater ecosystems and associated 24 m construction and operational phase buffer. All bare areas should be revegetated with suitable indigenous vegetation species.

4.2.18 Storm Water and Erosion Management

Objectives: To ensure that erosion and storm water are controlled and managed.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to management of storm water and erosion.

Measures:

- As it is relatively unclear at this stage to fully understand what impact the proposed development is going to have in terms of erosion, it is recommended that the drainage lines be monitored on a regular basis to ensure that any headcut erosion is adequately managed.
- The proposed PV facility may contribute to sheet erosion on the site as a result of altered flow patterns and vegetation composition on the site. The site should be monitored on a regular basis and mitigation measures implemented if sheet erosion is identified as being a problem.
- In general, the areas where concentrated flows develop as a result of the proposed development should be monitored for erosion and corrective measures implemented accordingly.
- The road network will have the potential to impact negatively on the natural drainage pattern of the area if not designed and implemented correctly. The road network should be monitored regularly to determine areas where stormwater may be concentrated or diverted which may lead to erosion.
- In general, the site should be monitored following any large scale storm event as well as periodically on an annual basis.
- 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.
- 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.

4.2.19 Natural Vegetation Management

Objectives: To aid in the conservation of floral habitat, floral biodiversity and protected floral species within the subject property as well as to maximise the use of indigenous landscaping and promote the enhancement and good management of natural environmental features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to natural environment management.

Measures:

- The Alien Vegetation Control Plan attached as Annexure F must be implemented

Please refer to Annexure F for the Alien Vegetation Control Plan for the site

4.2.20 Heritage Resources Management

Objectives: To aid in the conservation of heritage (including archaeological) resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of such resources.

Measures:

Loss of heritage structures:

- Avoid the trig beacon at D1-006.
- If not possible relocate with the backing of a S34 NHRA permit as issued by SAHRA.

Potential impact on unmarked infant and still born graves (D2-001):

- 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 are confirmed a comprehensive grave relocation process must be implemented and managed by a competent and experienced grave relocation professional.

Loss of burial ground:

- Implement a 50-meter no-go buffer as per SAHRA guidelines.
- Development of a heritage management plan if the burial ground is to be preserved in place.
- If the burial ground must be relocated a complete grave relocation process must be implemented and managed by a competent and experienced grave relocation professional.

Loss of fossil heritage:

- 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.

Chance finds procedure:

- A heritage practitioner / archaeologist should be appointed to develop a heritage induction program and conduct training for the ECO as well as team leaders in the identification of heritage resources and artefacts during the implementation of the EMPr.
- An appropriately qualified heritage practitioner / archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
- The qualified heritage practitioner / archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner / archaeologist.

Please refer to Annexure G for the Heritage Management Plan for the site

4.2.21 Faunal Management

Objectives: To aid in the conservation of faunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna.

Measures:

Habitat and species 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 birds to the project areas and may increase bat collisions or electrocutions;
- 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 or nominated official. For larger venomous snakes, a suitably trained specialist or 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.
- 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; and
- 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;
- 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.

Species of Conservation Concern (SCC):

- No collection of any fauna within the project areas may be undertaken by any construction personnel;
- 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 (Banded Ironstone Habitat and Senegalia-Tarchonanthus Habitat), the site should be inspected for the presence of burrowing SCC scorpions and baboon spiders SCC. 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;
- 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.
- 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 faunal SCC may be allowed by decommissioning phase personnel;

- All footprints should be rehabilitated as close to their pre-developed 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.

4.2.22 Floral Management

Objectives: To aid in the conservation of floral resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of flora.

Measures:

Habitat and species 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;
- Ensure fire management is in place. Use of firebreaks is recommended;
- 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;
- 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 unprotected ground as seeds might disperse upon it. All cleared AIP material to be disposed of at a licensed waste facility which complies with legal standards or garden refuge facilities, or within designated and demarcated areas as long as it is outside of any natural habitat.

Species of Conservation Concern (SCC) and Protected Flora:

- 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.

4.2.23 Avifaunal Mitigation Measures

Objectives: To aid in the conservation of avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of avifauna.

Measures:

Habitat Loss:

- 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.

Collision and Electrocutation:

- 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.

Disturbance:

- 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).

Attraction to the Facility:

- Install bird deterrent devices around panels and on transmission line poles, pylons and / or monopoles to limit perching and minimise collision and electrocution risk.

Chemical Use:

- Avoid or minimise the use of chemical surfactants and dust suppressants on site.
- Where necessary ensure that none of the cleaning water enters nearby watercourses through runoff and do not clean before an imminent rain storm.

4.2.24 Visual Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to mitigate visual impacts to an acceptable level.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Visual Management.

Measures:

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.
- 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.
- 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.
- As previously mentioned if the farm located within and adjacent to Dominion PV 2 was to be sold and the homestead converted to an office or similar for the PV facility, the risk would be negligible on the farmstead. If the farm was sold and the farmer became the tenant, it would be important to ensure that in the commercial arrangement and lease agreement the farmer accepts that the character of the landscape would change and that they in essence accept the visual impact. Lastly there could be some additional efforts to screen the farmstead with vegetation should the landowner/tenant remain in the dwelling and/or for the offices if deemed necessary.
- The proposed PV Panels must avoid visually sensitive resources such as the freshwater ecosystems in the Dominion PV 2 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.
- 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.
- 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.
- 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).

4.2.25 Topsoil Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage topsoil storage.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Topsoil Management.

Measures

- Topsoil can only be stripped from areas as indicated below:
 - Any area which is to be used for temporary storage of materials;
 - Areas which could be polluted by any aspect of the construction activity;
 - Areas designated for the dumping / stockpiling of soil;
 - or as instructed by the Customer's Representative or ECO.
- Where topsoil stripping forms part of the contract requirement the Contractor must store the excavated topsoil in a windrow or stockpile which shall be discernibly separate from wind rows or stockpiles of any other excavated materials;
- Stripping of topsoil must be undertaken in such a manner as to minimize erosion by wind or runoff;
- Topsoil shall not be disturbed more than is absolutely necessary;
- Topsoil stripping must only take place as the area becomes necessary for works to commence;
- Topsoil must not be contaminated with anything that might impair its plant-support capacity (e.g. aggregate, cement, concrete, fuels, litter, oils, domestic and industrial waste);
- Topsoil stockpiles must not be situated such that they obstruct natural water pathways;
- Stockpiles must not exceed 2m in height;
- Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding;

- After the completion of the backfilling, re-contouring and erosion control works, the Contractor shall spread the topsoil evenly at uniform depth over the areas from which it was removed, where this is a requirement of the contract specifications.

4.2.26 Agricultural and Soil Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage agriculture and soil on site

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to agricultural management

Measures:

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.
- 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.
- The footprint areas should be lightly ripped to alleviate compaction.

4.2.27 Air Emissions

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage climate change impacts due to the project operations

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to agricultural management

Measures:

- Construction will be of limited duration
- Develop and implement management programs and procedures

4.3 OPERATIONAL PHASE IMPACTS

4.3.1 Hazardous Material (Fuels, Oils and Others) Management

Objective: To minimise any hazardous fuel and oil material from causing environmental damage through the use, storage and/or handling of such hazardous material during the operational phase

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- Fuel may be stored on site in an area which has been approved by an Engineer and the ECO.
- The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are firmly shut and/or in bowzers.
- The tanks or bowzers are required to be located on smooth impermeable surfaces (concrete or plastic) with an earth bund.
- The impermeable lining shall extend to the crest of the bund and the volume of the bund will be 130% of the total of the storage tanks and/or bowzers located on the site.
- The bunded area is required to be sheltered from the rain.
- Provisions shall be made for refuelling at the fuel storage area, by protecting the open soil with bunding.
- If fuel will be dispensed from 200 litre drums, only empty clean drums must be able to be stored on the bare ground.
- All empty dirty drums must be stored on a bunded area.
- Should the use of a 200l drum be required, proper dispensing mechanisms are required to be used and the drum will not be allowed to be tipped in order to dispense the fuel.
- The dispensing mechanism for the fuel drums must be stored in a waterproof container when it is not in use.
- The Contractor must be required to prevent unauthorised access to the fuel storage area.
- No smoking is allowed within the vicinity of the fuel storage areas.
- The Contractor must ensure that adequate fire-fighting equipment is readily available at the fuel storage area.
- Where reasonable practical the plant shall be refuelled at the fuel storage area or at the workshop as applicable. If it is not possible then the surface under the refuelling area must be bunded with plastic and/or wooden pallets.
- The Contractor is required to ensure that absorbent materials are readily available in the vicinity of the refuelling areas to absorb and/or breakdown and where possible be designed to encapsulate minor hydrocarbon spills.
- This absorbent material must be able to absorb a minimum spill of 200l of hydrocarbons.
- The Contractor must obtain the Engineer's and ECO's approval for any refuelling or maintenance activities.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.
- Damaged solar panels are classified as hazardous waste and should be stored in a covered, impermeable area. These panels should be returned to the supplier for repairs or recycling, or supplied to a licensed recycling facility or licensed hazardous waste disposal facility where no recycling or re-use is possible.
- The storage of general waste in excess of 100m³ and/ or the storage of hazardous waste in excess of 80m³, excluding the storage of waste in lagoons or the temporary storage (i.e., less than 90 days) of such waste, requires the applicant to comply with GN No. 926 of 29 November 2013: National Norms and Standards for the Storage of Waste.

4.3.2 Socio-economic Management:

Objective: To maximise impacts on employment in the area during the construction phase.

Targets: To ensure that employment for local people is ensured during the construction phase.

Measures:

Development of infrastructure to generate clean, renewable energy:

Should the project be approved the proponent should:

- Implement a skills development and training programme aimed at maximizing the number of employment opportunities for local community members.
- Maximise opportunities for local content, procurement, and community shareholding.
- Maximise opportunities for local content and procurement.

Creation of employment and business opportunities:

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 contractors 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 a 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.

Establishment of a community trust funded by revenue generated from the sale of energy. The revenue can be used to fund local community development:

In order to maximise the benefits and minimise the potential for corruption and misappropriation of funds the following measures should be implemented:

- The CoMLM should liaise with the proponents of other renewable energy projects in the area to investigate how best the Community Trusts can be established and managed so as to promote and support local, socio-economic development in the region as a whole.
- The CoMLM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the CoMLM that should be consulted include the Municipal Managers Office, IDP Manager and LED Manager.
- Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community.
- Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from the SEF plant.

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.:

- Implement agreements with affected landowner.

Visual impact associated with the proposed solar facility and the potential impact on the area's rural sense of place and adjacent land uses:

- The recommendations contained in the VIA should also be implemented

Potential impact of the SEF on property values:

- The recommendations contained in the VIA should be implemented

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:

- The recommendations contained in the Final VIA should be implemented.

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.

4.3.3 Wet Environments Management

Objectives: To ensure that the best practice is followed with regards to wet environments rehabilitation, management and operations.

Targets: To ensure that the wet areas on site are not impacted during the operational phase of the facility.

Measures:

Operation and maintenance of the proposed Dominion PV 2 Park:

- 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.

Discharge of water from the access roads and bare soil into the surrounding landscape:

- 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.

4.3.4 Storm Water and Erosion Management

Objectives: To ensure that erosion and storm water are controlled and managed.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to management of storm water and erosion.

Erosion Mitigation Measures:

- As it is relatively unclear at this stage to fully understand what impact the proposed development is going to have in terms of erosion, it is recommended that the drainage lines be monitored on a regular basis to ensure that any headcut erosion is adequately managed.
- The proposed PV facility may contribute to sheet erosion on the site as a result of altered flow patterns and vegetation composition on the site. The site should be monitored on a regular basis and mitigation measures implemented if sheet erosion is identified as being a problem.
- In general, the areas where concentrated flows develop as a result of the proposed development should be monitored for erosion and corrective measures implemented accordingly. Areas of particular concern would include, but are not limited to, the discharge points from the laydown and substation areas as well as the areas under and around the PV panels.
- The road network will have the potential to impact negatively on the natural drainage pattern of the area if not designed and implemented correctly. The road network should be monitored regularly to determine areas where stormwater may be concentrated or diverted which may lead to erosion. In addition, the crossing points at the drainage lines should be monitored for signs of erosion.
- In general, the site should be monitored following any large scale storm event as well as periodically on an annual basis.
- 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.

Storm Water Mitigation:

- Monitoring of the site be carried out, both during and after construction, to identify potential impacts on the natural systems as a result of altered flow patterns. It is proposed that features on site be monitored after large storm events.
- The road network should be monitored regularly to determine areas where stormwater may be concentrated or diverted which may lead to erosion. In addition, the crossing points at the drainage features should be monitored for signs of erosion.
- Should signs of erosion and alterations to the natural flow patterns be identified, a suitably qualified engineer should be appointed to design appropriate interventions to address the issues as they arise.

4.3.5 Natural Vegetation Management

Objectives: To aid in the conservation of floral habitat, floral biodiversity and protected floral species within the subject property as well as to maximise the use of indigenous landscaping and promote the enhancement and good management of natural environmental features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to natural environment management.

Measures:

- The Alien Vegetation Control Plan attached as Annexure F must be implemented

Please refer to Annexure F for the Alien Vegetation Control Plan for the site

4.3.6 Faunal Management

Objectives: To aid in the conservation of faunal and avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna and avifauna respectively.

Measures:

Habitat and species 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.

Species of Conservation Concern (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.

4.3.7 Floral Management

Objectives: To aid in the conservation of floral resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of flora.

Measures:

Habitat and species 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;
- 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:

- 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.

Species of Conservation Concern (SCC) and protected flora:

- AIP management must continue throughout the operation of the proposed project to ensure that AIPs don't spread into adjacent natural areas where floral SCC numbers (and habitat) may be displaced;
- Monitoring of relocation success should continue for at least three years after the completion of the construction phase, or until it is evident that the species have established self-sustaining populations;
- Where feasible, rescued SCC must be used in the landscaping and rehabilitation activities for any remaining natural habitat that do not form part of the planned footprints; and
- Collection of floral SCC and protected flora by operational and maintenance teams must be prohibited.

4.3.8 Visual Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to mitigate visual impacts to an acceptable level.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Visual Management.

Measures:

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.
- Upon decommissioning, it is important that vegetation be reinstated to blend with the natural environment.

4.3.9 Emergency Management

Objectives: To ensure that an appropriate and efficient response is triggered in the event of an emergency situation arising. This should include incidents such as medical, fire, security and environmental disaster scenarios on the site.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to emergency response.

Measures:

- An Emergency Response Plan must be designed and implemented in conjunction with the local authority and the local emergency services.

4.3.10 Fire Management

Objectives: To ensure that fire as a result of the operational activities are controlled and managed appropriately.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to fire management.

Measures

- The Applicant must maintain the 30-meter fire break.
- The 30-meter fire break must be kept clear of any vegetation throughout the lifecycle of the PVSEF.
- Weekly checks of the 30-meter firebreak must be undertaken during the operational phase of the PVSEF, thus ensuring that this fire break is maintained correctly
- During the dry season the fire break must be compacted and wetted when it is in use.
- The 30-m fire break must be brush cut
- The 30-m fire break should have significant reduced fuel loads and the height of the vegetation must be kept as low as possible
- Waste material from the fire break preparation must be disposed off into the veld approximately 5m above the fire break or removed completely from site – by cutting, chipping stacking or burning with the required permission.
- A line fire breaks to avoid no populations of rear or endangered species, sensitive habitats such as wetlands and highly erodible areas.

4.3.11 Generation of Electricity

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage climate change impacts due to the project operations

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to climate management

Measures:

- Develop and implement management programs and procedures

4.3.12 Noise Pollution

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage noise pollution impacts due to the project operations

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to noise management

Measures:

Noise generated by BESS:

- 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.

Noise generated by the central inverter:

- Assessment on an annual basis for of the fans for it not to exceed the prevailing ambient noise level by more than 7.0dBA.

Noise generated by sub-station:

- Assessment on an annual basis of the fans for it not to exceed the prevailing ambient noise level by more than 7.0dBA.

Noise generated by O&M Building:

- Assessment of the fans on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA

Noise generated by the OHP lines:

- Assessment of the OHP lines assessed on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA.

Noise generated by PV panels:

- 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.

Noise generated by maintenance activities:

- Assessment of the maintenance activities on an annual basis for it not to exceed the prevailing ambient noise level by more than 7.0dBA.

4.3.13 Traffic Control Management

Objectives: To ensure that traffic impacts as a result of the construction related activities are minimized.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to construction traffic. To ensure that the impacts on current traffic flows in the vicinity of the site are minimised and that complaints relating to traffic associated with the site's activities are minimised.

Measures:

- Encourage environmentally friendly transportation alternatives for operational staff.

4.4 DECOMMISSIONING IMPACTS

Please note, that the Decommissioning Impacts are similar to those of the construction impacts because decommissioning will entail the same type of activities. Therefore, these have not been reproduced in this Section. Please kindly refer Section 4.2 for the Decommissioning Impacts.

Further decommissioning activities would be required to be applied for in a separate Environmental Permitting Process as per the requirements of the Competent Authority.

5. IMPLEMENTATION OF THE EMPR

5.1 ROLES AND RESPONSIBILITIES

- (a) Environmental register - an environmental register must be provided by the Principal Agent and kept on-site at all times as well as being freely accessible to all project team members. The register will provide a record of all actual environmental incidents that occur as a result of the onsite activity. This may include information related to such aspects as spillages, dust generation and complaints from adjacent neighbours and any other environmental incidents. It must also contain information relating to action taken/mitigation measures employed. Any party on-site may complete the register; however, it is envisaged that the Principal Agent, Contractor and ECO will be the main contributors. The Principal Agent must ensure that the Contractor implements recommendations made by the ECO within an agreed and reasonable time frame.
- (b) Environmental Control Officer (“ECO”) – the ECO must be appointed prior to commencement of operations. The ECO will advise the Principal Agent and Contractor of any environmental related issues during the construction and bulk landscaping phases of the development. The role of the ECO is defined more fully in Annexure D:
- i. The responsibilities of the ECO will include *monitoring* of compliance with the EMPr by the Contractor.
 - ii. The ECO has the authority to recommend the cessation of works or any portion of construction related activity to the Principal Agent. This will be triggered if in his/her opinion the activity has caused or will imminently cause significant damage and/or harm to the environment or is in contravention of the relevant environmental legislation/permits/authorisations applicable to the site and/or activity/ies.
 - iii. If the Contractor fails to show adequate consideration to the EMPr or the recommendations of the ECO, then the ECO may recommend to the Principal Agent, that the Contractor’s representative or any employee/s responsible for not showing adequate consideration to the EMPr are removed from the site. Alternatively, the ECO may recommend that all work on site be suspended until the matter is remedied. All costs will be carried by the Contractor.
 - iv. Should modifications to this document be required, these must be agreed to by all parties concerned.
- (c) The Client – the client is responsible for employing the Principal Agent, Contractor and Engineer for the duration of the construction contract. They in turn will employ the ECO. The client will also ensure, as a signatory to the EMPr, that the Principal Agent and Contractor fulfil their obligations in terms of this EMPr.
- (d) The Principal Agent – the Principal Agent is appointed by the client and is responsible to the client for ensuring that the construction contract is carried out to completion on time, in budget and that the Contractor fulfils their obligations in terms of the EMPr. The Principal Agent and ECO are expected to develop a close working relationship and to communicate frequently. The Principal Agent must be recognised as the senior authority on site and all communications and instructions between the ECO and the Contractor must occur via the Principal Agent. The Principal Agent is also responsible for deducting environmental penalties from the Contractor. The Principal Agent must ensure that the Contractor has a copy of this EMPr and all approved Method Statements and that the Contractor is familiar with the relevant documentation.

- (e) The Contractor – the Contractor will adhere to the conditions of this EMPr and ensure that all of its sub-Contractors, employees, suppliers, agents and so forth, for whom the Contractor is fully responsible for their actions on site, are fully aware of this EMPr, its requirements and the consequences of any breach of the requirements of this EMPr. The Contractor is fully responsible for *implementing* the EMPr. The Contractor will ensure that works on site are conducted in an environmentally responsible manner and in accordance with the requirements of this EMPr.
- (f) Council Representative – will be an appropriately qualified environmental officer of the Local Municipality. This representative will monitor compliance of this EMPr by the client through the ECO.
- (g) Problematic Issues – should problematic issues arise, as identified by the ECO, the ECO has the authority to call a special meeting with the Principal Agent to address and rectify the matter.

5.2 FREQUENCY OF VISITS BY THE ECO

- a) The ECO is required to be on site daily for the duration of the Project, unless determined otherwise by the ECO, taking into consideration the performance and compliance of the Contractor on site and with the EMPR respectively.
- b) The ECO should conduct on going Basic Environmental Awareness Training sessions with the Contractor, his staff and sub-contractors prior to any work taking place. The Contractors are required to provide a facility and interpreter (if required).
- c) An initial meeting with the ECO, local authority representative, Principal Agent and Contractor must be held to familiarise each of the parties with each other, the site, the EMPr and to confirm communication methods.
- d) The frequency of subsequent meetings and ECO visits must be agreed, depending on the performance of the Contractor. If required, the Principal Agent may introduce some form of penalty system if compliance with the EMPr proves problematic.
- e) A brief summary of the findings and any recommendations made by the ECO per visit should be emailed to all parties including the Principal Agent and Contractor. This report should also include photographs for additional information.

5.3 DOCUMENTED PROCEDURES

Method Statements (a template for these purposes is appended to this EMPr) will be required for activities that may result in significant impacts according to the ECO.

These must address the following aspects:

- What – a brief description of the work to be undertaken
- How – a detailed description of the process of work, methods and materials
- Where – a description of the location of the work (if applicable)
- When – the sequencing of actions with commencement and completion date estimates

All Method Statements (MS) must be in place at least 5 working days prior to the relevant construction activities taking place and must be approved by the ECO and Principal Agent prior to being implemented.

The following MS must as a minimum be made available to address the following construction related impacts:

- Erosion Management;
- Waste Management;

- Traffic Management; and
- Freshwater Management
- Road Management and construction

5.4 HANDLING OF COMPLAINTS RELATED TO THE PROJECT

All forms of complaint must be forwarded to the site Principal Agent and ECO in writing. These must be entered into the environmental register and all responses and actions taken to address these must also be recorded. All issues raised must be addressed. It is important that the complainant feels that their concerns have been listened to and that appropriate action (within reason) has been taken to address these.

5.5 CONDUCT OF EMPLOYEES ON SITE

The following restrictions will be placed on all staff operating on the site in general:

- Adherence to relevant health and safety standards and municipal by laws
- Use of appropriate Personal Protective Equipment (PPE) at all times
- No alcohol or illegal substance use may occur on site
- No illegal disposal of rubble;
- No littering of the site or surrounding areas;
- No collection of firewood;
- No interference with any fauna or flora;
- No use of toilet facilities other than the chemical toilets provided on site;
- No lighting of open fires; and
- No burning of any waste on site.

5.6 MATTERS PERTAINING TO NON-CONFORMANCE ON SITE

“Non-conformances” would occur when there are deviations from any of the construction requirements of this EMPr. This may also include non-compliance with the relevant environmental regulations.

The Contractor is responsible for reporting non-conformance with the EMPr, to the ECO. The applicant and Contractor, in consultation with the ECO must, thereafter, undertake the following activities:

- Investigate and identify the cause of non-conformance;
- Report matters of non-conformance to the local municipality (within a suitable timeframe, dependant on the severity of the incident);
- Implement suitable corrective action as well as prevent recurrence of the problem.
- Assign responsibility for corrective and preventative action.
- Any corrective action taken to eliminate the cause/s of non-conformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

Records

The Contractor must maintain and update the environmental register at all times regarding non-conformance issues. The record shall specifically contain and list the instances of non-conformances found in the EMPr, the date of their occurrence, date of corrective action, and date of completion of preventive action. In addition, matters of non-conformance and corrective action must be included within the audit reports. Records must be legible, identifiable, protected and easily retrieved for review.

Fine and Penalties relating to non-conformance/contraventions

The Contractor must comply with the environmental requirements of the construction phase requirements of this EMPr on an on-going basis and any failure on his part to do so will entitle the ECO and Principal Agent to impose a fine subject to the details set out below. Money from fines/penalties will be managed and allocated at the discretion of the Principal Agent.

1) Spot fines

Spot fines will be issued per incident in addition to any remedial costs incurred as a result of non-conformance with the EMPr, at the discretion of the Principal Agent and ECO. The ECO may *recommend* the imposition of fines and penalties but the Principal Agent will be responsible for imposing such fines or penalties against the account of the Contractor. Fines may be imposed on the Contractor for contraventions of the EMPr by individuals or operators employed by the Contractor and/or any sub-Contractors. The Principal Agent will inform the Contractor of the EMPr contravention and the amount of the fine. These monies will be recovered by the Principal Agent from the Contractor.

Failure by the Contractor to pay fines imposed by the Principal Agent within 14 days of the fine being imposed may result in a "Stop Works" order being issued by the Principal Agent until the matter is resolved. Any costs incurred as a result of the "Stop Works" order will be for the account of the Contractor.

The following spot fines are recommended for contraventions (plus any rehabilitation costs if applicable):

- a) Any individual/s littering on site: R50 on first offence and R250 on further offences.
- b) Any individual/s burning waste on site: R250 on first offence and R1 000 on further offences.
- c) Any individual/s dumping waste on site: R250 on first offence and R1 000 on further offences.
- d) Any violation of a Method Statement: R250 for first offence and R1 500 on further offences.
- e) Any individual causing avoidable disturbance to fauna and flora on site: R250 on first offence and R1 000 on further offences.

2) Penalty fines

Penalty fines will be implemented where the Contractor repeatedly fails to comply with the specifications of this EMPr the Contractor will be liable to pay a penalty fine over and above any other contractual consequence.

The following penalty fines (per repeat offence) are recommended for transgressions:

- a) Ongoing littering on site: R2 500 plus any rehabilitation costs, if applicable.
- b) Ongoing dumping of any waste on site: R10 000 plus any rehabilitation costs, if applicable.
- c) Ongoing burning of any waste on site: R10 000 plus any rehabilitation costs, if applicable.
- d) Ongoing transgression of a Method Statement: R10 000 plus any rehabilitation costs, if applicable.
- e) Ongoing disturbance to Fauna and Flora on site: R5 000 plus any rehabilitation costs, if applicable.

3) Other fines

- a) Any individual/s causing damage to identified sensitive natural areas: R5 000 plus any rehabilitation costs.
- b) Any individual/s causing damage to identified sensitive heritage areas: R5 000 plus any rehabilitation costs.
- c) Any individual/s causing irreparable damage to the environment: R10 000.
- d) Injuring or killing of any wildlife: R5 000 plus any rehabilitation costs, if applicable.

The above recommended fines are applicable and relevant to the construction phase of this EMPr and as such do not exempt the client from other legal obligations such as *Section 24(h)* National Environmental Management Second Amendment Act, Act No. 107 of 1998, which states that it is "*an offence for any person to contravene*

conditions applicable to any environmental authorization granted for a listed activity. A person convicted of an offence is liable to a fine not exceeding R5 million or to imprisonment for a period not exceeding ten years, or to both such fine and such imprisonment”.

An Environmental Management Programme constitutes a *Condition* applicable to an *Environmental Authorisation* and any transgression would thus trigger *Section 24(h)* of the above-mentioned Act. The exact penalty and fines will be decided on, subsequent to consultation with Competent Authority and the local municipality.

All staff working on-site must be made aware of the penalties and fines associated with non-conformance. The Principal Agent will be responsible for ensuring that the penalty system is maintained and enforced. Should disputes arise between the Client, Engineer, Contractor or ECO with respect to the above then the matter will be referred to arbitration.

Should you require any further information, please do not hesitate to contact the undersigned.

Yours faithfully,



FABIO VENTURI

Certified Environmental Scientist (SAIEES)

Environmental Assessment Practitioners Association of South Africa (Founding Member)

Green Star SA Accredited Professional (GCBSA)

Certified Carbon Footprint Analyst (CPSA)

ANNEXURE A - GLOSSARY

ANNEXURE A
GLOSSARY

TERMS USED IN THIS EMP

"Acceptable exposure" means the exposure of the maximum permissible concentration of a substance to the environment that will have a minimal negative effect on health or the environment.

"Agenda 21" means the document by that name adopted at the United Nations Conference of Environment and Development held in Rio de Janeiro, Brazil in June 1992.

"Agreement", for the purpose of NEMA EIA Regulations GNR 982 regulation 1(3) and (4) (of 2014) means the Agreement as contemplated in section 50A (2) of the Act;

"Agri-industrial" means an undertaking involving the beneficiation of agricultural produce.

"Alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –

- (a) the property on which, or location where, the activity is proposed to be undertaken;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity; or
- (e) the operational aspects of the activity;

And includes the option of not implementing the activity.

"Applicant", means a person who has submitted or who intends to submit an application.

"Application" in terms of the NEMA EIA Regulations GNR 982 (2014) means an application for an –

- (a) Environmental authorisation in terms of Chapter 4 of these Regulations;
- (b) Amendment to an environmental authorisation in terms of Chapter 5 of these Regulations;
- (c) Amendment to an EMPr in terms of Chapter 5 of these Regulations; or
- (d) Amendment of a closure plan in terms of Chapter 5 of these Regulations;

"Aquifer" means a geological formation which has structures or textures that hold water or permit appreciable water movement through them

"Aquatic critical biodiversity areas", means linkages between catchment, important rivers and sensitive estuaries whose safeguarding is critically required in order to meet biodiversity pattern and process thresholds and are spatially defined as part of a bioregional plan or systematic biodiversity plan, available on the South African National Biodiversity Institute's BGIS website (<http://bgis.sanbi.org/WCBF14project.asp>);

"Associated structures, infrastructure and earthworks" means any structures, infrastructure or earthworks, including borrow pits, that is necessary for the functioning of a facility activity;

"Basic assessment report" means a report contemplated in NEMA EIA Regulations GNR 982 regulation 19 (of 2014);

"Best practicable environmental option" means the Option that provides the most benefit or causes the least damage to the environment as a whole at a cost acceptable to society in the long term as well as in the short term

"Biodiversity", this means the variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

"Bioregional plan" means the bioregional plan contemplated in Chapter 3 of the National Environment Management Biodiversity Act, 2004 (Act No. 10 of 2004);

"Borehole" includes a well, excavation or any artificially constructed or improved underground cavity which can be used for the purpose of—

- (a) intercepting, collecting or storing water in or removing water from an aquifer;
- (b) observing and collecting data and information on water in an aquifer; or
- (c) recharging an aquifer;

"Buffer area" means, unless specifically defined, an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere;

"Building and demolition waste" means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition.

"Business waste" means waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes.

"By-product" means a substance that is produced as part of a process that is primarily intended to produce another substance or product and that has the characteristics of an equivalent virgin product or material.

"Canal" means an open structure that is lined or reinforced, for the conveying of a liquid or that serves as an artificial watercourse.

"Catchment" in relation to a watercourse or watercourses or part of a watercourse, means the area from which any rainfall will drain into the watercourse or watercourses or part of a watercourse, through surface flow to a common point or common points.

"Channel" means an excavated hollow bed for running water or an artificial underwater depression to make a water body navigable in a natural watercourse, river or the sea.

"Clean production" means the continuous application of integrated preventative environmental strategies to processes, products and services to increase overall efficiency and to reduce the impact of such processes, procedures and services on health and the environment.

The term **'client'** means the owner of the asset to be procured or project product, and representative of the end users of the asset.

"Closure plan" means a plan contemplated in NEMA EIA Regulations GNR 982 regulation 19 (of 2014);

"Coastal activities", means coastal activities listed or specified in terms of Chapter 5 of the National Environmental Management Act, which takes place in the coastal zone.

"Coastal management" includes-

- a) The regulation, management, protection, conservation and rehabilitation of the coastal environment.
- b) The regulations and management of the use and development of the coastal zone and coastal resources
- c) Monitoring and enforcing compliance with laws and policies that regulate human activities within the coastal zone
- d) Planning in connection with the activities referred to in paragraph (a), (b) and (c).

“Coastal management objective”, means a clearly defined objective established by a coastal management programme for a specific area within the coastal zone which coastal management must be directed at achieving.

“Coastal management programme”, means the national or a provincial or municipal coastal management programme established in terms of Chapter of the NEM: ICMA, 2008.

“Coastal planning scheme”, means a scheme that-

- a) Reserves defined areas within the coastal zone to be used exclusively or mainly for specified purposes, and
- b) Prohibits or restricts any use of these areas in conflict with the terms of the scheme.

“Coastal protected area” means a protected area that is suited wholly or partially within the coastal zone and that is managed by, or on behalf of, an organ of state, but excludes any part of such a protected area that has been exercised from the coastal zone in terms of section 22 of the NEM: ICMA, 2008.

“Coastal protected zone”, means the coastal protection zone contemplated in section 17 of the NEM: ICMA, 2008.

“Coastal public property”, means public property referred to in section 7 of the NEM: ICMA, 2008.

“Coastal resources”, means any part-

- a) Of the cultural heritage of the Republic within the coastal zone, including shell middens and traditional fish traps, or
- b) The coastal environment that is of actual or potential benefit to humans.

“Coastal set-back line” means a line determined by the MEC in accordance with section 25 of the NEM: ICMA, 2008 in order to demarcate an area within which development will be prohibited or controlled in order to achieve the objects of this Act or coastal management objectives.

“Coastal waters” means –

- a) Means waters that form part of the internal waters or territorial waters of the Republic referred to in sections 3 and 4 of the Maritime Zone Act, 1994 (Act No 15 of 1994) respectively and
- b) Subject to section 26 of the NEM: ICMA, any estuary.

“Coastal wetland” means-

- a) Any wetland in the coastal zone; and
- b) Includes-
 - i. Land adjacent to coastal waters that is regularly or potentially inundated by water, salt marshes, mangrove areas, inter-tidal sand and mud flats, marshes and minor coastal streams regardless of whether they are of saline, freshwater or brackish nature; and
 - ii. The water, the subsoil and substrata beneath and bed and banks of any such wetland.

“Coastal zone” means the area comprising coastal public property, the coastal protection zone, coastal access land and coastal protected areas, the seashore, coastal waters and the exclusive economic zone and includes any aspects of the environment on, in under and above such area.

“Commence” means the start of any physical activity, including site preparation or any other activity on the site in furtherance of a waste management activity, but does not include any activity required for investigation or

feasibility study purposes as long as such investigation or feasibility study does not constitute a waste management activity.

“Commercially confidential information” means commercial information the disclosure of which would prejudice to an unreasonable degree the commercial interests of the holder provided that details of emission levels and waste products must not be considered to be commercially confidential notwithstanding any provision of this Act or any other law.

“Community” means any group of persons or a part of such a group who share common interests and who regard themselves as a community.

“Competent authority”, means the authority who in terms of the provisions of the NEMA and the EIA Regulations GNR 982 (of 2014) is identified as the authority who must consider and decide on an application in respect of a Specific listed activity.

Note: the “competent authority” in terms of an application for environmental authorisation for an Activity listed in listing notice 1, 2 or 3, is not necessarily the same authority as the “licensing Authority” in terms of the NEMA:WA or NEM: AQA.

“Concentration of animals” means the keeping of animals in a confined space or structure, including a feedlot, where they are fed in order to prepare them for slaughter or to produce products such as milk or eggs.

“Conservation” in relation to a water resource means the efficient use and saving of water, achieved through measures such as water saving devices, water-efficient processes, water demand management and water rationing.

“Constitution” means the Constitution of the Republic of South Africa 1996 (Act No. 108 of 1996).

“Construction” means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

The term **‘Contractor’** means an organisation that contracts with a Principal to carry out the work under the contract, including construction and related services, to deliver an asset or construction product.

The term **‘consultant’** means a professional person or organisation that contracts with a customer to provide design, management or other services.

“Container” means a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bins, bin-liners and skips.

“Contaminated” means the presence in or under any land, site, buildings or structures of a substance or micro-organism above the concentration that is normally present in or under that land, which substance or micro-organism directly or indirectly affects or may affect the quality of soil or the environment adversely.

“Cultural significance”, this means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

“Cumulative impact”, 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;

"Dam" when used in the Listing Notice 1 GNR 983 and Listing Notice 2 GNR 984 Regulations means any barrier dam and any other form of impoundment used for the storage of water.

"Dangerous goods" means goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards;

"Days" means calendar days. Note: when a period of days must in terms of these regulations be reckoned from or after a particular Day, that period must be reckoned as from the start of the day following that particular day to the end of the last day of the period, but if the last day of the period falls on a Saturday, Sunday or public holiday, that period must be extended to the end of the next day which is not a Saturday, Sunday or public holiday. The period of 15 December to 2 January must be excluded.

In the reckoning of days, where a timeframe is affected by the 15 December to 2 January period, the timeframe must be extended by the number of days falling within the 15 December to 2 January period. Where a timeframe is affected by one or more public holidays, the timeframe must be extended by the number of public holiday days falling within that timeframe.

"Decommissioning" means to take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned.

"Department", means the Western Cape department of environmental affairs and development planning;

"Derelict land" means abandoned land or property where the lawful/legal land use right has not been exercised during the preceding ten-year period.

The term **'design'** means the process (and product) of converting a brief into design details ready for documentation, including concept design and design development, and then documentation or detailing of the technical and other requirements for the project in a written form that details the project product sufficiently for it to be constructed or otherwise provided.

"Development" means the building, erection, construction or establishment of a facility, structure of infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility, structure of infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint;

"Development footprint", means any evidence of its physical alteration as a result of the undertaking of any activity;

"Development setback" means a setback line defined or adopted by the competent authority;

"Disposal" means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.

"Domestic waste" means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes.

"Dumping at sea" means-

- a) Any deliberate disposal into the sea of any waste or material other than operational waste from a vessel, aircraft, platform or other man-made structure at sea.
- b) Any deliberate disposal into the seas of a vessel, aircraft, platform or other man-made structure at sea.
- c) Any storage of any waste or other material on or in the seabed, its subsoil or substrate
- d) Any abandonment or topping at site of a platform or other structure at sea for the sole purpose of deliberate disposal but "dumping at sea" does not include-
 - i. The lawful disposal at sea through sea out-fall pipelines of any waste or other material generated in land
 - ii. The lawful depositing of any substance or placing or abandoning of anything in the sea for a purpose other than mere disposal of it, or
 - iii. Disposing of or storing in the sea any tailings or other materials from the bed or subsoil of coastal waters generated by the lawful exploration, exploitation and associated off-shore processing of mineral resources from the bed, subsoil or substrata of the sea.

"Dynamic coastal processes" means all natural processes continually reshaping the shoreline and near shore seabed and includes-

- a) Wind action
- b) Wave action
- c) Currents
- d) Tidal action
- e) River flows

"DWA", the Department of Water Affairs. This Department is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing this [sector](#). It also has override responsibility for water services provided by local government.

"Ecosystem" means a dynamic system of plant animal and micro-organism communities and their non-living environment interacting as a functional unit.

"Effluent" means-

- a) Any liquid discharge into the coastal environment as waste and includes any substance dissolved or suspended in the liquid; or
- b) Liquid which is a different temperature from the body of water into which it is being discharged.

"Environment", the surroundings (biophysical, social and economic) within which humans exist and that are made up of:

- i. the land, water and atmosphere of the earth;
- ii. micro-organisms, plant and animal life;
- iii. any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;

"Environmental assessment practitioner" (EAP), means the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the NEMA EIA Regulations GNR 982 – as defined in section 1 of the Act.

Note: if exemption from the appointment of an EAP has been applied for, the applicant must perform the tasks required of an EAP, as indicated in this guideline.

“Environmental audit report” means a report contemplated in NEMA EIA Regulations GNR 982 regulation 34 (of 2014);

“Environmental authorisation”, means the authorisation by a competent authority of a listed activity or specified activity in terms of this act, and includes a similar authorisation contemplated in a specific environmental management act.

“Environmental Impact”, the direct effect of human activities and natural events on the components of the environment.

“Environmental Impact Assessment” (EIA), means a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and S&EIR;

“Environmental Impact Assessment Report” (EIR) means a report contemplated in NEMA EIA Regulations GNR 982 regulation 23 (of 2014);

“Environmental Management Programme” (EMPr), a document that contains recommendations for the control or management of the potential significant impacts of operations on the environment and recommendations to contain or mitigate actual impacts – as contemplated in NEMA EIA Regulations GNR 982 regulation 19 and regulation 23 (of 2014).

The term **‘environmental opportunity’** means a potential for beneficial environmental impacts (such as an improvement in air or water quality through environmentally friendly technology alternatives).

The term **‘environmental risk’** means a potential for adverse environmental impacts (such as pollution of a water source during construction activities).

“Environmentally sound management” means the taking of all practicable steps to ensure that waste is managed in a manner that will protect health and the environment.

“Estuarine functional zone” means the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area, as defined by the area below the 5m topographical contour (referenced from the indicative mean sea level);

“Estuary” means a body of surface water-

- a) That is part of a water course that is permanently or periodically open to the sea;
- b) In which a rise and fall of the water level as result if the tides are measurable at spring tides when the water course is open to the sea;
- c) In respect of which the salinity is measurably higher as a result if the influence of the sea.

“Expansion” means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

“Export” means to take or send waste from the Republic to another country or territory.

“Extended producer responsibility measures” means measures that extend a person's financial or physical responsibility for a product to the post-consumer stage of the product, and includes—

- (a) waste minimisation programmes;
- (b) financial arrangements for any fund that has been established to promote the reduction, re-use, recycling and recovery of waste;
- (c) awareness programmes to inform the public of the impacts of waste emanating from the product on health and the environment; and
- (d) any other measures to reduce the potential impact of the product on health and the environment

“Fatal Flaw”: generally, this is regarded as an impact associated with an activity on a site that is of such a negative or detrimental nature that even with mitigation measures, cannot be mitigated to acceptable levels and it is therefore not considered as implementable by the relevant independent specialist or EAP.

“Feasible”, Acceptable, capable of being used or implemented successfully, without unacceptably damaging the environment. Hydrogeological study: The study of ground water.

“Financial year” means a period commencing on 1 April of any year and ending on 31 March of the following year.

“Forum” refers to the National Environmental Advisory Forum.

“Gauteng Agricultural Potential Atlas” means the Gauteng Agricultural Potential Atlas, which can be obtained from the Gauteng Provincial Department responsible for environmental affairs;

“Gauteng Conservation Plan” means a systematic conservation planning tool delineating biodiversity priority areas representative of biodiversity pattern, process and species of special concern, which areas have been identified in three broad categories; namely, Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and Protected Areas;

“Gauteng Protected Area Expansion Strategy” means a framework for protected area expansion in Gauteng, setting out key strategies for protected area expansion and identifying spatial priorities and protected area targets and is aligned to the National Protected Area Expansion Strategy as it identifies finer scaled provincial priorities based on regional and local conservation imperatives;

“Gazette”, when used in relation to—

- (a) the Minister, means the Government Gazette; and
- (b) the MEC, means the Provincial Gazette of the province concerned.

“General waste” means waste that does not pose an immediate hazard or threat to health or to the environment, and includes—

- (a) domestic waste;
- (b) building and demolition waste;
- (c) business waste; and
- (d) inert waste;

“Government waterwork” means a waterwork owned or controlled by the Minister and includes the land on which it is situated.

“Hazard” means a source of or exposure to danger.

"Hazardous waste" means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

"Holder of waste" means any person who imports, generates, stores, accumulates, transports, processes, treats, or exports waste or disposes of waste.

"High-risk activity" means an undertaking, including processes involving substances that present a likelihood of harm to health or the environment.

"High water mark" means the highest line reached by coastal waters but excluding the line reached as a result of-

- a) Exceptional or abnormal floods or storms that occur no more than one in ten years or
- b) An estuary being closed to the sea

"Import" means any entry into the Republic other than entry for transit.

"Important Bird and Biodiversity Areas (IBA)" means areas/sites that hold significant numbers of globally and/or regionally threatened species (Categories A1 and C1); sites that are known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) (Category A2); sites that are known or thought to hold a significant component of a group of species whose distributions are largely or wholly confined to one biome (Category A3);

"Incineration" means any method, technique or process to convert waste to flue gases and residues by means of oxidation.

"Independent", in relation to an EAP, a specialist or the person responsible for the preparation of an environmental audit report, means –

- (a) That such EAP, specialist or person has no business, financial, personal or other interest in the activity or application in respect of which that EAP, specialist or person is appointed in terms of the NEMA EIA Regulations GNR 982 (2014); or
- (b) That there are no circumstances that may compromise the objectivity of that EAP, specialist or person in performing such work; excluding –
 - i. Normal remuneration for a specialist permanently employed by the EAP; or
 - ii. Fair remuneration for work performed in connection with that activity, application or environmental audit;

"Indigenous vegetation" refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

"Industrial complex" means an area used or zoned for bulk storage, manufacturing, processing or packaging purposes.

"Industry" includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations.

"Inert waste" means waste that—

- (a) does not undergo any significant physical, chemical or biological transformation after disposal;
- (b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and

(c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant;

"In stream habitat" includes the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse.

"Interested and affected party" (I&AP), for the purposes of chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in section 24(4)(a)(v), and which includes-

- (a) any person, group of persons or organisation interested in or affected by such operation or activity; and
- (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

"International environmental instrument" means any international agreement declaration, resolution, convention or protocol which relates to the management of the environment.

"Large stock unit" means domesticated units including but not limited to cattle and horses, as well as game, including but not limited to antelope and buck with an average adult male live weight of 100 kilograms or more.

"Life cycle assessment" means a process where the potential environmental effects or impacts of a product or service throughout the life of that product or service are being evaluated.

"Linear activity" means an activity that is arranged in or extending along one or more properties and which affects the environment or any aspect of the environment along the course of the activity, and includes railways, roads, canals, channels, funiculars, pipelines, conveyor belts, cableways, powerlines, fences, runways, aircraft landing strips, and telecommunication lines;

"Littoral active zone" means any land forming part of or adjacent to the seashore that is-

- a) unstable and dynamic as a result of natural processes, and
- b) characterised by dunes, beaches, sand bars and other landforms composed of unconsolidated sand, pebble or other such material which is either un-vegetated or only partially vegetated

"Low water mark" means the lowest line in which coastal waters recede during spring tides.

"Maintenance" means actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint;

"Maintenance management plan" means a management plan for maintenance purposes defined or adopted by the competent authority;

The term '**management**' means the planning and interactive controlling of human and material resources to achieve time, cost, quality, performance, functional and scope requirements. It involves the anticipation of changes due to changing circumstances and the making of other changes to minimise adverse effects.

"Marina" means a constructed waterway that is normally associated with residential or commercial use and that could include mooring facilities.

"Marine Living Resource Act" means the Marine Living Resources Act, 1998 (Act No. 18 of 1998).

"MEC" means the Member of the Executive Council to whom the Premier has assigned the performance in the province of the functions entrusted to a MEC by or under such a provision.

"Minimisation", when used in relation to waste, means the avoidance of the amount and toxicity of waste that is generated and, in the event where waste is generated, the reduction of the amount and toxicity of waste that is disposed of.

"Minimum information requirements" means the minimum information requirements contemplated in section 24(5)(bA)(viiiA), if any are applicable at the time of the application;

"Mitigation" means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible;

"Mixed use", with regard to an activity, means the presence of two or more types of land use in an area.

"National Appeal Regulations" means the national appeal regulations published in terms of section 43(4) and 44 of the Act;

"National department" means a department of State within the national sphere of government.

"National Environmental Management Act" (NEMA), means the National Environmental Management Act, 1998 (Act No. 107 of 1998); To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith.

"National Protected Area Expansion Strategy (NPAES)" means South Africa's national strategy for expansion of the protected area network, led by the Department of Environmental Affairs and developed in collaboration with national and provincial conservation authorities. The NPAES sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion. Focus areas for protected area expansion are identified in the NPAES. They are large, intact, unfragmented areas of high importance for land-based protected area expansion, suitable for the creation or expansion of large protected areas.

"NEM: AQA", National Environmental Management: Air Quality Act (39 of 2004). The NEM: AQA's serves to protect the environment by providing reasonable measures for the protection and improvement of the quality of air; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting economic and social development.

"NEM: BA", National Environmental Management: Biodiversity Act (10 of 2004). This Act serves to provide for the management and conservation of biological diversity within an area and of the components of such biological diversity. This Act's objective is to preserve species and ecosystems irrespective of whether or not they are situated in protected areas.

"NEM: ICM", National Environmental Management: Integrated Coastal Management Act (24 of 2008). This act applies to the coastal zone of South Africa and is intended to preserve, protect, extend and improve the status of coastal public property as being held in trust by the State on behalf of all South Africans, including future generations.

"NEM: PAA", National Environmental Management: Protected Areas Act (57 of 2003). This Act is intended to protect and conserve ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. This includes the identification and classification of various types of protected areas to give effect to this intention and underpinning this intention is the stated objective of creating a national system

of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. These protected areas are to fall on state owned land, privately owned land and communally owned land.

“NEM: WA”, National Environmental Management: Waste Act (59 of 2008). The NEM:WA serves to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

“NEMA EIA regulations”, mean the environmental impact assessment regulations promulgated in terms of the national environmental management act, 1998 (act no. 107 of 1998) (“NEMA”) 12.

“No-go option” means the option of not implementing the activity.

“Non-substantive”, in relation to the amendment or substitution of a regulation, notice, strategy, licence, approval, or provision thereof, includes—

- (a) any clerical mistake, unintentional error or omission;
- (b) the correction of any miscalculated figure; and 45
- (c) the correction of any incorrect description of any person, thing, property or waste management activity;

“Ocean-based activity” means an activity in the territorial waters of the Republic of South Africa;

“Organ of state”, means -

- (a) any department of state or administration in the national, provincial or local sphere of government; or
- (b) any other functionary or institution –
 - i. Exercising a power or performing a function in terms of the constitution or a provincial constitution; or
 - ii. Exercising a public power or performing a public function in terms of any legislation but does not include a court or a judicial officer.

Note: examples of organs of state include: municipalities (both the district and local municipality), Heritage western cape, CapeNature, the department of water affairs, etc.

“Person” includes a natural person, a juristic person, an unincorporated body, an association, an organ of state and the Minister.

“Phased activities” means an activity that is developed in phases over time on the same or adjacent properties to create a single or linked entity through interconnected internal vehicular or pedestrian circulation, sharing of infrastructure, or the continuum of design, style or concept by the same proponent or his or her successors.

“Plan of study for environmental impact assessment” means a study contemplated in NEMA EIA Regulations GNR 982 regulation 22 (of 2014) which forms part of a scoping report and sets out how an environmental impact assessment will be conducted;

“Pollution”, means any change in the environment caused by-

- i. Substances
- ii. Radioactive or other wastes; or
- iii. Noise, odours, dust or heat.

Emitted from any activity, including the storage to treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where the change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems or on material useful to people, or will have an effect in the future.

“Previous NEMA notices” as contemplated in these transitional arrangements means the previous notices published in terms of section 24(2) and NEMA (Government Notices R. 386 and R. 387 in the Government Gazette of 21 April 2006, as amended, or Government Notice No. R 544, 545 and 546 in the Government Gazette of 18 June 2010, as amended);

“Previous NEMA regulations” means the environmental impact assessment regulations published in terms of: · sections 26 and 28 of the ECA, by government notice no. R. 1183 of 5 September 1997; or · NEMA, by government notice no. R. 385 in the government gazette of 21 April 2006.

The term **‘procurement’** means the collection of activities performed by and for an agency to acquire services and products, including assets, beginning with the identification/detailing of service requirements and concluding with the acceptance (and where applicable, disposal) of the services and products.

The term **‘project’** means an undertaking with a defined beginning and objective by which completion is identified. Project delivery may be completed using one contract or a number of contracts

“Proponent” means a person intending to submit an application for environmental authorisation and is referred to as an applicant once such application for environmental authorisation has been submitted;

“Protection” in relation to a water resource, means -

- (a) maintenance of the quality of the water resource to the extent that the water resource may be used in an ecologically sustainable way;
- (b) prevention of the degradation of the water resource; and
- (c) the rehabilitation of the water resource

“Protected area” means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers;

“Public participation process”, means a process by which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, an application.

“Receipt” means receipt on the date indicated –

- (a) On a receipt form if the application of document was hand delivered or sent via registered mail;
- (b) In an automated or computer generated acknowledgment of receipt;
- (c) On an acknowledgment in writing from the competent authority as the date of receipt if the application or document was sent via ordinary mail; or
- (d) On an automated or computer generated proof of transmission in the case of a facsimile message;

"Recovery" means the controlled extraction of a material or the retrieval of energy from waste to produce a product.

"Recycle" means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.

"Red Flags": generally, this is terminology used to bring to attention, at the early stages of assessment, a potentially serious issue that needs to be assessed in greater detail and that may have undesirable impacts, even with mitigation. This can however, only be determined on detailed assessment, but serves as a good guide to the professional team and EAP and applicant early on in the process to inform further design on site.

"Registered environmental assessment practitioner or registered EAP" means an environmental assessment practitioner registered with an appointed registration authority contemplated in section 24H of the Act;

"Registered interested and affected parties" in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of NEMA EIA Regulations GNR 982 regulation 42 (of 2014);

- a) all persons who, as a consequence of the public participation process conducted in respect of an application have submitted written comments or attended meetings with the applicant or EAP;
- b) all persons who, after completion of the public participation process, have requested the applicant or the EAP managing the application, in writing, for their names to be placed on the register; and
- c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

Note: to be registered as an interested and affected party the persons referred to in (a) and (b) above must provide their names, contact details and addresses to the EAP managing the application process. Registered IA&Ps must ensure that they notify the EAP if their contact details and/or address changes during the application process.

A registered I&AP is entitled to comment, in writing, on all written submissions made to the department by the applicant or the EAP, provided that comments are submitted within the specified timeframes and the I&AP discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

"Reserve" means the quantity and quality of water required -

(a) to satisfy basic human needs by securing basic water supply, as prescribed under the Water Services Act. 1) 97 (Act No, 108 of 1997) for people who are now or who will, in the reasonably near future be—

- (i) relying upon;
- (ii) taking water from; or
- (iii) being supplied from, the relevant water resource; and

(b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource.

"Resource quality" means the quality of all the aspects of a water resource including-

- (a) the quality, pattern, timing, water level and assurance of instream flow;
- (b) the water quality, including the physical, chemical and biological characteristics of the water;
- (c) the character and condition of the instream and riparian habitat; and
- (d) the characteristics, condition and distribution of the aquatic biota.

“Responsible authority” in relation to a specific power or duty in respect of water uses means-

- (a) it that power or duty has been assigned by the Minister to a catchment management agency that catchment management agency; or
- (b) it that power or duty has not so been assigned the Minister.

“Re-use” means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.

“Riparian habitat” includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of Species with a composition and physical structure distinct from those of adjacent land areas.

“Route determination” means the process of planning and designing a new route;

“SANS 1089:1999” The Petroleum Industry: Storage and distribution of petroleum products in above-ground bulk installations.

“Scoping report” means a report contemplated in NEMA EIA Regulations GNR 982 regulation 21 (of 2014);

“S&EIR” means the scoping and environmental impact reporting process contemplated in NEMA EIA Regulations GNR 982 regulation 21 to regulation 24 (of 2014);

“Sea” means all marine waters, including-

- a) The high seas
- b) All marine waters under the jurisdiction of any state, and
- c) The bed, subsoil and substrata beneath those waters, but does not include estuaries.

“Seashore” subject to section 26 of the NEM: ICMA, 2008, means the area between the low water mark and the high water mark.

The term **‘service provider’** means a Contractor, sub-Contractor, supplier, consultant (including an agency) and sub-consultant (contracting with a consultant), and their service providers, that contract with a customer to carry out assets construction, provide other products (including goods) and/or provide services.

“Significant impact” means an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence;

“Site or areas listed in terms of an International Convention” means any area and its buffer, unless specifically defined, of 5 kilometres extending from its listed boundary, listed in terms of an international convention but does not include world heritage sites, and shall include but not be limited to the Ramsar Convention on Wetlands (Ramsar, Iran, 1971);

“Small stock unit” means domesticated units, including sheep, goats and pigs, as well as game, including but not limited to antelope and buck with an average adult male live weight of less than 100 kilograms.

“Specialist” means a person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies;

“State department”, means any department or administration in the national or provincial sphere of Government exercising functions that involve the management of the environment or that administer a law relating to a matter affecting the environment.

Note: examples of state departments include: the department of water affairs, department of agriculture, etc. Whilst all state departments are organs of state, not all organs of state are state departments (e.g. Municipalities are organs of state, but not state departments).

“State land” means land which vests in the national or a provincial government, and includes land below the high water mark and the Admiralty Reserve but excludes land belonging to a local authority.

“Storage” means the accumulation of waste in a manner that does not constitute treatment or disposal of that waste.

The term **‘sub-Contractor’** means an organisation that contracts with a Contractor as the customer to carry out construction and related services, and/or provide other products.

The term **‘supplier’** means an organisation that contracts with a Contractor/Principal to supply a product and/or service.

“Sustainable development” means the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

“Systematic biodiversity plan” is a plan that identifies important areas for biodiversity conservation, taking into account biodiversity patterns (i.e. the principle of representation) and the ecological and evolutionary processes that sustain them (i.e. the principle of persistence). A systematic biodiversity plan must set quantitative targets/thresholds for aquatic and terrestrial biodiversity features in order to conserve a representative sample of biodiversity pattern and ecological processes;

“the Act” means the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;

- Any reference in the associated regulations to an environmental assessment practitioner will, from a date to be determined by the Minister by notice in the Gazette, be deemed to be a reference to a registered environmental assessment practitioner, as defined.

“Throughput capacity” means the design capacity or maximum capable capacity of a facility, structures or infrastructure, whichever is greater;

“Transit” means the continuous passage from one border of the Republic to another such border without storage other than temporary storage incidental to transport.

“Treatment” means any method, technique or process that is designed to—

- (a) change the physical, biological or chemical character or composition of a waste; or
- (b) remove, separate, concentrate or recover a hazardous or toxic component of a waste; or
- (c) destroy or reduce the toxicity of a waste, in order to minimise the impact of the waste on the environment prior to further use or disposal:

"Undeveloped" means that no facilities, structures or infrastructure have been effected upon the land or property during the preceding 10 years.

"Unit" in relation to a quantity standard for determining throughput of facilities or infrastructure for the slaughter of animals, has the meaning assigned to it in Regulations promulgated in terms of the Meat Safety Act, 2000 (Act No. of 40 of 2000).

"Urban areas" means areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas.

"Vacant" means not occupied for the purpose of its lawful land use during the preceding ten-year period.

"Virgin soil" means land not cultivated for the preceding 10 years.

"Waste" means any substance, whether or not that substance can be reduced, re-used, recycled and recovered—

- (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- (b) which the generator has no further use of for the purposes of production;
- (c) that must be treated or disposed of; or
- (d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
 - (i) a by-product is not considered waste; and
 - (ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste;

"Waste disposal facility" means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise.

"Waste management activity" means any activity listed in Schedule 1 or 40 published by notice in the Gazette under section 19, and includes—

- (a) the importation and exportation of waste;
- (b) the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;
- (c) the accumulation and storage of waste;
- (d) the collection and handling of waste;
- (e) the reduction, re-use, recycling and recovery of waste;
- (f) the trading in waste;
- (g) the transportation of waste;
- (h) the transfer of waste; 50
- (i) the treatment of waste; and
- (j) the disposal of waste;

"Waste management services" means waste collection, treatment, recycling and disposal services.

"Waste minimisation programme" means a programme that is intended to promote the reduced generation and disposal of waste.

"Waste transfer facility" means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility.

"Waste treatment facility" means any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste.

"Watercourse" means-

(a) a river or spring;

(b) a natural channel in which water flows regularly or intermittently;

(c) a wetland lake or dam into which, or from which, water flows; and

(d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and

A reference to a watercourse includes, where relevant, its bed and banks;

"Water management area" is an area established as a management unit in the national water resource strategy within which a catchment management agency will conduct the protection use development, conservation, management and control of water resources.

"Water management institution" means a catchment management agency, a water user association, a body responsible for international water management or any person who fulfils the functions of a water management institution in terms of this Act.

"Water resource" includes a watercourse, surface water, estuary, or aquifer.

"Waterwork" includes any borehole, structure, earthwork or equipment installed or used for or in connection with Water use.

"Wetland" means land which is transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface, or the land is periodically covered with shallow water and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

ANNEXURE B – METHOD STATEMENT

ANNEXURE B

METHOD STATEMENT

TYPICAL BASELINE INFORMATION TABLE RELATING TO CONSTRUCTION WORKS

Describe in detail <i>what</i> work is to be undertaken?
Describe in detail <i>where</i> on the site the works are to be undertaken and the <i>extent</i>?
When the works will start and the anticipated finishing date of these works?
How are the works to be undertaken?
Typical Plant and Machinery to be used
Materials to be stored on Site

METHOD STATEMENT TABLE

PROJECT NAME				
IMPACT SOURCE(S)				
RECEPTOR(S)				
OBJECTIVE				
RISKS				
Impacts of Camp Site on Surrounding Site				
NOTES:				
ROLE	NAME	COMPANY	DATE	SIGNATURE
CLIENT				
PRINCIPAL AGENT				
CONTRACTOR				
ENGINEER				
ECO				

Signature of this Method Statement represents a **binding agreement** to the Method Statement and associated Construction EMP by all site Contractors and sub-Contractors involved in the work for which the Method Statement is submitted.

DECLARATIONS OF RESPONSIBILITY ROLES ON PROJECT

ROLE	NAME	COMPANY	DATE	SIGNATURE
CLIENT				
PRINCIPAL AGENT				
CONTRACTOR				
ENGINEER				
ECO				

DECLARATIONS OF UNDERSTANDING BY PARTIES

CLIENT

I understand the contents of the method statement document and associated construction EMP as well as the legal obligations in terms of ensuring that the Project Team comply with this Method Statement and associated Construction EMP.

_____ (Print name)

_____ (Signed) Dated: _____

CONTRACTOR

I understand the contents of the method statement document and the scope of the works required of me. I further understand that the method statement may be amended on application to the signatories of this declaration, and that the Environmental Control Officer will audit my compliance with the contents of this method statement.

_____ (Print name)

_____ (signed) Dated: _____

ENVIRONMENTAL CONTROL OFFICER (ECO)

The work described in this Method Statement document, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm.

_____ (Print Name)

_____ (Signed) Dated: _____

PRINCIPAL AGENT

The work described in this Method Statement document, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm.

_____ (Print name)

_____ (Signed) Dated: _____

ANNEXURE C - DESIGN AND PLANNING

ANNEXURE C
DESIGN AND PLANNING

ANNEXURE D – ROLE OF ECO

ANNEXURE D

ROLE OF THE ECO

DUTIES OF THE ECO

1. The identification of potential environmental impacts, prior to the onset of the project.
2. Ensuring that the EMP conditions are adhered to at all times and taking action (via the engineer) where the specifications are not being followed.
3. Ensuring that environmental impacts are kept to a minimum.
4. Reviewing and approving method statements in consultation with the Principal Agent.
5. Advising the engineer and Contractor on environmental issues and assisting in developing environmentally responsible solutions to problems.
6. Reporting to the client and Principal Agent on a regular basis and advising of any environmental impacts.
7. Attending site meetings (when necessary) and giving a report back on the environmental issues at these meetings and other meetings that may be called regarding environmental matters.
8. Inspecting the site and surrounding areas regularly.
9. Establishing and monitoring an ongoing environmental awareness program in conjunction with the Contractor.
10. Requesting the removal of person(s) and/or equipment not complying with the specifications.
11. Keeping both a written and photographic record of progress on site from an environmental perspective, and an ad hoc record of all incidents or events on site with environmental ramifications. These records should be dated and accurately catalogued.
12. Undertaking continual internal review of the EMP and submitting a report at the end of the project.
13. Submitting all written instructions and verbal requests to the Contractor via the engineer.

ANNEXURE E – PROJECT SPECIALIST STUDIES

ANNEXURE E

Specialist Studies Undertaken for the Dominion 2 Solar Park

ANNEXURE F – VEGETATION PLANS

ANNEXURE F

Alien Vegetation Control Plan

ANNEXURE G – HERITAGE MANAGEMENT PLAN

ANNEXURE G

Heritage Management Plan

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED DOMINION SOLAR PARK 2

<ul style="list-style-type: none"> Area and site no. 	<ul style="list-style-type: none"> Mitigation measures 	<ul style="list-style-type: none"> Phase 	<ul style="list-style-type: none"> Timeframe 	<ul style="list-style-type: none"> The responsible party for implementation 	<ul style="list-style-type: none"> Monitoring Party (frequency) 	<ul style="list-style-type: none"> Target 	<ul style="list-style-type: none"> Performance indicators (monitoring tool)
<ul style="list-style-type: none"> General project area 	<ul style="list-style-type: none"> Implement a chance to find procedures in case where possible heritage finds are uncovered. 	<ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> During construction 	<ul style="list-style-type: none"> Applicant ECO Heritage Specialist 	<ul style="list-style-type: none"> ECO (monthly / as or when required) 	<ul style="list-style-type: none"> Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34-36 and 38 of NHRA 	<ul style="list-style-type: none"> ECO Monthly Checklist/Report
<ul style="list-style-type: none"> Burial grounds and graves 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> During Construction 	<ul style="list-style-type: none"> Applicant Environmental Control Officer (ECO) Heritage specialist 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA 	<ul style="list-style-type: none"> ECO Monthly Checklist/Report
<ul style="list-style-type: none"> Historical Structures 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Pre-construction 	<ul style="list-style-type: none"> After the approval of the EA and before construction occurs 	<ul style="list-style-type: none"> Applicant Environmental Control Officer (ECO) Archaeologist 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA 	<ul style="list-style-type: none"> ECO Monthly Checklist/Report
<ul style="list-style-type: none"> Palaeontological resources 	<ul style="list-style-type: none"> If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the 	<ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> During Construction 	<ul style="list-style-type: none"> Applicant Environmental Control Officer (ECO) 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> Ensure compliance with relevant legislation and 	<ul style="list-style-type: none"> ECO Monthly Checklist/Report

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<ul style="list-style-type: none"> Area and site no. 	<ul style="list-style-type: none"> Mitigation measures 	<ul style="list-style-type: none"> Phase 	<ul style="list-style-type: none"> Timeframe 	<ul style="list-style-type: none"> The responsible party for implementation 	<ul style="list-style-type: none"> Monitoring Party (frequency) 	<ul style="list-style-type: none"> Target 	<ul style="list-style-type: none"> Performance indicators (monitoring tool)
	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			<ul style="list-style-type: none"> 		recommendations from SAHRA under Section 36 and 38 of NHRA	

ANNEXURE H – EAP’S CURRICULUM VITAE

ANNEXURE H

EAP’s Curriculum Vitae