Environmental Consultants

REPORT IN SUPPORT OF A PART 2 AMENDMENT TO AN ENVIRONMENTAL AUTHORISATION

in terms of Regulation 31 of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act (Act 107 of 1998), as amended.

File Reference Number:
14/12/16/3/3/2/998

Project Title:
Part 2 amendment application to the Environmental Authorisation for the development of a 300MW solar photo-voltaic (PV) facility and associated infrastructure, on Portion 1 of Farm Riet Fountain 39C, Portion 1 of Kwanselaars Hoek 40C, Portion 4 of Taaibosch Fontein 41C and Portion 1 of Farm No. 56 in the Hanover District, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province.

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DOCUMENT CONTROL

Table 1: Document Control.

PHASE	AUTHOR	STATUS	REVISION	DISTRIBUTED ON	SIGNATURE
Author	Justin Bowers	Draft	00	06 March 2023	
Review	Shaun MacGregor	Draft	01	14 March 2023	
Approve					

Table 2: General Site Information.

The following general site information is provided:
21-digit Surveyor General codes of all affected farm portions
The 21-digit Surveyor General Codes of each cadastral land parcel are as follows: • Portion 1 of Riet Fountain 39C C03000000000003900001 • Portion 1 of Kwanselaars Hoek 40C C03000000000004000001 • Portion 4 of Taaibosch Fontein 41C C03000000000004100004 • Portion 1 of Farm No. 56 C03000000000005600001
Coordinates of activities
1. **Inclusion of a second Loop-In transmission line connection:** Begin: 30°53'27.69"S, 24°18'52.63"E; Middle: 30°53'46.65"S, 24°18'38.57"E; End: 30°53'45.98"S, 24°16'47.78"E. 2. **Inclusion of a second Loop-Out transmission line connection:** Begin: 30°53'27.60"S, 24°18'56.61"E; Middle: 30°53'50.08"S, 24°18'39.79"E; End: 30°54'2.08"S, 24°17'6.57"E. 3. **Relocation of construction camp** (30°53'10.75"S, 24°18'39.68"E) and **Operations & Maintenance (O&M) offices** (30°53'7.45"S 24°18'43.02"E). 4. **Provision for on-site concrete batching** at construction camp (30°53'10.75"S, 24°18'39.68"E) or Main Transmission Sub-station (MTS, 30°53'20.49"S, 24°19'0.75"E). 5. **Inclusion of additional water requirements and associated boreholes** (Solar Borehole 4: 30°52'17.66"S, 24°18'38.12"E; Borehole 13: 30°51'35.47"S, 24°19'4.47"E; Borehole 14: 30°51'33.38"S, 24°19'3.39"E) for construction and operational water requirements and overhead storage tank (30°51'42.08"S, 24°18'36.96"E); Solar Borehole 5 and associated overhead storage tanks (30°53'8.79"S, 24°18'45.21"E). 6. **Inclusion of re-alignment of Eskom 11kV distribution line** servicing the landowner (Beginning of realignment: 30°53'17.06"S, 24°19'52.48"E; Middle 1: 30°53'2.49"S, 24°20'18.27"E; Middle 2: 30°51'41.78"S, 24°18'37.10"E; End of realigned section: 30°51'45.81"S, 24°18'24.51"E). 7. **Inclusion of high-level microwave communication towers, lightning conductors & flood lighting** at the MTS ((30°53'20.49"S, 24°19'0.75"E) and Dx sub-stations (30°53'10.02"S, 24°18'43.32"E). 8. Changes to the solar PV Environmental Management Programme (EMPr) associated with: a. Construction camp (30°53'10.75"S, 24°18'39.68"E)

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b. On-site refuelling c. Washing bays and associated oil separators d. Maintenance of vehicles and construction equipment e. Hazardous waste management.	
PV plant design specifications including:	
Type of technology	Solar PV Plant of PV panels using polycrystalline solar module technology.
Panel Array height	4m
Surface area to be covered (including associated infrastructure such as roads)	448ha
Surface orientation	Northern direction
Laydown area dimensions (construction period)	4 hectares
Generation capacity	300Mwac
Generation capacity of the facility as a whole at delivery points.	300Mwac, less intrinsic losses.

Table 3: Checklist: Content of Report in terms of Regulation 32 of the EIA Regulations, 2014, as amended.

(1)(a) A report, reflecting-	
(i) an assessment of all impacts related to the proposed change;	☑
(ii) advantages and disadvantages associated with the proposed change; and	☑
(iii) measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and	☑
(iv) any changes to the EMPr;	☑
which report-	
(aa) had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and	☑
(bb) reflects the incorporation of comments received, including any comments of the competent authority.	☑

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EXECTIVE SUMMARY

Ecoleges Environmental Consultants were appointed by SolarAfrica Energy (Pty) Ltd, to undertake an application for a Part 2 amendment to the Environmental Authorisation (EA) for the development of a 300MW solar photo-voltaic (PV) plant on several portions of farms in the Hanover District, Northern Cape province.

An environmental authorisation has been issued for the project (DFFE Reference: 14/12/16/3/3/2/998) which has undergone previous Part 1 and Part 2 amendments, and which now requires an additional Part 2 amendment application to include aspects not included in the original application nor previous amendments. The additional scope relates to:

- Inclusion of a second Loop-In Loop-Out transmission line connection
- Relocation of the construction camp and Operations & Maintenance offices.
- Provision for on-site concrete batching at construction camp or Main Transmission Sub-station.
- Inclusion of three additional boreholes (Solar Borehole 4 and Boreholes 13 & 14) for construction and operational water requirements and overhead storage tanks.
- Inclusion of re-alignment of Eskom 11kV distribution line servicing the landowner, around the perimeter of the solar PV park.
- Inclusion of high-level microwave communication towers, lightning conductors & lighting at the MTS and Dx sub-stations.
- Inclusion of automated solar panel cleaning technology.
- Changes to the solar PV EMPr associated with:
    - Construction camp
    - On-site refuelling
    - Washing bays and associated oil separators
    - Maintenance of vehicles and construction equipment
    - Hazardous waste management
    - Additional specialist mitigations relating to the expanded project scope.
- Removal of Condition 32 of the Environmental Authorisation as the stated heritage site TS05 does not occur on the affected property nor was it mentioned in any submitted heritage reports.

The EA amendment process is to take a holistic approach regarding environmental compliance under all relevant legislation to ensure that the amended project scope does not negatively impact the environment nor result in "triggering" additional Listed Activities.

The general objectives of public participation stipulated in the Environmental Impact Assessment (EIA) Regulations (2014), as amended have been undertaken to provide interested and affected parties the opportunity to comment on the amendment report & process including all project information and associated specialist reports. All I&APs have been included into the project I&AP register, to ensure any additional issues and concerns raised by I&APs are duly addressed. The comments and responses are recorded and form part of the Comments & Response Register.

In consideration of the investigated impacts, the nature and extent of the proposed development, compliance with the relevant legal, policy and planning documentation and the findings of the specialist

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studies, it is anticipated that the amended project scope is supported from an environmental perspective and should be considered for amendment to the Environmental Authorisation, subject to the implementation of the identified recommendations.

DISCLAIMER

Although Ecoleges Environmental Consultants has exercised due diligence whilst drafting this report, Ecoleges shall not be held responsible for any damages or losses suffered by the client, caused by or arising out of circumstances over which Ecoleges has no control, such as the use and interpretation of the Report by the client, the competent authority, its officials or their representatives or agents.

Whilst the authors have made every effort to verify that information provided in this report is reliable, accurate and relevant, this report is based on information that could reasonably have been sourced within the time allocated to the report and is dependent on the information provided by the client and/or its representatives.

It should, accordingly, not be assumed that all possible and applicable findings and/or measures are included in this report as any report represents a sample of the project parameters.

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ABBREVIATIONS AND DEFINITIONS

Table 4: List of terms for abbreviations and acronyms used in this document.

Abbreviation	Term
CA	Competent Authority
DFFE	Department of Forestry, Fisheries and the Environment
DMRE	Department of Mineral Resources & Energy
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EIAr	Environmental Impact Assessment Report
EMPr	Environmental Management Programme
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IPP	Independent Power Producers
IRP	Integrated Resource Planning
LA	Listed Activity (EIA Regulations, 2014)
LNG	Liquefied Natural Gas
LN1	Listing Notice 1: GN R. 983, 4 December 2014 amended in GN No. 327, 7 April 2017, GG No. 41766, GN No. 706, 13 July 2018 and GG No. 43358, GN No. 599, 29 May 2020.
LN2	Listing Notice 2: GN R. 984, 4 December 2014 amended in GN No. 325, 7 April 2017, GG No. 41766, GN No. 706, 13 July 2018 and GG No. 43358, GN No. 599, 29 May 2020.
LN3	Listing Notice 3: GN R. 985, 4 December 2014 amended in GN No. 324, 7 April 2017, GG No. 41766, GN No. 706, 13 July 2018 and GG No. 43358, GN No. 599, 29 May 2020.
MPRDA	Mineral and Petroleum Resources Development Act (Act 28 of 2002)
NDP	National Development Plan
NEM: WA	National Environmental Management: Waste Act (Act 59 of 2008)
NEMA	National Environmental Management Act (Act 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act (Act 39 of 2004)
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act (Act 25 of 1999)
NWA	National Water Act (Act 36 of 1998)
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SDGs	Sustainable Development Goals
S&EIA	Scoping and Environmental Impact Assessment
UNFCCC	United Nations Framework Convention on Climate Change

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Table 5: Definitions of some terms used in this document.

Term	Source	Definition
Development	EIA Regulations, 2014 as amended	The building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, 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, 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	EIA Regulations, 2014 as amended	Any evidence of physical alteration as a result of the undertaking of any activity.
Environment	ISO 14001:2015	Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their relationships.
Environment	National Environmental Management Act (Act 107 of 1998)	The surroundings 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 well-being.
Environmental aspect	ISO 14001:2015	Element of an organization's activities or products or services that interacts or can interact with the environment.
Environmental impact	ISO 14001: 2015	Change to the environment, whether adverse or beneficial, wholly, or partially resulting from an organisation's environmental aspects.
Interested party	ISO 14001: 2015	Person or organisation that can affect, be affected by, or perceive itself to be affected by a decision or activity.
Impacts	ISO 14001:2015	Any change to the environment, whether adverse or beneficial, wholly, or partially resulting from an organization's environmental aspects.
Significant impact	EIA Regulations, 2014 as amended	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.
Sustainable development	National Environmental Management Act (Act 107 of 1998)	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.
Watercourse	EIA Regulations, 2014 as amended	(a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, pan, lake or dam into which, or from which, water flows; and 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.

DETAILS OF THE EAP AND APPLICANT

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INTRODUCTION

In 2016 Ecoleges undertook an application for environmental Authorisation (EA) by way of Scoping & Environmental Impact Assessment (S&EIA) for the development of a 225 MW Solar PV facility, a prerequisite by the National Energy Regulator of South Africa (NERSA) for awarding a Power Purchase Agreement (PPA) under the Renewable Energy Feed in-Tariff (REFIT) program. The Department of Forestry, Fisheries and the Environmental (DFFE) granted environmental authorisation (Reference: 14/12/16/3/3/2/998) on 16th April 2018.

A Part 1 amendment application (14/12/16/3/3/2/998/AM1) to the environmental authorisation, to increase the capacity (not scope or footprint) of the facility to 300 MW due to technological advancements in solar photovoltaic panel efficiency and electrical output, was granted on the 24th of November 2020.

A Part 2 amendment application (14/12/16/3/3/2/998/AM3) to the environmental authorisation, was granted in 2021 for the inclusion of containerised lithium-ion battery storage and dual-fuel backup generators with associated fuel storage as part of the tender requirements for the Risk Mitigation Independent Power Producers Programme (RMIPPP) Bid Round.

The competent authority has been the National Department of Environmental Affairs because the applications were part of the REIPPP and RMIPPP BID rounds, which formed part of a Strategic Infrastructure Project (SIP) as described in the National Development Plan, 2011. Soventix SA (Pty) Ltd was an unsuccessful bidder in both tender processes.

A Part 2 amendment application (14/12/16/3/3/2/998/AM4) was approved on 25 November 2022 relating to the increased footprint and capacity of the Main Transmission sub-station, as well as an additional switching sub-station, which will facilitate additional generation capacity into the Eskom grid for "wheeling" to private consumers from the authorised Sun Central Cluster 1 and proposed phases 2 & 3 of Sun Central as well as other local renewable energy projects requiring grid access.
Additionally, a "staging area" was included where large transport vehicles can offload infrastructure and equipment for transfer onto smaller vehicles for localised distribution to site. This staging area will also act as an access control point, for staff and contractor's entering and exiting the PV sites.
Finally, an existing access road across a watercourse, was provided as the main access to the solar PV facility, in addition to the current property owner's main access road. The originally considered site access route on a local district road, crossed an existing Transnet railway line at two points, which poses challenges to larger vehicles transporting heavy equipment.

A Part 1 amendment application (14/12/16/3/3/2/998/AM5) was approved on 7 December 2022, following the sale of shares and project rights by Soventix SA to SolarAfrica Energy (SAE).

As the current project scope has grown beyond what was originally envisaged for Sun Central Cluster 1 (Figures 1, 2, 3 & 4), additional authorisations will be required and included in the scope of this Part 2 amendment.

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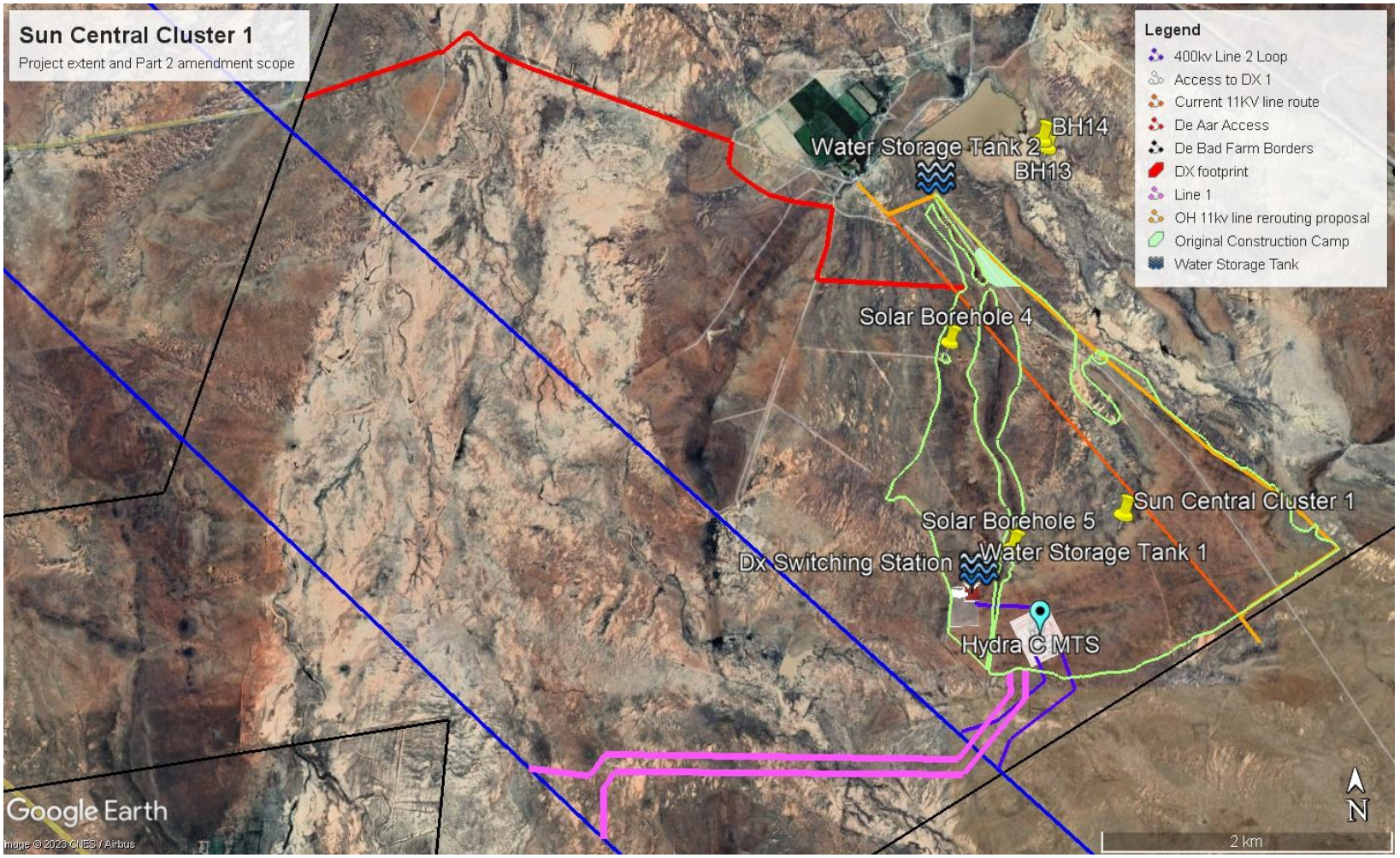

Figure 1. Layout map indicating the location of the Loop-In, Loop-Out (LILO) transmission lines into Line 1 (pink lines) and Line 2 (purple lines), boreholes and overhead storage tanks, re-aligned 11kV distribution line (dark orange line is current alignment and light orange is the proposed re-alignment), originally proposed construction camp (light-green polygon) which will now be located adjacent to the Dx Switching Station, while concrete batching will take place within the construction camp or on or directly adjacent Hydra C MTS.

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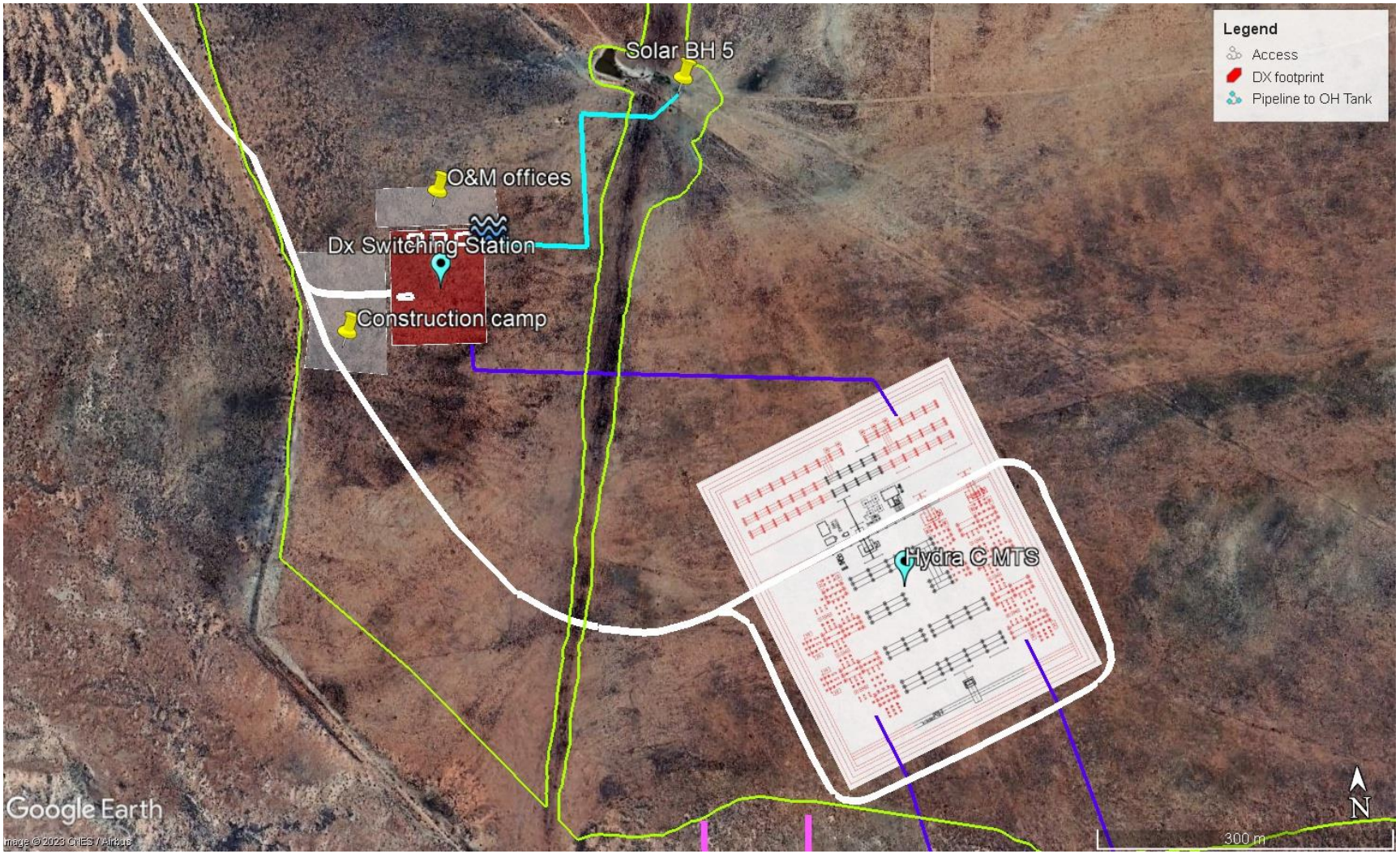

Figure 2. Proposed location of O&M offices, construction camp, and alignment of water pipeline from solar borehole 5 to the O&M offices.

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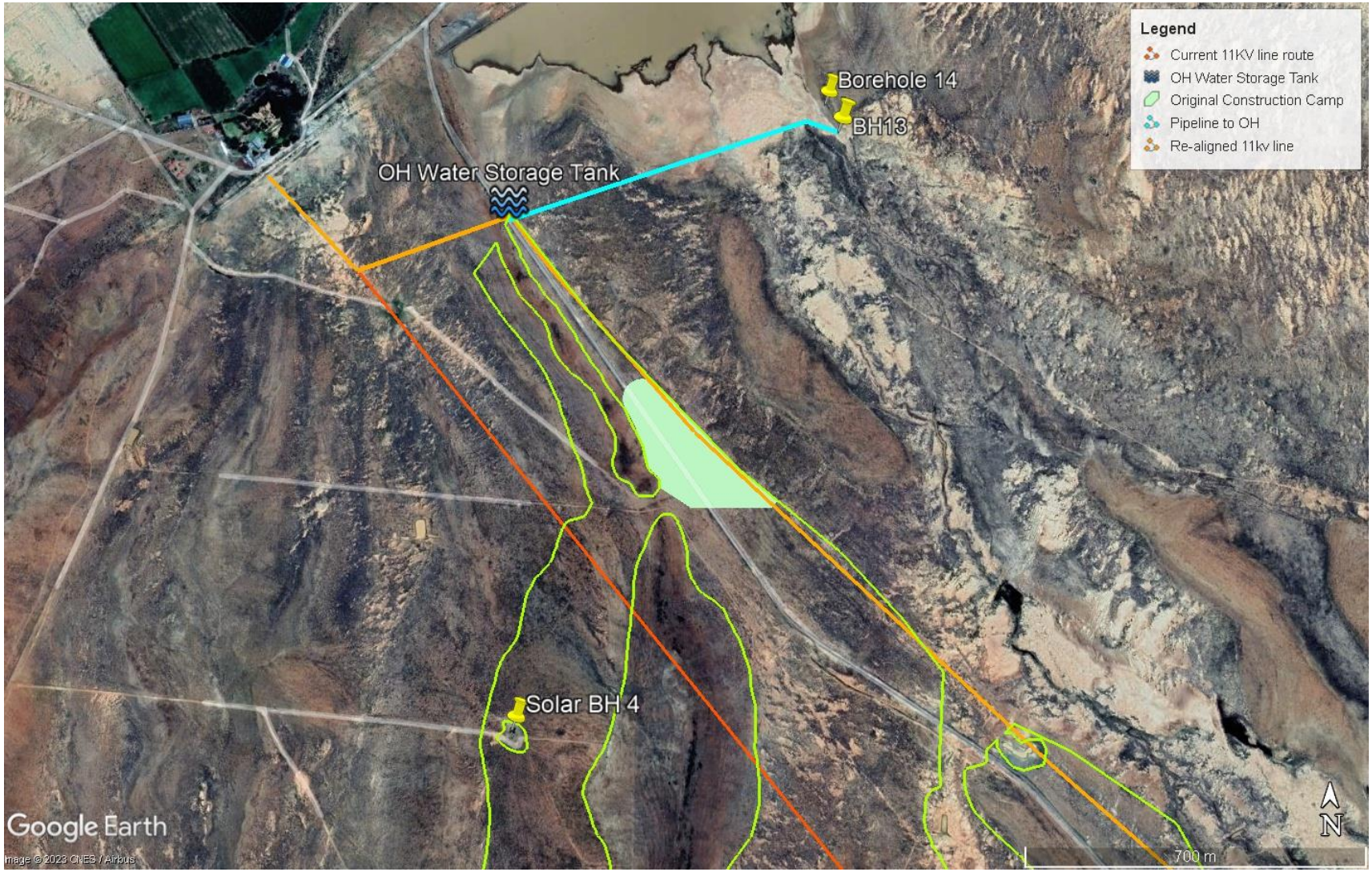

Figure 3. Location of three additional boreholes (4, 13 & 14) including associated pipelines and overhead water storage tanks. The green polygon indicates the original location of the construction camp which is now proposed adjacent to the Dx sub-station.

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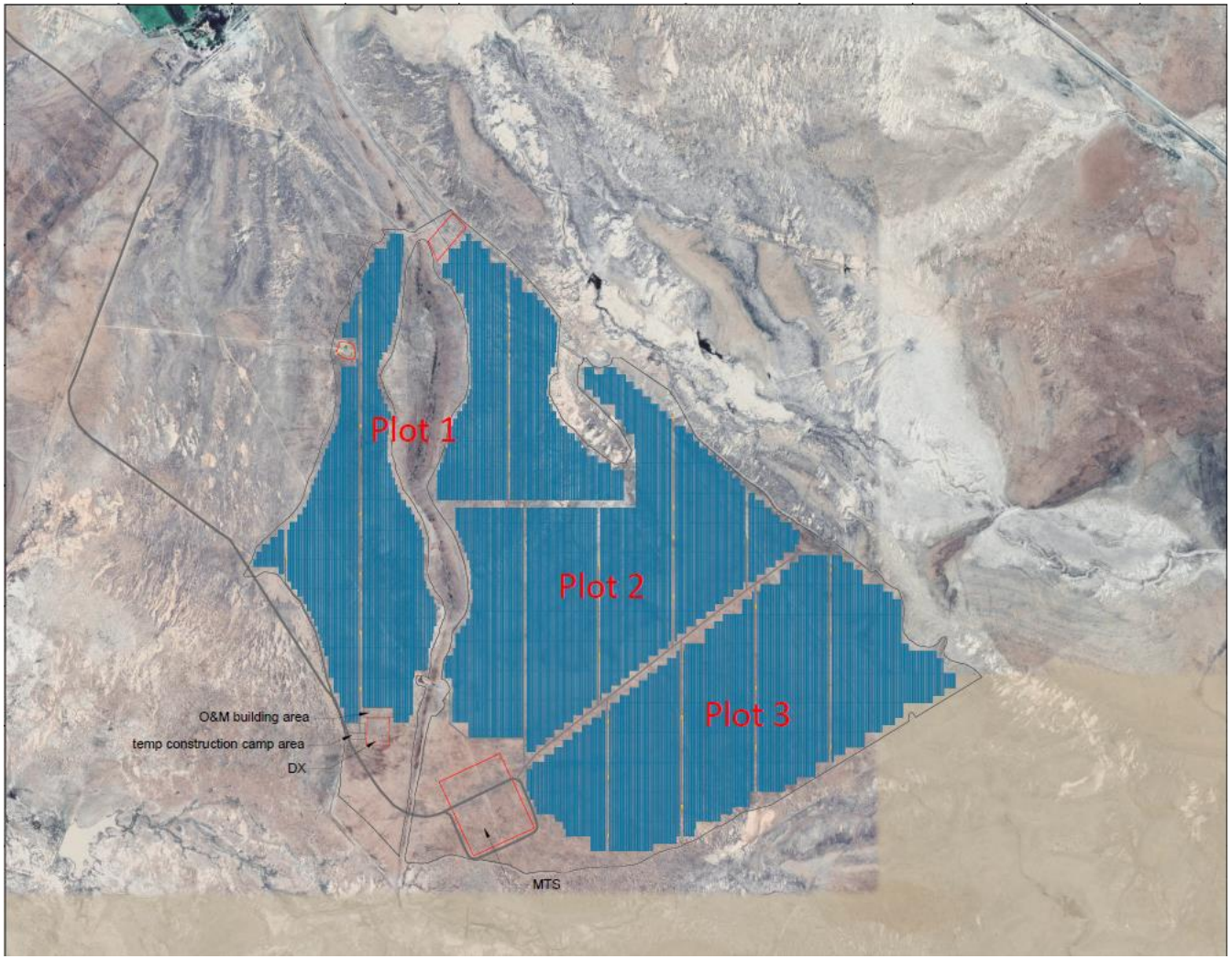

Figure 4. Location of the three 100 MW solar PV blocks within the approved development footprint relative to the location of the O&M building, temporary construction camp, 132 kV switching yard (Dx) and Main Transmission Sub-station (MTS).

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SECTION I: AN ASSESSMENT OF ALL IMPACTS RELATED TO THE PROPOSED CHANGE

Impact & risk assessments are the backbone of any environmental impact assessment. Without the opportunity to identify, predict and evaluate the risks & impacts that alternative activities, technologies or sites would have on environmental aspects, it would not be possible to pursue the best practicable environmental option that achieves our constitutional right to have the environment protected through sustainable development (Ecoleges Environmental Consultants, 2021).

Impacts versus Risks

Risk is defined in ISO 14001 nomenclature (South African Bureau of Standards, 2015) as:
"effect of uncertainty" where:

- An effect is a deviation from the expected — positive or negative.
- Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.

Risk is often characterized by reference to potential events and consequences, or a combination of these. Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence.

It is our opinion that a risk therefore equates to a potential impact, meant to encourage people to think beyond the obvious impact and consider (1) variable driving forces, and (2) uncertain outcomes, to identify potential or indirect risks and impacts so that specific actions can be taken in response to that risk.

(1) Variable driving forces

Some variable driving forces include nature, human behaviour, and exposure scenarios.

An **environmental aspect** is described in SANS/ISO 14001 (South African Bureau of Standards, 2015) as an "*element of an organisation's activities, products or services that interacts or can interact with the environment*".

An **environmental impact** is an "*adverse or beneficial change to the environment resulting from the organization's environmental aspect*s" (South African Bureau of Standards, 2015).

For example, if an activity is driving a covered coal truck on a surfaced road, then one aspect of that activity is emissions to air, including greenhouse gases, and the impact is global warming. If a person changes the exposure scenario to a dirt road, then another emission to air is dust, and the potential impacts or risks include dust fall on vegetation, and the inhalation of dust by people. It would not have been possible to identify the potential risks if one did not consider an alternative exposure scenario.

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(2) Uncertain outcomes

Uncertain outcomes relate to the nature and extent of an outcome most often because of a lack of information, data or understanding about, for example, stressors, responses and distributions over space and time.

For example, a lack of meteorological data would make it difficult to assess the effects of wind on dust emissions, and how it can influence the certainty of the impact.

So, the determination of an impact versus risk is based on whether an activity can be exposed to variable driving forces or generate uncertain outcomes. The methodology used in assessing impacts and risks is the same as described below. However, the legislated precautionary principle is adopted when identifying mitigations for risks.

The Methodology used in Determining and Ranking potential environmental Impacts and Risks

Ecoleges sets out to identify, predict and evaluate impacts and risks by implementing the mitigation hierarchy, by firstly identifying the activities that are to be undertaken during the development, and where applicable, related operation of a listed or specified activity. Once the activities and associated environmental aspects, or elements of the applicant's and/or contractor's activities that interact or can interact with the environment, are identified, e.g., air emissions, it is possible to identify the potential environmental impact and risks, considering that an impact is any change to the environment resulting from the applicant's or contractor's environmental aspects. This process of identification is facilitated by a Leipold Matrix, which considers the possible outcomes of each aspect and the cause of that aspect (or activity) within the context of the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment. Other critical inputs are received from Interested & Affected Parties, and, where applicable, the findings contained in specialist studies.

Motivation for the methodology

A **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 quality standards, thresholds or targets, and*…"

According to the EIA Regulation's definition, there are two measures of significance: (1) a notable effect on the environment, and (2) non-compliance with standards, thresholds, or targets.

(1) A notable effect on the environment

An impact can be significant based on a measurable effect to the environment.

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(2) Non-compliance with standards, thresholds, or targets

An impact can be significant based on non-compliance, which is basically failure to act in accordance with formal requirements such as a law, regulation, term of a contract, rule or in this context, environmental standards, thresholds, and targets.

a. An example of a standard is the General Authorisation for Section 21(f) water uses relating to the "discharge of waste or water containing waste into a water resource…" published in GN No. 665 of 2013. It contains a table of wastewater limit values applicable to the discharge, including such parameters as Chemical Oxygen Demand, pH, Suspended Solids, and the concentration of other dissolved elements.
b. An example of a threshold is 300m^2 in the case of Specified Activity 12 of Listing Notice 3 relating to the clearance of indigenous vegetation in identified geographical areas.
c. An example of targets are the biodiversity targets for ecosystems, species, or ecological processes that Critical Biodiversity Areas (CBAs) are required to meet.

Consequently, the methodology differentiates between two measures of significance, namely **Impact Magnitude** and **Impact Importance**. Impact Magnitude relates to a notable effect on the environment and Impact Importance refers to non-compliance. Significance is assessed using both approaches. If either one is, or both are, significant, then the impact is significant.

Each approach entails assigning ranks, usually Low, Medium, or High, to a set of judgemental criteria, that is criteria that are based on clearly defined value judgements (or descriptors) that have been adapted to the South African EIA context.

This requirement is written into the second part of the EIA Regulation's definition of **significant Impact**. It continues, "…*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*."

So, not only does the definition identify four key criteria that we need to consider, but it also requires that these criteria are ranked, implying levels of severity determined by the EAP's judgement.

Additional criteria identified by the EIA Regulations for inclusion in the assessment process include **nature**, **significance**, **consequence**, and **extent**.

In total, eight different criteria must be taken into consideration when undertaking an impact and risk assessment. However, which criteria should be used to evaluate **Impact Magnitude** and which criteria should be used to evaluate **Impact Importance**?

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Description of the criteria

The "**Nature**" of something means the basic or inherent features, character, or qualities of something. However, considering that identified potential environmental impacts should as far as possible be quantified, the nature of an impact should be evaluated by predicting those attributes that are measurable, or at least prone to minimal subjectivity during their judgement, such as intensity, extent, duration, and status.

The "**Status**" of an impact identifies whether it is a positive or beneficial, negative, or adverse, or neutral impact. Status is not mentioned as a criterion in the EIA Regulations, 2014 as amended, but the Regulations do refer to the inclusion of both positive and negative effects. So, status has been incorporated into the assessment process as a criterion and specifically with reference to evaluating the nature, or determining the inherent qualities, of an impact.

In summary, nature is a composite score that combines four different impact values: (1) **intensity** or severity, (2) geographic **extent** or spatial scale, (3) **duration** (and if applicable frequency), and (4) **status**.

Once the nature of an impact has been considered together with the **probability**, likelihood of occurrence or, also called, degree of certainty, then a person will arrive at **Impact Magnitude**, which is a separate and standalone measure of significance.

The other measure of **significance** is **Impact Importance**. Impact importance is effectively a value judgement placed on the degree of change by affected parties and is determined by combining a criterion called "**Level of Acceptability**" with the probability or likelihood of exceeding a threshold of sorts.

Although the Level of Acceptability is not identified as a criterion in the EIA Regulations, it is alluded to in the definition of "significant impact" as non-compliance with standards, thresholds, or targets, e.g., non-compliance with a threshold is unacceptable, and if highly probable, then it constitutes a significant impact.

In fact, the Level of Acceptability is very likely synonymous with, and achieves the same intent as, "**Consequence**."

A single impact can have multiple consequences, e.g., the consequences of global warming are many, ranging from rising sea levels to earlier flowering seasons. So, consequence is an extension of impact. Some consequences may be significant. Some may be insignificant. It is simply not possible to pick up on any significance if not by considering all the context-specific consequences. Therefore, considering that potential consequences are so many and varied, the only way of ranking a consequence is through its level of acceptability.

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The Level of Acceptability criterion measures the degree of change in an environmental resource against (1) quantitative thresholds provided by legal requirements and scientific standards, and which represent that point at which a project's potential environmental effects become significant, and (2) qualitative thresholds of social acceptability informed by *inter alia* the Public Participation Process.

Furthermore, the Level of Acceptability criterion, if considered properly in its formulation, also allows for the findings from undertaking a need and desirability to be brought into the impact and risk assessment process, e.g., the answers to the questions in the Need and Desirability Guideline document should be used to inform the Level of Acceptability for applicable impacts.

Value Judgement

Significance, being an anthropocentric concept, is a value judgement, dependant on the nature of the impact expressed in terms of both biophysical and socio-economic values (**Impact Magnitude**), and its acceptability to affected communities (**Impact Importance**).

Considering value judgements can vary greatly amongst different stakeholders, professional judgement, such as that of the EAP, shall be used in conjunction with the different value judgements expressed by various stakeholders. In other words, significance shall be communicated from a variety of perspectives other than the professional opinion of a multidisciplinary study team, and include environmental, socio-economic, or cultural attributes perceived by society to be significant. Despite the potential variety of perspectives, they can be categorized into three broad forms of recognition for determination of impact significance, namely 1. Institutional (laws, plans or policy statements), 2. Public and 3. Technical (scientific or technical knowledge or judgement of critical resource characteristics) (DEAT 2002). Consequently, thresholds of significance were as far as possible based on / determined by reference to legal requirements, accepted scientific standards or social acceptability (Table 6).

Significance is relative and must always be set in a context to show whose values they represent. The selected criterion, "Level of Acceptability," provides such a context, taking all three forms of recognition into account by asking whether impacts are legally, publicly, and professionally recognized as important.

Natural environmental, socio-economic, and cultural heritage impacts were identified systematically by considering how the activities to be undertaken during the development phase will interact with all elements of the receiving environment, as well as inputs received from I&APs and specialists.

Once identified, natural environmental, socio-economic, and cultural heritage impacts were then assessed using the approach outlined below. All impacts, including those identified by I&APs and Specialists, are measured against the current land-use activity (the no-go option / option of not implementing the activity) and assessed by ranking a suite of generic criteria. The criteria, as well as the descriptors that are used to assign

specific rankings for each criterion, provide a consistent and systematic basis for the comparison and application of judgements. Consequently, this methodology has been distributed to the specialists to avoid inconsistency between the EAP and specialists when determining impact significance.

Methodology

The methodology comprises two phases: (1) Phase 1 involves an assessment of significance without mitigation (Figure 4), and (2) Phase 2 involves an assessment with mitigation. If the outcome of a Phase 1 assessment is not significant, then the impact(s) are omitted from further assessment. However, if either Impact Magnitude (Figure 5) or Impact Importance are significant, then the highest rank prevails, e.g., if an impact is of low magnitude, but unacceptable to certain affected parties, then the Impact Importance rank needs to proceed to the Phase 2 assessment. In the case of both Impact Magnitude and Impact Importance being significant, then both ranks shall be simultaneously subjected to a Phase 2 assessment. During Phase 2 either or both Significance ranks (Impact Magnitude and/or Impact Importance) are considered together with the following three criteria to determine whether a phase 1-assessment should be repeated with mitigation or whether the proposed activity needs to be refused or redesigned: Reversibility, Irreplaceable Loss of Resources, and Mitigatory Potential.

Important Note: Non-significant impacts are omitted from further assessment, that is no phase 2-assessment. There is one exception, that is impacts with a positive **Status**. Impacts with a positive status are assessed according to their mitigatory potential to identify further opportunities for enhancing positive effects.

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(1) Phase 1-Assessment without mitigation

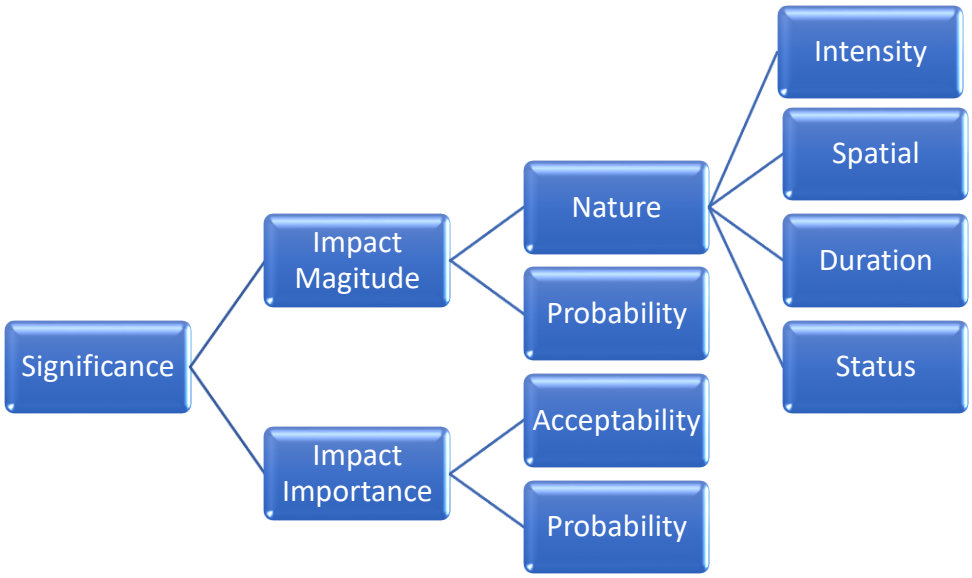

Figure 5. Schematic of determining Impact Significance.

Impact Magnitude and Impact Importance ratings are predicted as described below. However, the outcomes of the phase 1-assessment (rankings) should still be verified within the context of the descriptors described in Table 6.

Table 6: Significance Criterion (Impact Magnitude and Impact Importance Rating).

Ranks	Description
High	• Of a substantial or the highest order possible within the bounds of impacts that could occur. • In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or some combination of these. • Social, cultural, and economic activities of communities are disrupted to such an extent that these come to a halt.
Medium	• Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. • In the case of adverse impacts, mitigation is both feasible and easily possible.

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	• Social, cultural, and economic activities of communities are changed, but can be continued (albeit in a different form). • Modification of the project design or alternative action may be required. • In the case of beneficial impacts, other means of achieving this benefit are about equal in time, cost and effort.
Low	• Zero impact or impact is of a low order and therefore likely to have little real effect. • In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. • Social, cultural, and economic activities of communities can continue unchanged. • In the case of beneficial impacts, alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming.

a. **Impact Magnitude (Significance)**

Impact Magnitude is a composite score that is made up of the following two criteria: (1) Nature (composite score), and (2) Probability, likelihood of occurrence or degree of certainty.

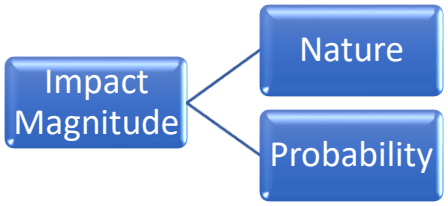

Figure 6. Schematic of determining Impact Magnitude significance.

The possible composite scores for Impact Magnitude are:

IMPACT MAGNITUDE		Probability		
		High	**Medium**	**Low**
Nature	**High**	±1	±1	±0
	Medium	±1	±1	±0
	Low	±0	±0	±0

Assumption: If the Nature and/or Probability is low, then Impact Magnitude is non-significant.

Significant	±1	Non-significant	±0

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i. **Nature**

Nature is a composite score that is made up of the following four criteria: (1) Intensity or severity, (2) Geographic extent or spatial scale, (3) Duration and frequency, and (4) Status (positive/beneficial, negative/adverse, or neutral) (Figure 6).

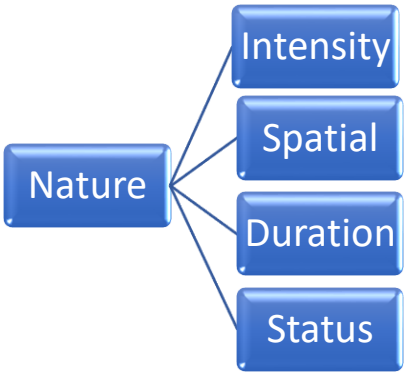

Figure 7. Schematic of determining the Nature of Impact Magnitude.

The possible composite scores for Nature are:

Nature		Intensity		
		High	**Medium**	**Low**
Spatial and Duration	**High**	H	H	H
	Medium	H	M	M
	Low	H	M	L

Assumption: if any one of the criteria are Medium or High, then Nature is significant.

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Table 7: Criteria used in evaluating Impact Magnitude (Significance).

Criteria	Ranks and Descriptors		
	Low	Medium	High
Intensity or Severity	• No disturbance or the disturbance of degraded areas, which have little conservation value. • Zero to a minor change in species occurrence or variety. • Natural function and processes are not affected, or if affected, then not modified. • Social, cultural, and economic activities of communities can continue unchanged, or they are changed, but can be continued (albeit in a different form) without stakeholder consultation.	• Disturbance of areas that have potential conservation value or are of use as resources. • Moderate change in species occurrence and variety. • Modified processes will continue. • Social, cultural, and economic activities of communities are changed, but can be continued (albeit in a different form) with stakeholder consultation.	• Disturbance of pristine areas that have important conservation value. • Complete change in species occurrence and variety/Destruction of rare or endangered species. • Functioning of processes will cease. • Social, cultural, and economic activities of communities are disrupted to such an extent that these come to a halt. • Sensitive environmental receptors with a low capacity (tolerance) to accommodate the change.
Geographical extent or spatial scale (the boundaries at local and regional extents will be different for biophysical and social impacts)	• Within site boundary. • Distribution within a population. • Within one property.	• Beyond site boundary. • Distribution across populations. • Traverses several properties. • Local area.	• Widespread. • Far beyond site boundary. • Distribution across ecosystems. • Crosses municipal or provincial boundaries. • Regional, national international scale.

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Duration and frequency (Long term (High), Medium term (Medium), Short term (Low))	• Immediate, once-off. • Temporary - quickly reversible. • Less than the project lifespan. • 0 to 5 years (or for rehabilitation <1yr, restricted to a season).	• Delayed, intermittent. • Temporary - reversible over time. • Lifespan of the project. • 5 to 15 years (or for rehabilitation >1yr, extending into other season cycles).	• Continuous • Permanent. • Beyond closure or decommissioning. • More than 15 years (or for rehabilitation >2yr, extending into multiple season cycles).
Status (-ve (High), neutral (Medium), +ve (Low))	• Beneficial effects. • Net gain of resources.	• Neutral. • Indifferent. • No net loss or gain.	• Adverse effects. • Costs. • Net loss of resources.
Probability (Definite (High), Probable (Medium), Improbable (Low))	• The impact will not occur, or it is highly unlikely that the impact will occur. • Limited useful information on and understanding of the environmental factors potentially influencing this impact (uncertainty) or a high degree of certainty that it will not occur. • Low probability or negligible - less than 1:20 chance of occurrence *(P<0.05)* of an impact occurring.	• There is a chance/risk of the impact occurring. • Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact. • Moderate probability (5-95%) of a particular fact or the likelihood of an impact occurring.	• Impact will occur regardless of prevention measures. Substantial supportive data exist to verify the assessment. • Wealth of information on and sound understanding of the environmental factors potentially influencing the impact. • Definite or high probability (>95%) of a particular fact or the likelihood of an impact occurring.

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b. **Impact Importance (Significance)**

Impact Importance is a composite score that is made up of the following two criteria: (1) Level of acceptability/consequence, and (2) Probability, likelihood of occurrence or degree of certainty (Figure 7).

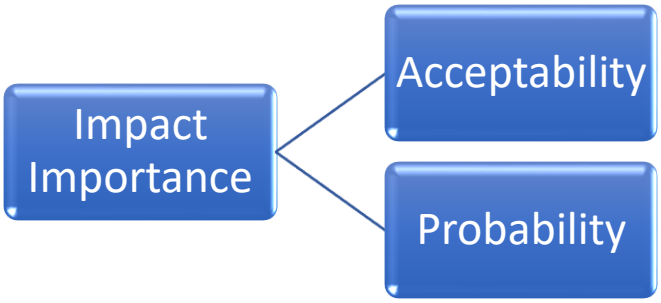

Figure 8. Schematic of determining Impact Importance.

The possible composite scores for Impact Importance are:

IMPACT IMPORTANCE		Probability		
		High	Medium	Low
Level of Acceptability	High	±1	±1	±0
	Medium	±1	±1	±0
	Low	±0	±0	±0

Assumption: If the Level of Acceptability and/or Probability is low, then Impact Importance is non-significant.

Significant	±1	Non-significant	±0

Table 8: Probability Criterion used in evaluating Impact Importance.

Ranks	Description
High (H) Definite	• Wealth of information on and sound understanding of the level of acceptability. • High degree of certainty. Definite or high probability (>95%) of a particular fact or the likelihood of a level of acceptability.
Medium (M) Probable	• Reasonable amount of useful information on and relatively sound understanding of the level of acceptability. • Moderate degree of certainty or probability (5-95%) of a particular fact or the likelihood of a level of acceptability.

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Low (L) Improbable	• Limited useful information on and understanding of the level of acceptability. • Low degree of certainty or probability or negligible - less than 1:20 chance *(P<0.05)* for a level of acceptability.

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Table 9: Level of Acceptability Criterion used in evaluating Impact Importance.

Ranks	Description Source of information: Quantitative thresholds (legal requirements, scientific standards, international standards), qualitative thresholds (social acceptability expressed during PPP), Need & Desirability, Specialist Assessments

High (Unacceptable)	Consequence of impact or risk:
	• Need & Desirability results relating to this impact or risk, and within the context of a specific aspect of the environment, indicate that it is **unnecessary and/or undesirable**.
	• Environmental quality standards (e.g., GA for S21(f) with wastewater discharge limit values), thresholds (e.g., in listing notices) and targets (e.g., for biodiversity, species and ecological processes that CBAs are required to meet) **will be exceeded**.
	• Normative thresholds of impacts or resource use that are clearly established by social norms, usually at the local or regional level and often tied to social or economic concerns.
	• Non-compliance
	ENVIRONMENT
	• Extinction of biological species, loss of genetic diversity, rare or endangered species, critical (CR, EN) habitat.
	• Critically Endangered Species:
	  ○ lead to a long-term decrease in the size of a population,
	  ○ reduce the area of occupancy of the species,
	  ○ fragment an existing population into two or more populations,
	  ○ adversely affect habitat critical to the survival of a species, or
	  ○ disrupt the breeding cycle of a population.
	• Endangered and Critically Endangered Ecological Communities:
	  ○ lead to a long-term adverse effect on an ecological community,

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	○ reduce the extent of a community, ○ fragment an occurrence of the community, or ○ adversely affect habitat critical to the survival of an ecological community. • Listed Migratory Species: ○ substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species, ○ result in invasive species that is harmful to the migratory species becoming established in an area of important habitat of the migratory species, or ○ seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population. • Disruption of food webs. • Discharges or release of persistent and/or toxic chemicals, microbiological agents, nutrients (nitrogen, phosphorous), radiation or thermal energy (e.g., cooling wastewater). SOCIO-ECONOMIC • Appropriate and justifiable social and economic outcomes, including meeting basic needs and equity, **cannot be achieved, <u>and</u> will be exacerbated,** e.g., increase in unemployment or shrinkage in the economy. • Social **outrage <u>and/or</u> widespread condemnation** expressed during PPP. • Negative effects on human health, well-being or quality of life, e.g., reduction of the quality or quantity of recreational opportunities or amenities or detrimental change in the current use of lands and resources for traditional purposes. • Negative effects on cultural, heritage (incl. architectural), archaeological, or palaeontological resources. <u>Required action:</u> • Abandon project in part or in its entirety. • Redesign project to remove or avoid impact or risk.

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Medium (Manageable)	Consequence of impact or risk: • Need & Desirability results relating to this impact or risk, and within the context of a specific aspect of the environment, indicate that it is **unnecessary or undesirable, but is manageable to the extent that it is neutral**. • Conflict with policies or land-use plans. • Environmental quality standards (e.g., GA for S21(f) with wastewater limit values), thresholds (e.g., in listing notices) and targets (e.g., biodiversity, species and ecological processes that CBAs are required to meet) **may be exceeded**. • Controversial thresholds of impacts or resource use that are highly controversial, or which are sources of conflict between various individuals, groups or organizations. ENVIRONMENT • **Threat** of extinction of biological species, loss of genetic diversity, rare or endangered species, critical habitat. • **Threat** of disruption of food webs. • Some loss of threatened (VU) habitat. • Loss of populations of or damage to commercial biological species. • Spread of biological disease, pests, feral animals or weeds can be avoided with mitigation. • **Threat** of discharges or release of persistent and/or toxic chemicals, microbiological agents, nutrients (nitrogen, phosphorous), radiation or thermal energy (e.g., cooling wastewater). SOCIO-ECONOMIC • Appropriate and justifiable social and economic outcomes, including meeting basic needs and equity, **may be achieved**. • **Legitimate** concerns expressed by individuals or groups during the PPP **are manageable to the satisfaction of those concerned**. • Increases level of risk on human health, well-being or quality of life, e.g., potential reduction of the quality or quantity of recreational opportunities or amenities, or for detrimental change in the current use of lands and resources for traditional purposes by aboriginal persons. • **Threat** of negative effects on cultural, heritage (incl. architectural), archaeological, or palaeontological resources.

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	Required action: • Implement regulatory and/or management controls (with the project proponent's commitments). • Adequate compensation must be given to affected communities.
Low (Acceptable)	Consequence of impact or risk: • Need & Desirability results relating to this impact or risk, and within the context of a specific aspect of the environment, indicate that it is **needed and desirable, or neutral.** • Environmental quality standards (e.g., GA for S21(f) with wastewater discharge limit values), thresholds (e.g., in listing notices) and targets (e.g., biodiversity, species and ecological processes that CBAs are required to meet) **will not be exceeded**. • Preference thresholds of impacts or resource use that are preferences for individuals, groups, or organizations only, as distinct from society at large. • Compliance ENVIRONMENT • **No** extinction of biological species, loss of genetic diversity, rare or endangered species, critical habitat. • **No** disruption of food webs. • Some loss of populations and habitats of non-threatened species. • Modification of landscape without downgrading special aesthetic values. • Emissions demonstrably less than the carrying capacity of the receiving environment. • **Zero** discharges or release of persistent and/or toxic chemicals, microbiological agents, nutrients (nitrogen, phosphorous), radiation or thermal energy (e.g., cooling wastewater). SCIO-ECONOMIC • Appropriate and justifiable social and economic outcomes, including meeting basic needs and equity, **will be achieved or at least remain unaffected**.

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	• Project is **welcomed by I&APs, <u>or</u> they are indifferent**. • Zero risk or positive effects on human health, well-being, or quality of life, e.g., improvement of the quality or increase in the quantity of recreational opportunities or amenities. • Zero or positive effects on cultural, heritage (incl. architectural), archaeological, or palaeontological resources. • Positive, beneficial, or neutral, that is no risk of harm to the biophysical, economical, or social (incl. cultural heritage and public health) environments. <u>Required action:</u> • Enhance beneficial impacts or risks.

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(2) Phase 2-Assessment with mitigation

Once an impact has been identified, predicted, and evaluated to determine significance, the EIA Regulations, 2014 as amended, further require one to determine the degree to which these impacts (1) can be reversed, (2) may cause irreplaceable loss of resources, and (3) can be avoided, managed, or mitigated.

The fact these requirements are written as a separate provision in the EIA Regulations implies that they are not considered as part of the evaluation of significance but are rather to be considered afterwards.

Furthermore, the fact that the EIA Regulations require "the degree" to be determined also implies that rankings must be assigned to each of these considerations.

Reversibility, irreplaceability and mitigatory potential, when considered together with the outcome of the outcome of the Phase 1 assessment, will decide on whether the activity responsible for an impact should be refused or can be entertained further by re-assessing the impact with mitigation to confirm whether the activity may proceed.

So, during Phase 2 (Figure 8) either or both Significance ranks (Impact Magnitude and/or Impact Importance) are considered together with the following three criteria; Reversibility (Table 10), Irreplaceable Loss of Resources (Table 11), and Mitigatory Potential (Table 12), to determine whether (1) a phase 1-assessment should be repeated with mitigation, or (2) the proposed activity needs to be refused or redesigned.

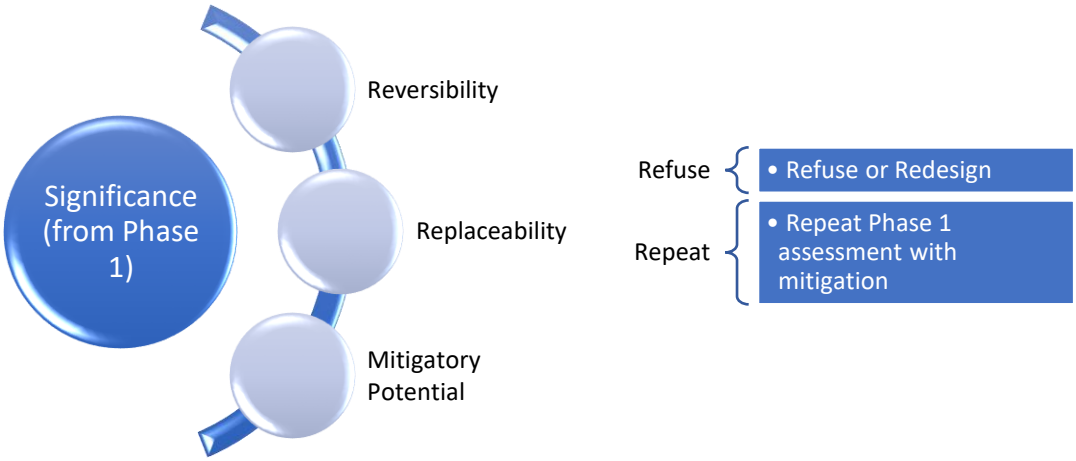

Figure 9. Schematic of Phase 2 assessment process.

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Table 10: Reversibility Criterion.

Ranks	Description
No to low degree	• If functional thresholds established for resource use are exceeded, the impacts will disrupt the functioning of an ecosystem sufficiently to destroy resources important to the nation or biosphere irreversibly and/or irretrievably. • Impacts are irreversible and/or the costs of human intervention are unaffordable.
Moderate degree	• Impacts are reversible with moderate to high (but affordable) human intervention.
High degree	• Impacts are naturally reversible, e.g., do not require any or only little human intervention.

Table 11: Irreplaceability Criterion.

Ranks	Description
Low degree to irreplaceable	• If functional thresholds established for resource use are exceeded, the impacts will disrupt the functioning of an ecosystem sufficiently to destroy resources important to the nation or biosphere irreversibly and/or irretrievably.
Moderately replaceable	• Large scale loss of productive capacity of renewable resources. • Moderate scale loss of productive capacity of non-renewable resources.
High degree of replaceability	• Low to moderate loss of productive capacity of renewable resources. • Low scale loss of productive capacity of non-renewable resources.

Table 12: Mitigatory Potential (for negative and positive impacts or risks) Criterion.

Ranks	Description
Low	• Little or no mechanism for mitigation and/or achieving the objectives. • No possible mitigation that could offset the impact or mitigation is difficult, expensive, time-consuming or some combination of these.
Moderate	• Moderate potential (few mechanisms) to mitigate negative impacts, but there remains a risk of the objectives not being met and/or the implementation of mitigation measures may still not prevent some negative effects. • Mitigation is both feasible and possible.
High	• High potential to mitigate negative impacts to the level of insignificant effects and achieve objectives. • Mitigation is either easily achieved or little will be required, or both.

Important Note: provide mitigation objectives that would result in a measurable reduction in the impact or risk (using expertise and/or experience). Mitigations must be realistic, that is reasonable and feasible.

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Quantifiable standards (performance criteria) for reviewing or tracking the effectiveness of the proposed mitigation action should be provided where appropriate.

Residual Risk

Finally, the level of residual risk after mitigation is determined.

If adequate mitigations are applied, then the residual risk should be at a level of acceptable risk, meaning either the consequences of the impact will be below the quantitative or qualitative thresholds prescribed by legal, scientific, or social acceptability or the magnitude will be low.

If the mitigated risk is not at a level of acceptable risk, then the mitigations are lacking, or if all reasonable mitigations have been exhausted, then the activity responsible for the impact must be refused.

Residual risk also includes the consideration of other factors that could prevent the desired outcomes of the proposed management measures and mitigations.

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IDENTIFICATION OF ACTIVITIES, SUB-ACTIVITIES, ASPECTS AND ENVIRONMENTAL DESCRIPTORS

Tables 6 describes all the activities that will be undertaken as part of the amendment application which are not Listed Activities under the EIA Regulations (2014) as amended, and do not require environmental authorization, but whose impacts have to be considered, mitigated and managed through incorporation into an updated and amended EMPr.

Table 6: Activities, aspects and impacts including the affected environment for the amendment process reflected in a Leipoldt matrix, with the "X" indicating the area of impact and colour-coded according to the relevant specialist assessment (as per legend below).

Legend:

	Hydrology
	Visual
	Social
	Climate Change
	Air Quality
	Geotechnical
	Geohydrology
	Bats
	Palaeontology
	Agriculture
	Cultural Heritage & Archaeology
	Traffic
	Aquatic
	Noise
	Other

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
PHASES, ACTIVITIES, SERVICES & PRODUCTS	SUB-ACTIVITY	ENVIRONMENTAL ASPECT																											
Planning & Design																													
COMPLIANCE - Acquiring authorisations, permits and/or licenses for activities/uses undertake	Water Use S21(c) and (i)	Compliance Management	X																										
	Water Use S21 (a)		X																										
	Water Use		X																										

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
n during construction and operation	S21 (b)																												
	Water Use S21 (g)		X																										
	WTW & WWTW	Registration of Water Care Works and Process Controllers	X																										
	Water Services	Permission from nomina	X																										

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
Description of change or response→				fauna	flora	fauna	flora	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation											
		ted Water Services Authority																											
	Changes to the flow pattern of runoff water	Provisions of the CARA Regulations	X																										
	Establishment of a solar PV	Section 53 of the MPRDA	X																										

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
	facility with associated limitations for mining potential																												
	Eskom 11kV re-alignment	Letter of Consent	X																										

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
	Construction of 400kV LILO	Civil Aviation Act	X																										
	Microwave communication towers	Astronomy Geographic Advantage (AGA) Act	X																										

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
	Microwave towers & high-level OH lighting	Section 29 approvals i.t.o Electronic Communications Act	X																										
CONSIDERATION OF ALTERNATIVES	Alternative Technologies	Autonomous solar panel cleaning robot																		X									
CHANGE LAND USE	Surrounding landowner	Conflict with surrounding																		X		X	X				X		

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
	engagement	land uses																											
LAYOUT & DESIGN	LILO into Line 1 & microwave tower	Zone of Visual Influence																								X			
	Lighting	Eskom standards	X																							X			
	Lighting	Biological effects		X											X			X		X						X			
	Lighting	Human landscape effects		X																									

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
	DWS Regulated Area	Surface water hydrology & aquatic system integrity																	X										
	Distribution Lines	Obstruction		X				X			X						X	X		X									
	Water infrastructure (Supply)	Groundwater abstraction, purification and storage								X	X							X		X				X					

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
	Infrastructure	Dispersive Soils															X												
	Buffers	Specialist recommendations																X								X			
	Flood lines		X																										
	Building Lines	Eskom servitude	X																										
Pre-construction																													
Planning	Invasive Species ito NEM	Compliance Management	X																										

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
	BA, 2004																												
	Protected Species	Compliance Management	X																										
	Stakeholder Engagement Plan	Grievance Mechanism																			X								

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
Contractor Readiness	Acquiring permissions	Eskom Permissions	X																										
	Employment of labour	Influx of job-seekers																			X								
		Training																			X								
Site Establishment	Method Statements	Flooding protocols								X																			

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
Description of change or response→				fauna	flora	fauna	flora	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation											
				quantity	quantity	quantity	quantity																						
Construction																													
Employee management (including appointment, conduct and movement)	Damage to infrastructure	Landowner's property																			X								
	Communicating	Noise generation																			X								
	Supervision	Loss of livestock																			X								
Construction Plant Management including Deliveries	Driving/Transport	Livestock safety																			X								

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
Water management	Pumping from a borehole	Utilisation of ground water resources								X		X																	
	Water treatment plant	Treatment of ground water									X																		
Handling Hazardous Substances	Concrete batching plant	Air emissions											X																
STORMWATER MANAGEMENT AND EROSION CONTROL		Ephemeral streams								X																			

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
LINEAR INFRASTRUCTURE CROSSINGS	Powerlines & Pylons	Importing material																	X										
		Installing pylons							X										X										
ROAD MANAGEMENT	New two-track roads	Susceptible to erosion								X																			
	Importing material	Suitable material							X																				
	Use of roads	Dust generation																				X							
Clearing/ Grubbing	Constructi	Loss of topsoil								X																			

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
and Grading	on camp & O&M	Dust generation											X																
		Destruction of heritage artefacts																										X	
Drilling and/or Ram Piling	Foundational integrity	Overturning risks							X																				
Infrastructure within Regulated Area	LILO Line 1	Effects on aquatic environment				X					X																		

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
Installing infrastructure	Microwave towers	Visual effects																									X		
	LILO powerlines	Visual effects																									X		
	Conventional structures	Foundational integrity							X																				
Earthworks - holes for racks and fence posts, inverters, field	Excavating and Trenching	Destruction of artefacts																										X	
		Sedimentation of																X											

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Receiving environment or environmental attributes →			Legal System	THREATENED OR PROTECTED INDIVIDUALS				PHYSICAL						THREATENED OR PROTECTED ECOSYSTEMS						Socio-economic								Heritage and Culture	Safety Net
				Terrestrial and Avian		Aquatic		Soil and Rock		Ground and Surface Water			Atmosphere	Terrestrial & Avian			Aquatic			Economical	Social	Property	Land Use	Health & Safety	Security	Public Services	Visual Aesthetics	Heritage	
				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
transformers, on-site substation, pylons and operational area		waterc ourse																											
		Effect of vadose soils						X	X																				
Stockpiling and Storing (Laydown)	Topsoil, aggregate etc	Wind erosion & entrainment											X																
	Topsoil	Viability						X																					
Sourcing materials (aggregate)	Borrow pits and spoiling	Potential sand & aggregate	X																										

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				fauna	flora	fauna	flora																						
Description of change or response→				quantity	quantity	quantity	quantity	quantity	quality	quantity	quality	behaviour	quality	quantity	transformation	fragmentation	quantity	transformation	fragmentation										
		sourcing and spoiling of excess material																											
Post-construction (incl. rehabilitation & monitoring)																													
Rehabilitation	LILO servitude	Rehabilite disturbed areas			X																								
Cumulative Impacts									X	X		X	X					X			X					X	X		

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Table 7: Identification of potential impacts from registered Interested and Affected Parties (I&APs) as per Appendix 3 (h)(iii) "*a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them*" (comments will be captured in the Comments & Response Sheet following the commenting period).

I&APs			
ACTIVITY	SUB-ACTIVITY	ENVIRONMENTAL ASPECT & IMPACT	ENVIRONMENTAL DESCRIPTOR
None received yet.			

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Cumulative Effects

A guide prepared for the Canadian Environmental Assessment Agency (CEAA) (Hegmann *et al*. 1999) defined cumulative effects as: *"…changes to the environment that are caused by an action in combination with other past, present and future human actions."*

Cumulative effects (Figure 9) are commonly understood as the impacts which combine from different projects and which result in significant change, which is larger than the sum of all the impacts. (DEAT (2004) Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7, Department of Environmental Affairs and Tourism (DEAT), Pretoria)

Cumulative effects can then occur when impacts are:
(1) additive (incremental);
(2) interactive;
(3) sequential; or
(4) synergistic.

Eccles *et al*. (1994) summarises the essence of cumulative environmental change as follows: *"Where the intensity of development remains low, the impacts can be assimilated by the environment over time, and cumulative effects do not become a significant issue. However, when development reaches a high level of intensity, impacts cannot be assimilated rapidly enough by the environment to prevent an incremental build-up of these impacts over time. Changes over time and space accumulate and compound so that in aggregate the effect exceeds the simple sum of previous changes. This temporal and spatial accumulation gradually alters the structure and functioning of environmental systems, and subsequently affects human activities."*

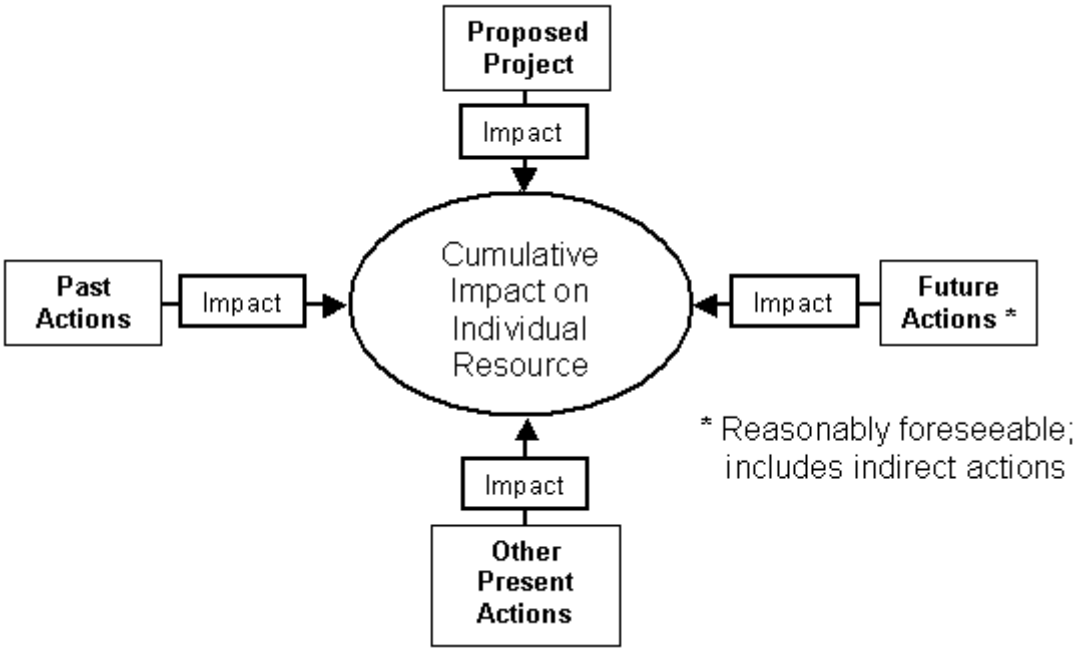

Figure 10. A flow diagram showing the compounding effects of cumulative impacts on a resource.

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The assessment would need to identify and investigate the potential cumulative effects of the proposed development taking into consideration the types and characteristics of aggregate effects. These can be fragmentation, compounding effects, indirect effects, triggers and thresholds.

Planning to address cumulative effects involves delineating spatial and temporal boundaries, determining future development and determining the significance of cumulative impacts. The commonly adopted method to identify and assess cumulative effects is via Geographic Information Systems (GIS). This computer tool uses powerful mapping and spatial information for capturing, displaying and analysing digital data. Map overlays have been used to identify areas where effects are likely to be greatest.

The assessment of sensitive receptor information can be used to form a consolidated “no-go” area map from a geographical, physical, biological, social, economic, heritage and cultural aspects.
This exercise used the method of bio-geographical analysis, including landscape analysis looking at patterns, structure and ecological process within a spatial unit. There was also the carrying capacity analysis which identifies thresholds as constraints to development, in the ecological context, carrying capacity is defined as the threshold below which ecosystem functions can be sustained.

The additional method to identify potential cumulative impacts includes the checklist technique in which potential cumulative impacts can be identified by using a list of common or likely effects.

The other pathway within cumulative impacts of a proposed development could be the compounding effect from one or more processes. The method of interactive matrices involves analysis of the additive and interactive effects of various configurations of multiple similar projects in the same geographic area. Due to the large number of developments in the broader area, there is potential for cumulative impact to generate additional impacts on broad-scale ecological processes and the countries’ ability to meet conservation targets.

The cumulative impacts included in the additional activities within the scope of the Part 2 amendment are considered under each environmental attribute and associated specialist study in Section III of this report. Much of the information provided on cumulative impacts is provided in the various specialist assessment reports, which are often qualitative rather than quantitative in nature, and do not necessarily conform to the theoretical assessment protocols and methodologies described above.

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ASSESSMENT OF ASPECTS & IMPACTS

The identified actual and potential Impacts, comments received from I&APs and findings contained in specialist assessments, are segregated amongst the different phases of implementation (planning and design, pre-construction & construction) so that they can be logically managed /mitigated for by the responsible role players at the appropriate time.

PLANNING AND DESIGN PHASE

Table 8: Impact Significance, including Impact Magnitude and Impact Importance associated with the planning & design phase including residual impacts.

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACTS & RISKS	PHASE 1 IMPACT ASSESSMENT						PHASE 2 IMPACT ASSESSMENT					
		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Compliance Management	Any unauthorised activity within the Department's (DWS) regulated area of a watercourse constitutes an offence. Those activities associated with the development which require a S21(c) and (i) authorisation, include: 1. LILO into existing Eskom	Significant	Significant	Significant	Moderate	Moderate	High	Construction may not commence without a water use license for Section 21(c) and (i) water uses.	Non-significant	Non-significant	Non-significant	WULA is not issued prior to commencement of construction. Conditions of the issued WULA are not fully implemented and effective mitigation & compliance is not acheived	Periodic internal & external audits to be undertaken.

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ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACTS & RISKS	PHASE 1 IMPACT ASSESSMENT						PHASE 2 IMPACT ASSESSMENT					
		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
	Line 1 400kV transmission line; 2. Relocation of existing 11kV distribution line (and creating a fire-break road) that will intersect with floodlplain associated with unnamed tributary of the Brak River; 3. Installing an underground water pipe across a watercourse (Brak River tributary) and associated floodplain from both boreholes 13 & 14; and 4. Installing an underground water pipe across a watercourse (wetland) from borehole 5.												

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ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACTS & RISKS	PHASE 1 IMPACT ASSESSMENT						PHASE 2 IMPACT ASSESSMENT					
		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Compliance Management	Taking of water without a license for purposes other than reasonable domestic use and livestock watering, which exceeds the limits, or contravenes the exclusions, provided in the General Authorisation, constitutes an offence.	Significant	Significant	Significant	Moderate	Moderate	High	Abstraction of water may not commence without a water use license for Section 21(a) water use for boreholes 13 & 14.	Non-significant	Non-significant	Non-significant		
Compliance Management	Storing water without a license for purposes other than rainfall run-off from a roof, and which exceed the limits provided in the General Authorisation, constitutes an offence.	Significant	Significant	Significant	Moderate	Moderate	High	Water may not commence without a water use license for Section 21(b) water use for the water storage tanks linked to the boreholes.	Non-significant	Non-significant	Non-significant		

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Compliance Management	Treating, Storing or Reuse of Wastewater in the absence of section 21(g) water use authorisation	Significant	Significant	Significant	Moderate	Moderate	High	(1) The disposal and storage of domestic wastewater may not commence without a water use authorisation (a General Authorisation or Water Use License) for Section 21(g) water use. (2) Similarly, the storage of waste for reuse or disposal, e.g., untreated effluent, such as concrete slurry from concrete mixer trucks during construction and contaminated soil, may not commence without a water use authorisation (a General Authorisation or Water Use License) for	Non-significant	Non-significant	Non-significant		

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
								Section 21(g) water use. (3) If treated effluent (wastewater) will be used to supplement the demand for water to control dust, then it too may not commence without a water use authorisation (a General Authorisation or Water Use License) for Section 21(g) water use or other water use as determined by the Responsible Authority.					

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Compliance Management	Water Care Works & Process Controllers must be registered with the Director-General of the Department of Water Affairs.	Significant	Significant	Significant	Moderate	High	High	(1) Apply for the registration of a Water Care Work (wastewater treatment plant) to the Director-General of the Department of Water Affairs on a form obtained from him before it is commissioned. (2) The owner of the Water Care Work must display in a prominent place on that work a copy of the certificate of registration. (3) The owner of the Water Care Work must employ the minimum number of persons of the classes prescribed in Schedule IV of the Regulations for the Erection, Enlargement,	Non-significant	Non-significant	Non-significant	In the event construction WTW & WWTW options are not decided on durign the design phase, this aspect may be left to the constractor in accrodance with his chosen technology	Ensure operational technologies are decided on and applied for in good time, and ensure tender and contract documents provide clarity on the registration requirements.

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
								Operation & Registration of Water Care Works (1985), as amended. (4) The owner of the Water Care Work must notify the Director-General in writing during January of each year, of the employment of any person referred to in Schedule III of the Regulations for the Erection, Enlargement, Operation & Registration of Water Care Works (1985), as amended, during the past year.					

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Permission from nominated Water Services Authority	Permission may be required from Emthanjeni Local Municipality (ELM) to use water services from a source other than a water services provider nominated by the water services authority having jurisdiction in the area.	Significant	Significant	Significant	Moderate	High	High	(1) Obtain written approval from the Municipal Manager of the Emthanjeni Local Municipality to supply groundwater from permissible boreholes on Cluster 1 for sanitation services and industrial use under Sections 6 and 7 of the Water Services Act, 1997 before the intended use of that water for construction.	Non-significant	Non-significant	Non-significant	Non-engagement from the municipality may result in no formal permission being granted.	Engage with relevant municipal officials on an ongoing basis unitl a formal response is provided.

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Provisions of the CARA Regulations	Permits or exception may be required from the Department of Agriculture, Land Reform and Rural Development (DALR&RD) under provisions of the CARA Regulations including permission under regulation 7(1) & 8 of the CARA Regulations for the drainage of a vlei, marsh or floodplain and changing the flow pattern of runoff water; respectively relating to construction within the floodplain of the Brak River.	Significant	Significant	Significant	Moderate	Moderate	High	(1) Obtain, if necessary, a written permission(s) from the executive officer (of the DALR&RD) to divert surface water run-off through designed engineering structures, such as box culverts, drifts or other permissible designs at the identified watercourse crossings and where applicable alluvial floodplains in terms of CARA Regulations 7 and 8.	Non-significant	Non-significant	Non-significant	Mitigations and measures contained in EMPr are not deemed satisfactory in addressing Agriculture's concerns	Amendment to the EMPr to incorporate additional mitigations to the satisfaction of Dept. of Agriculture

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Section 53 of the MPRDA	Use of land surface rights contrary to objects of the MPRDA (Act 28 of 2002).	Significant	Significant	Significant	Moderate	High	High	An application must made be to the Minister of Mineral Resources & Energy through the mechanism specified by the Department (e.g. SAMRAD) in terms of subsection (2) of section 53 of the MPRDA, for any person who intends to use the surface of any land in any way which may be contrary to any object of the MPRDA or which is likely to impede any such object.	Non-significant	Non-significant	Non-significant	DMRE deems the site of high mining potential and is not willing to issue Section 53 approval	Appeal decision based on lack of alignment with sensitivity of the site, spatial development plans.

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF REV	DEGREE OF IRR	DEGREE OF MIT	MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
Compliance Management	Re-alignment/location of the 11kV distribution line around the perimter of the solar PV park will require formal permission from Eskom.	Significant	Significant	Significant	Moderate	High	High	The applicant must submit a formal application for the relocation of the 11kV distribution line and comply with the conditions of any issued wayleaves and/or permissions.	Non-significant	Non-significant	Non-significant	Part 2 amendment, including this aspect of the project is not approved	In the absence of Part 2 amendment approval, relocation of the 11kV powerline must have stand-alone permissions in place or ensure a route where no additional authorisations are required.

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		IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
					REV	IRR	MIT						
Provisions of Civil Aviation Act (Act No. 13 of 2009)	Six (21 m) lightning masts will be erected within proximity to the on-site substation, construction of the 32 m high 400kV LILO transmisison line, 20m high-level floodlighting and 35m microwave tower represent a potential obstacle to aviation.	Significant	Significant	Significant	High	High	High	(1) Lodge an Obstacle Application for assessment with ATNS to obstacles@atns.co.za at least 120 days before the commencement of construction, preferably during the Planning and design phase once the engineers have determined the specifications of the structures (e.g., dimensions, co-ordinates, etc.) and completed the final layout plan. (2) The client will have to liaise with SACAA to finalise the "As build" and for any queries with the lighting.	Non-significant	Non-significant	Non-significant	Heights of additional infrastructure deemed an unacceptable risk to civil aviation	Re-engage with applicant and Eskom to meet CAA requirements and include same in revised design criteria

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PRE-CONSTRUCTION PHASE

Table 9: Impact Significance, including Impact Magnitude and Impact Importance associated with the pre-construction phase including residual impacts.

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACTS/RISKS	ENVIRONMENTAL ATTRIBUTES	PHASE 1 IMPACT ASSESSMENT						PHASE 2 IMPACT ASSESSMENT					
			IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
						REV	IRR	MIT						
Compliance Management	Failure to notify the environmental Competent Authority and take measures to control listed alien invasive plant species.	Legal System	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) The landowner must notify the Minister (DFFE) and/or MEC, in writing, of the listed invasive species occurring in the project area. (2) Implement an alien invasive control programme that will lead to the effective control and ultimate eradication of listed species.	Non-significant	Non-significant	Non-significant	Non-notification and ineffective control measures of occurring alien species will lead to a degraded environment and lowered agricultural potential	Appointment of ECO during construction and IEA during operations audits will independently identifiy the efficacy of management measures
Compliance Management	Failure to obtain the applicable permit for picking a protected, specially protected or	Legal System	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) Undertake a pre-construction search for listed protected species. (2) Construction may not commence without the applicable permit(s) and/or license to carry out a	Non-significant	Non-significant	Non-significant	Undertaking a search during the incorrect seasons will yield poor results	Ensure search and rescue activitiies are undertaken within the

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ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACTS/RISKS	ENVIRONMENTAL ATTRIBUTES	PHASE 1 IMPACT ASSESSMENT						PHASE 2 IMPACT ASSESSMENT					
			IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
						REV	IRR	MIT						
	indigenous* plant								restricted activity involving, or picking, or cutting, disturbing, damaging or destroying any threatened or protected flora.				and underestimate the affected species	relevant seasons for the spectrum of species represented on the project
Permission: No mechanical equipment shall be used in the vicinity of Eskom's apparatus and/or services without prior written permission having been granted by Eskom (Eskom letter dated 14 March 2017 ref: Invest14/03/2017)	The construction of the 400 kV LILO powerlines and associated access road will impact Eskom's power lines servitude. Construction without permission will constitute an offence in terms of the relevant legislation.	Legal System	Significant	Significant	Significant	Moderate	High	High	The Holder of the EA must apply for co-use of Eskom's 400 kV powerline servitude by submitting a formal application entitled "Annex A Application for the co-use of an Eskom right or restriction area", as well as all required supporting documents that are indicated in the form. The application should be submitted to Nomzamo Mdunyelwa ST(SA)0991, Land & Rights Officer, Land Development, Northern Cape Operating Unit, Eskom (Tel: 053 830 5947, Mobile: 081 046	Non-significant	Non-significant	Non-significant	Applications are not lodged prior to commencemet of works within existing Eskom servitudes.	Ensure applications to work within Eskom servitudes are lodged with adequate lead times ahead of the construction programme

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ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACTS/RISKS	ENVIRONMENTAL ATTRIBUTES	PHASE 1 IMPACT ASSESSMENT						PHASE 2 IMPACT ASSESSMENT					
			IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
						REV	IRR	MIT						
									5341, Email:MdunyeNC@eskom.co.za) at least 30 days before the intended date of commencement to prevent any unnecessary delays. A separate application will need to be submitted for (1) development or upgrading service roads and (2) constructing the 400 kV LILO powerlines from the MTS to the existing Eskom 400 kV powerlines.					

CONSTRUCTION PHASE

Table 9: Median of extent, magnitude, duration, significance and probability for negative & positive (highlighted in "Green") impacts associated with the construction phase and post-construction rehabilitation & monitoring.

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACTS & RISKS	ENVIRONMENTAL ATTRIBUTES	PHASE 1 IMPACT ASSESSMENT						PHASE 2 IMPACT ASSESSMENT					
			IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	DEGREE OF			MITIGATION/S	IMPACT SIGNIFICANCE	IMPACT MAGNITUDE	IMPACT IMPORTANCE	RESIDUAL RISK/S	RESIDUAL RISK MITIGATIONS
						REV	IRR	MIT						

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Landowner's property	Damage to farm infrastructure from copnstruction activities and staff.	Property	Significant	Significant	Significant	Moderate	High	High	(1) Affected landowners must be compensated for losses resulting from any damage to farm infrastructure. (2) Inspections of boundary fences should be done on a daily basis in areas where there are activities. (3) All fences should be inspected and be kept clear of debris, especially in the rainy season.	Non-significant	Non-significant	Non-significant	Absence or poor formulation of policy relating to the landowner can lead to conflict and contractual complexity	Ensure grievance and compensation policy is clearly formulated to the satisfaction of both parties
Noise generation	Noise increase at the boundary of the project footprint and at the abutting houses during construction activities.	Social	Significant	Significant	Significant	High	High	High	Construction activities should be limited to daytime only.	Non-significant	Non-significant	Non-significant	Poor consideration for the noise sensitive nature of the broader receiving environmental will result in excessively loud communicaiton between workers	Implement working protocols that encourage and enforce suitable and acceptable levels of communication
Loss of livestock	Farm gates being left open, or not being closed properly	Social	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) Inspections of boundary gates should be done on a	Non-significant	Non-significant	Non-significant	Despite best efforts, there remains the probability	During peak periods of construction, dedicated

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	by construction teams.								daily basis in areas where there are activities. (2) Affected landowners must be compensated for their losses if any livestock losses occur. (3) Develop a grievance mechanism and a complaints procedure that allows the landowners to log their grievance and submit a claim for damages.				that a gate will be left open. This is more serious if it is a perimeter gate than an internal one.	individuals must be assigned to gate duties on high traffic routes.
Generating noise	Noise increase at the boundary of the project footprint and at the abutting houses from construction equipment.	Social	Significant	Significant	Significant	Moderate	High	Moderate	1. Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels and during daytime only. 2. The speed limit to be always adhered to. 3. Road maintenance must be done on a regular basis to avoid	Non-significant	Non-significant	Non-significant	Sub-contracted plant and vehicles, over which the developer & EPC contractors have less control, do not comply.	Undertake inspections of vehicle and plant before being allowed on site and ensure SOPs are drafted and implemented.

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									the creation of potholes.					
Livestock safety	The construction of a solar electricity generating facility and its associated infrastructure will lead to a change of land use and livelihoods, potentiallly including livestock production.	Social	Significant	Significant	Significant	Moderate	Moderate	High	(1) Livestock must have right of way. (2) Construction vehicles must wait for the animals to cross before they continue with their journey. (3) The contractor must compensate the farmer for any losses of livestock due to irresponsible behaviour by the construction teams. (4) A protocol on compensation must be agreed upon and be in place before construction commences. (5) A claims procedure must be in place and shared with all the stakeholders before the	Non-significant	Non-significant	Non-significant	Impatience on the behalf of contractor's staff with regard to livestock movement and right-of-way. Not maximising opportunities for local where possible.	Develop SOPs governing protection of livestock and erect signboards as constant reminder of the importance of protecting livestock. Develop a database of local service providers from which services should be procured preferentially.

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									construction commences. (6) The farmers must be given a construction programme with sufficient leeway to ensure that they can move their livestock before construction activities commence. (7) The principle of "locals first" must be used to ensure that neighbouring landowners benefit from requirements for accommodation or any other services that they can deliver.					
Utilisation of groundwater resources	Uncontrolled abstraction can lead to over pumping boreholes, reduced borehole life, pump failure and depletion of the underground aquifer.	Ground and Surface Water	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) Do not overproduce from boreholes used as part of the project: 8 hours of pumping per day is recommended. (2) Water should be pumped from the boreholes to dedicated	Non-significant	Non-significant	Non-significant	Meters are not installed, or not actively monitored and recorded.	Ensure meters are installed at the onset of use and where necessary calibrated and/or replaced according to manufacturer's expected timeframes.

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									storage tanks to build up a reserve, whereafter the boreholes are only used to top up the storage tanks. (3) Groundwater abstraction from BH13 (or BH14) shall not exceed its sustainable yield, that is 6.64 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 191.23 m3/day or 5 736.96 m3/month. (4) Groundwater abstraction from Solar BH No. 5 (or Solar Borehole No. 4) shall not exceed its sustainable yield, that is 0.23 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 6.62 m3/day or 198.72 m3/month.					

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	Over-production from a series of boreholes that are drilled in the same contact, and close to each other (<500 m), may lead to fracture failures as the fractures are simultaneously dewatered.	Ground and Surface Water	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) If both BH13 and BH14 are made operational, they should not be dewatered simultaneously. The Groundwater abstraction from either borehole shall not exceed the sustainable yield calculated for BH13, that is 6.64 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 191.23 m3/day or 5 736.96 m3/month. (2) Do not overproduce from boreholes used as part of the project. 8 hours of pumping per day is recommended. (3) Routine monitoring of groundwater quality and quantity at BH13 should be sufficient to determine the impact on the	Non-significant	Non-significant	Non-significant	Failure of meters and / or monitoring systems may result in an underestimate of abstraction and potentially exceedance of sustainable yields	Implement a maintenance programme of monitoring system.

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									local aquifer system. (4) Undertake monthly field assessments of borehole groundwater for pH, Electrical Conductivity (EC)/Total Dissolved Solids (TDS), temperature and groundwater level. (5) Undertake annual laboratory samples of borehole groundwater for pH, EC/TDS, COD, Turbidity, Major cations, and anions (Ca, Mg, Na, K, Cl, NO3, SO4, PO4, F) and Microbes (E. coli, total coliforms, and standard plate count). (6) Install flow meters on any pipeline between a borehole and the point of abstraction to ensure usage					

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									remains within the sustainable yield determined in the Geohydrologic al Assessment Report (the sustainable yield of BH13 is 6.64 l/sec for 8hrs per 24hr day of pumping only, which is equivalent to 191.23 m3/day or 5 736.96 m3/month). (7) Monitor abstraction rates (in litres and/or m3) and pumping periods (duration in minutes and/or hours) from BH13 daily. (8) Conduct multi borehole water level logging, to ensure that no cumulative dewatering impacts are taking place for boreholes which may be in the same contact zones, e.g., downstream and within					

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									HRU4. (9) Evaluate any complaints by landowners about declining yields which may relate to the project.					
Treatment of groundwater	Hard water is aesthetically unpleasant for domestic use and can result in scaling in piping exposed to heat, or in utensils used to boil water.	Ground and Surface Water	Significant	Significant	Significant	Moderate	Moderate	High	(1) Potable water will be supplied by the contractor(s) from a commercial source or permissible boreholes: Borehole No. 13, Borehole No. 14 and/or Solar Borehole No. 4 & 5. (2) Treat the groundwater abstracted from boreholes with a deionisation (or other suitable) treatment plant if it is to be used for domestic use and/or cleaning solar panels. Groundwater need not be treated if it will only be used for road construction, e.g., road stabilisation or	Non-significant	Non-significant	Non-significant	Incomplete or inadequate treatment and/or deionization will still result in higher than desired mineral content.	Regular testing of treated water to ensure the desired water quality.

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									dust suppression.					
Air emissions	Increase in ambient PM10 concentrations and dustfall.	Atmosphere	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) Store fine aggregate materials such as cement and sand in a manner so as to avoid or minimize dust generation, with water also being used as a dust suppressant. (2) Fit cement silos with alarms to prevent over filling, airtight inspection hatches and automatic cut-off switches on the filler lines where appropriate. (3) To minimize dust generation the following measures are recommended: (3.1) Drop heights from haulage trucks into bins and onto conveyors should be minimised as	Non-significant	Non-significant	Non-significant	Poor maintenance of particularly cement siilo filters	Implement an inspection, maintenance and replacement schedule for the silo filters

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									far as possible. (3.2) Work surfaces should be kept clean. (3.2) Duct work must be airtight as far as possible. (3.3) Vehicle movement and loading areas should be enclosed as much as is practicable. (3.4) Aggregate spills should be cleaned up. (3.5) Conveyor belts and hoppers must be covered or enclosed where practical and appropriate.					
Ephemeral streams	Ephemeral drainage line crossings can be considered critical stormwater management areas, where there will be an activity that could alter the natural conditions of the rivers/streams, which could lead to	Ground and Surface Water	Significant	Significant	Significant	Moderate	Moderate	Moderate	**Construction:** (1) Ensure access is limited to one point to prevent sedimentation. (2) Construction should take place during dry months, with a decreased probability of storm events. (3) Temporary stormwater	Non-significant	Non-significant	Non-significant	Working within the ephemeral streams and associated floodplains as in a less sensitive terrestrial environment.	Ensure work teams are sensitized to the sensitive environments within the project area and adopt suitably sensitive work procedures.

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	sedimentation and erosion if storm events occur during the construction phase.								systems, such as sandbags, berms or shallow channels should be used to stabilise work areas and manage stormwater runoff at watercourse crossings. (4) Ensure a stormwater management plan is implemented. (5) Ensure that all stormwater systems are kept clean of any debris to reduce flooding risk. (6) Have fuel/oil spill kits on-site, for immediate clean-up of any hydrocarbons during the proposed activities. (7) Park vehicles in dedicated areas, with drip trays to manage potential leakages. (8) Conduct regular					

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									inspections and maintenance of the site to ensure that vegetation cover is adequate, and no rivulets are generated. (9) MTS - Free drainage is recommended. However, if erosion and ponding are noted, a vegetated swale or V-drain should be considered, that drain to outlets stabilised by rock rip-rap/reno mattresses. **Post Construction:** (10) Re-vegetate eroded areas to ensure reduced sedimentation risk and reduced runoff volumes to the streams. (11) Don't leave excavations open or the area unrehabilitated					

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									before a rainfall month occurs. (12) Stormwater management systems must be inspected annually to ensure they are operating as per the design criteria.					
Importing material/ Excavating/Diversion Works/Sedimentation /Erosion	Erosion and sedimentation of stream crossings	Aquatic Ecosystems	Significant	Significant	Non-significant	Moderate	High	High	(1) Manage surface water runoff during construction of crossings within the Brak River drainage system and large ephemeral tributaries. (2) Manage surface water runoff during construction of crossings within or within proximity to smaller ephemeral tributaries and headwater drainage lines. (3) Monitor for signs of erosion during construction of crossings within the Brak River drainage system and large	Non-significant	Non-significant	Non-significant		

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									ephemeral tributaries, as well as within or within proximity to the smaller ephemeral tributaries, alluvial floodplains, and headwater drainage lines. (4) Vegetation clearance must be restricted to the physical footprints of the construction camp, staging area, permanent and temporary roads within the road servitude, and the pipeline corridors only (5) Vegetation clearance must be restricted to the physical footprints of the pylon footings. (6) The operating teams responsible for construction within the watercourse crossings and 15 m buffers on both sides of the large					

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									ephemeral drainage systems must be (in their induction) exposed to the importance and sensitivity of the drainage systems they will be working in. All construction activities should be conducted with care inside the buffered drainage area. (7) Construction within the watercourse crossings and buffers must be overseen by the project management. (8) No temporary structures, such as camps, water treatment facilities, portable toilets, stores or stockpiles should be established inside the 15 m buffered area on both sides of the large ephemeral					

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									drainage systems.					
Installing pylons	Poor foundation conditions or ineffective support will cause powerline pylons to collapse	Soil and Rock	Significant	Significant	Non-significant	Moderate	High	High	1. The proposed embedment length of the foundation piles of the pylons should be between 2.0m and 2.5m depending on the total length and loads generated and the design of the powerline.	Non-significant	Non-significant	Non-significant	Ineffective implementation of the design criteria may leave the pylons susceptible to toppling.	Engineering sign-off for every pylon.
	Any permanent clearing of vegetation and disturbance to the topsoil close to watercourses will be subject to erosion.	Aquatic Ecosystems	Significant	Significant	Significant	Moderate	Moderate	Moderate	Clearance (1) A construction method statement should be compiled and approved prior to the commencement of construction activities within all water resource types and where applicable their buffers. (2) Vegetation and soil should be retained in position for as long as	Non-significant	Non-significant	Non-significant	Constructiion programme pressures result in work being undertaken outside of dry periods.	A policy must be implemented forbidding construction within aquatic environments under wet conditions

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									possible and should only be removed immediately ahead of construction / earthworks in any specific area. (3) Vegetation clearing (and the area of disturbance) is to be kept to a minimum. No unnecessary vegetation to be cleared. (4) In areas where construction activities have been completed and no further disturbance is anticipated, rehabilitation and re-vegetation should commence as soon as possible. Access roads for construction (5) Existing roads and tracks should be used for access as far as possible, rather than creating new					

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									routes. (6) Any additional routes and turning areas required by the contractor must be approved by the SEO, in the form of an amended ESM&R Plan indicating the position and extent of the proposed route / area. (7) Roads that cross the large flood plains and severe gulley erosion should be planned well to reduce soil erosion. (8) Ensure that all access roads utilised during construction (which are not earmarked for closure and rehabilitation) are returned to a usable state and / or a state no worse than prior to construction. General construction (9) Suitable					

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									demarcation must be erected around the construction area, including the servitude, areas where material is stored and the actual footprint of the development to prevent access to sensitive areas. (10) There should be reduced activity at the site after rainfall events when the soils are wet. No driving off from hardened roads should occur immediately following large rainfall events until soils had dried out and the risk of bogging down has decreased. Stormwater Management (11) Where diversion berms create concentrated flows, particularly in steep and/or					

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									sensitive areas, the use of swales, silt fences or other effective erosion control measures is recommended to attenuate runoff. (12) All storm water management measures should be regularly maintained. (13) Implement appropriate stormwater management around the excavated trenches to prevent the ingress of surface water run-off. Rehabilitation (14) Any areas disturbed during the construction phase should be rehabilitated as fast and effective as possible. (15) Any erosion channels developing during or after the					

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									construction period should be appropriately backfilled (and compacted where relevant) and the areas restored to a condition like the condition before the erosion occurred. (16) A vegetation rehabilitation plan should be prepared and implemented for areas where the original vegetation was cleared or severely disturbed. (17) Site rehabilitation should as far as feasible aim to restore surface draining patterns, natural soil, and vegetation to what it was prior to construction.					

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Creating bare surfaces susceptible to erosion	Loss in plant basal cover during vegetation clearing	Ground and Surface Water	Significant	Significant	Non-significant	Moderate	Moderate	High	Limit the number of new routes through the veld, especially with the development of the transmission lines to reduce the mechanical impact on the veld.	Non-significant	Non-significant	Non-significant	Temporary access tracks are erroneously graded and converted into permanent roads	Method statements must be compiled governing the scope of the upgrades of the various roads and tracks on the project.
Suitable material	The usage of mudstone from the Karoo Supergroup for use as wearing course for the road may reduce the quality of concrete and/or roads due to its instability.	Soil and Rock	Significant	Significant	Non-significant	Moderate	Moderate	High	It is recommended that the material (G5) for the wearing course be sourced from commercial suppliers.	Non-significant	Non-significant	Non-significant	Unavailability of affordable G5 material from local suppliers	Ensure local suppliers can suitable materila at an affordable cost prior to commence ment
Dust generation	Increase in ambient PM10 concentrations and dust fall and effects on property and human health	Property	Significant	Significant	Significant	Moderate	High	High	(1) Implement a dust monitoring programme for the access road and construction sites. (2) Wetting of open areas and erection of wind shields.	Non-significant	Non-significant	Non-significant	Inadequate water supplies or water application equipment may retard dust suppression efficacy	Utilise water additives to increase the persistence of dust suppression efforts.

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Loss of topsoil	Insufficient topsoil in areas outside floodplains and drainage lines.	Ground and Surface Water	Significant	Significant	Significant	Moderate	Moderate	High	Remove all the topsoil (to a depth of 100 mm) during the construction phase.	Non-significant	Non-significant	Non-significant	Stockpiling of topsoil in areas with high stormwater runoff can result in erosiion and export of material	Identify areas with high stormwater runoff and reduce topsoil stockpiling in these areas
Dust generation	Increase in ambient PM10 concentrations and dust fallout.	Atmosphere	Significant	Significant	Significant	High	High	High	(1) Encourage natural vegetation growth in areas where a large area of soils are exposed to the elements to reduce the amount of potential loose soil especially close to sensitive receptors. (2) Adopt dust suppression such as watering in areas of the worksites in close proximity to dust sensitive receptors where earthworks have been completed. (3) Re-vegetate open areas with indigenous plants as soon as practicably	Non-significant	Non-significant	Non-significant	Excessive and unnecessary clearance of vegetation will expose larger than necessary areas	Minimise vegetation clearance to absolute necessities and initiate rehabilitation activities as soon as construction activities are complete in any given area.

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									possible to minimize the risk of wind erosion and dust generation.					
Destruction of heritage artefacts	Damage to heritage sites 3, 7, 9, 10, 12 & 18 during construction.	Heritage	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) If the sites can't be avoided by the development activities and need to be destroyed as a result then the following mitigation measures were recommended prior to development commencing: (2) Mapping of surface sites to determine their extents (3) Surface collection of material to obtain a representative sample of Stone Age material and types to determine the age of the material and sites.	Non-significant	Non-significant	Non-significant	Additional heritage sites may not have been previously identified	Ensiure a clear understanding of the Chance Find Procedure

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Overturning risks	Poor foundation conditions or ineffective support will cause the PV structures to overturn.	Soil and Rock	Significant	Significant	Non-significant	Moderate	High	High	Pre-bored rammed piles are recommended as the most practical solution. Depending on the supplier used, pre-bored rammed piles where the profile is rammed into a hole drilled slightly smaller than the profile will generate sufficient shear friction. Alternatively, the borehole can be drilled oversize, and the pile rammed into backfilled chips or into the hole filled with concrete.	Non-significant	Non-significant	Non-significant	None known	
Effects on aquatic environment	Compaction and disruption of streambeds and floodplains can impact aquatic fauna refugia.	Aquatic Species	Significant	Significant	Non-significant	Moderate	Moderate	Moderate	(1) Reduce the extent of vehicle tracks and service roads within floodplains and streambeds as far as possible. (2) As far as practicable, contrain construction to the dry mo	Non-significant	Non-significant	Non-significant	Heavy traffic for the installation of linear infrastructure within the floodplains may result in multiple tracks	Ensure tracks are defined and allow for dedicated passing lanes, preferably outside floodplains

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	Installation of LILO pylons within streambeds & floodplains can affect hydrology of this ephemeral system.	Ground and Surface Water	Significant	Significant	Significant	Moderate	Moderate	Moderate	No pylons should be located within an area that would be expected to become inundated during a 1:100 flood eve	Non-significant	Non-significant	Non-significant	Span lenghts between pylons may necessitate some pylons falling within the floodplain	Determine a detailed layout plan for the pylons and make adjustments as far as possible to remain outside delineated 1:100 floodplains
Visual effects	Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure.	Visual Aesthetics	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) The laydown and building structures should be located away from neighbouring property farmsteads and banked into the ground to the eastern areas as much as possible. (2) Following the removal of the vegetation, wind-blown dust during construction should be monitored by the ECO to ensure that it does not become a nuisance factor to the local receptors.	Non-significant	Non-significant	Non-significant	Eskom standards do not permit the implemetation of some or all of the suggested mitigations	Engage with Eskom to obtain concession on their standards where possible to help reduce visual impacts

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									Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorisation of the ECO. (3) Topsoil from the footprints of the road and structures should be dealt with in accordance with EMP. (4) The buildings should be painted a grey-brown colour. Fencing around the structure should be simple, diamond shaped (to catch wind-blown litter) and appear transparent					

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									from a distance. The fences should be checked on a monthly basis for the collection of litter caught on the fence. (5) No signage should be located on the structure. (6) Lights at night have the potential to significantly increase the visual exposure of the proposed project. It is recommended that mitigations be implemented to reduce light spillage. No overhead lighting to be used for secur					
	(1) Small maintenance access routes would be created along the proposed power line route which could result in soil erosion if not adequately managed. (2) Loss of landscape	Visual Aesthetics	Significant	Significant	Significant	Moderate	Moderate	Moderate	(1) Management of dust from moving vehicles. (2) Utilisation of the existing roads for maintenance as much as possible. (3) Effective rehabilitation of access tracks	Non-significant	Non-significant	Non-significant		

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	character due to the construction of monopoles and cabling.								after construction. (4) Windblown dust during construction should be monitored by the ECO. Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorisation of the ECO. (5) Littering should be a finable offence. (6) Any impacted areas used in the laydown for the construction, not incorporated into the development footprint, would need to be rehabilitated and restored to natural					

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									vegetation. (7) Topsoil from the footprints of the structures should be dealt with in accordance with EMP.				
Foundational integrity	Poor foundation conditions or ineffective support will cause structures to collapse.	Soil and Rock	Significant	Significant	Non-significant	Moderate	High	High	1. For conventional structures, including control rooms and lightly loaded structures at the substations, standard re-enforced strip foot foundations are recommended for both profile areas. 2. Heavy structures should be founded on raft foundations resting on the siltstone bedrock.	Non-significant	Non-significant	Non-significant	Poor quality control may result in lower grade foundations	Implement holding point quality controls
Destruction of artefacts	Earthmoving activities could damage or destroy artefacts or fossils.	Heritage	Significant	Significant	Significant	Moderate	Moderate	Moderate	If any substantial fossil remains (e.g., vertebrate bones, teeth) are exposed by surface	Non-significant	Non-significant	Non-significant	During excavations, some chance find artefacts may already be damaged by plant before	Ensure Chance Find Procedure forms part of Induction and Toolbox talks

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									clearance or excavations during the construction phase of the development, the Chance Fossils Finds Protocol must be fully implemented.				cessation of work	
Sedimentation of watercourse	(1) Erosion and sedimentation of watercourses due to unforeseen circumstances (i.e., bad weather). (2) Alteration of natural drainage lines may lead to ponding or increased runoff patterns (i.e., may cause stagnant water levels or increase erosion). (3) Installation of road culverts or pylons for transmission lines may cause temporary sedimentation after storm events.	Aquatic Ecosystems	Significant	Significant	Non-significant	High	High	Moderate	Cover soil stockpiles with a temporary liner to prevent contamination (where required and visually determined).	Non-significant	Non-significant	Non-significant	Unforeseen circumstances, particularly weather, cannot always be forecast or predicted	Ensure stockpiles are protected even when poor weather conditions are not forecast

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Effect of vadose soils	(1) Disturbing vadose zone during excavations activities, contractor laydown areas. (2) Excavations associated with the borrow pits for road-building material may subject the surroundings to temporary sedimentation during storm events. (3) There is a potential for some erosion if there are storm events.	Soil and Rock	Significant	Significant	Non-significant	High	High	High	(1) All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is essential. (2) Only excavate / clear areas applicable to the project area. (3) Retain as much indigenous vegetation as possible / re-vegetate. (4) Exposed soils are to be protected using a suitable covering or sandbags or berms to control erosion	Non-significant	Non-significant	Non-significant	Accurate identification and delineation of vadose soils not always done	Provide soils maps to construction teams
Effect of vadose soils	Hydrocarbon/oil spillages onto soils have the potential to contaminate the soils.	Soil and Rock	Significant	Significant	Significant	Moderate	High	High	Have fuel/oil spill clean-up kits on site.	Non-significant	Non-significant	Non-significant	The volume of hydrocarbon spills cannot be accurately forecast	Ensure goog maintenance of vehcieles and plant and good containment measures

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Wind erosion & entrainment	Increase in ambient PM10 concentrations and dust fall.	Atmosphere	Significant	Significant	Significant	Moderate	High	Moderate	(1) Store fine aggregate materials such as cement and sand in such a manner that dust generation is avoided or minimized. (2) Additional control measures may include enclosures and covering or increasing the moisture content of the material. (3) Dampen the stockpiles during dry or windy conditions where aggregate materials are exposed and located close to sensitive receptors. (4) Restrict the height of stockpiles of topsoil and dry materials and gently shape these as far as practicable to minimize wind erosion and dust generation. (5) Remove	Non-significant	Non-significant	Non-significant	Non-construction related wind erosion and dustfall will exacerbate the situation	None

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									materials first from the bottom of the piles to minimize the generation of dust. (6) Keep the hatches on material storage containers closed when not in use.					
Viability of stockpiled material	Insufficient topsoil in areas outside floodplains and drainage lines.	Soil and Rock	Significant	Significant	Non-significant	Moderate	High	High	Topsoil should be store in berms not wider than 2 m or higher than 1 m.	Non-significant	Non-significant	Non-significant	Topsoil stockpiled for extended periods can leach out rhough the vertical profile	Reinstate topsoil sooner than later
Potential sand & aggregate sourcing and spoiling of excess material	Unstructured spoiling of excess soil and rocks into the existing landowners borrow pits	Soil and Rock	Significant	Significant	Significant	Moderate	Moderate	High	Ensure layer works is undertaken to reinstate excess material in an ecologically suitable structure.	Non-significant	Non-significant	Non-significant	Inclusion of building rubble into spoil material	Ensure no building waste is included in spoil.
Rehabilitate disturbed areas	Loss in plant basal cover, increase in pioneer plants such as weedy forbs and annual grasses in floodplains and drainage lines	Terrestrial and Avian Species	Significant	Significant	Significant	Moderate	Moderate	Moderate	1. Chemical intervention is recommended at areas where topsoil has eroded, to ameliorate these soil conditions. 2. Apply 2 ton/ha gypsum and work in 15cm two	Non-significant	Non-significant	Non-significant	Incusion of chemical fertilisers & organic material into the rehabilitation efforts may not be adeqaute measures	Implement in combination with the rehabilitation EMP

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									weeks before planting (good drainage is a requirement for gypsum treatment). 3. It is recommended that these soils should be allowed to drain and sodium leached out of the soil profile. 4. Rip against contour, cut-off drains and artificial drains might be needed. 5. Broadcast 200 kg/ha Superphosphate and 200 kg/ha Ammoniumsulphate directly before planting and work in 5cm.					
Compromised topsoil	Insufficient topsoil in areas outside floodplains and drainage lines.	Soil and Rock	Significant	Significant	Significant	Moderate	Moderate	Moderate	1. The stored topsoil must be used to cover the landscaped area at the end of the construction phase. 2. Broadcast 150 kg/ha 3:2:0(32)+Zn directly before planting and	Non-significant	Non-significant	Non-significant		

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									work in 5cm. 3. Topdress 120 kg/ha LAN six weeks after planting. 4. Organic matter in the form of manure and/or humic products can be used with the chemical fertilisers to ameliorate the soil and improve soil health. These potential actions must be coordinated with the grazing recommendations.					
Veld condition	Veld mismanagement	Terrestrial & Avian Ecosystems	Significant	Significant	Non-significant	High	High	High	1. Follow-up grazing assessments and monitoring of veld condition is recommended to determine the progress of the recovery process on the disturbed, rehabilitated areas arising from this project as well as the existing sites on Cluster 1.	Non-significant	Non-significant	Non-significant	Lack of application of the grazing management recommendations	Access of sheep into the solar PV plant must comply with sound grazing practices

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OPERATIONAL PHASE

No explicit operational activities, aspects and impacts were identified specific to the scope of the amendment activities, which have not already been adequately covered in previous iterations of impact assessment. The inclusion of the Generic EMPr for the sub-stations addresses operational aspects.

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SECTION II: ADVANTAGES AND DISADVANTAGES ASSOCIATED WITH THE PROPOSED CHANGE

Additional Loop-In Loop-Out (LILO) into Line 1 of the existing 400kV transmission powerline

The Sun Central PV projects intend to develop three clusters, of which Cluster 1 is already approved, and Clusters 2 & 3 (phases 2 & 3) are currently under application with Department of Forestry, Fisheries and the Environment (DFFE). In the event that all three Clusters or phases are approved, 1 GW of renewable energy will be produced by these three integrated solar PV facilities. The generated electricity will Loop-In, Loop-Out (LILO) of the existing Eskom 400 kV Hydra-Poseidon Line 2 by way of the Hydra C Main Transmission Sub-station (MTS). The evacuation of 1 GW of renewably generated electricity into Line 2, will exhaust the current spare capacity on this line, and not facilitate any further feed-in by other projects in the area. The development of a second LILO into Line 1 will ensure that the Hydra C MTS can receive additional energy from renewable energy projects in the area, and evacuate this energy into Line 1. The two separate LILO lines will further help justify the significant costs associated with the construction of the MTS.

Re-location of construction camp and operations & maintenance offices

Centralising the footprints of the construction camp (and potential concrete batching plant), operations & maintenance (O&M) offices and 132 kV switching (Dx) sub-stations will help to manage environmental impacts and risks associated with these activities. De-centralisation spreads the impacts out over a larger area, making management and mitigation logistically more difficult. It also allows for focussed efforts on rehabilitation and monitoring of temporary footprints, post-construction.

Provision of on-site concrete batching

The construction of Hydra C Main Transmission Sub-station (MTS), including bulk earthworks and associated concrete foundations, in accordance with Eskom minimum requirements and specifications, will require large volumes of material to be cut-to-fill and the subsequent construction of a concrete platform/foundation. The construction of the concrete platform will require in the order of 17,000 m^3 of concrete of a specified MPA (foundation dimensions estimated at 285m x 345m x 0.18m). Trucking these volumes to site by way of ready-mix trucks poses significant logistical challenges and associated risks to the environment, surrounding landowners and road users. While the raw materials for the on-site formulation of concrete will still be supplied by various commercial sources, the raw materials (excluding cement) are largely inert, and pose a lower transport and supply risk.

Additionally, on site quality controls can be implemented to ensure the formulation of concrete meets minimum requirements, and lowers the risk of sub-standard work being undertaken which has to be demolished and redone with associated waste management implications.

Inclusion of additional boreholes for construction and operational water requirements and associated pipelines and storage tanks

A geohydrology assessment was undertaken (GCS, 2023) for the larger project area including pump yield tests of several boreholes on the affected properties. The borehole originally identified (Solar Borehole 5) for the full water supply of Cluster 1 was subsequently determined to have a low sustainable yield (0.8m^3/h) and would unlikely be capable of meeting the construction water requirements of the project and/or construction demand may cause damage to the groundwater resource through over abstraction.

The geohydrology assessment identified three other boreholes (solar borehole 4 (0.8m^3/h), borehole 13 & 14 (24m^3/h) which are suitable groundwater sources to supply the water needs of the project. Provision of adequate above-ground water storage will help ensure continuity of supply, while allowing to consistent lower yield pumping, rather than high-yield quick-demand pumping.

Re-alignment/relocation of Eskom 11kV distribution line

The solar PV project footprint currently only has the 11 kV Eskom servitude running through it. The integrity of any servitude needs to be retained, including right of access to the servitude holder. The retention of the 11 kV distribution line on its current alignment would pose challenges to the layout and configuration of the solar PV footprint, including shading of the solar panels, as setbacks from the powerline would need to be enforced, effectively reducing development area for solar PV placement.

The relocation of the 11 kV powerline along the northern perimeter of the solar PV park, will reduce conflict between the servitude holder and the solar PV project.

Inclusion of microwave communication towers, lightning conductors & high-level lighting at the Main Transmission Substation (MTS) and switching (Dx) sub-stations

The above listed infrastructure pose additional visual impacts to surrounding landowners, users and aircraft as well as potential impacts on various faunal species. The inclusion of these infrastructure are however mandatory Eskom requirements, and will help ensure the acceptance of the sub-stations to Eskom and the ultimate realisation of the project.

Inclusion of robotic solar panel cleaning technology

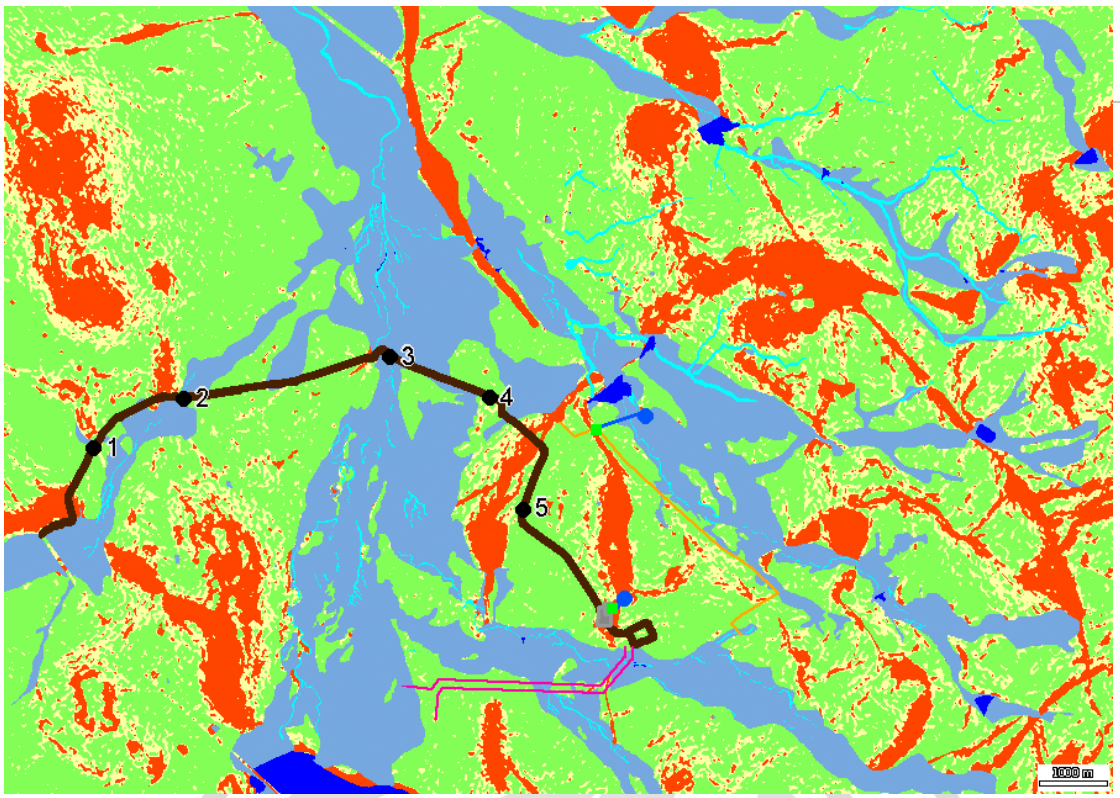
The efficiency of solar panels can be negatively affected if dust & dirt are allowed to accumulate. If maximum efficiency in power generation is to be maintained, solar panels need to be cleaned timely. However, manually cleaning solar panels is costly and time-consuming. Robotic cleaning systems help to maintain the efficiency of solar power production by making sure the solar panels are kept clean without large human resource requirements or water consumption. The robot comes equipped with a roller brush and a water sprayer to clean all dust & dirt from the surface of the panels. The sprayer gets its supply of water through an onboard tank.

Advantages and disadvantages relating to agricultural resources

From a grassland ecological and soil erosion perspective, the opinion of the appointed specialists, is that the current planned development (and the cumulative effect of 30km from other PV-projects), will not have a significant impact on the current veld condition and potential grazing potential, reflected from the baseline study in 2017. However, if the proposed mitigations are not followed (as stipulated in all the reports from 2017 for the full project areas of PV development), it is envisaged that deterioration in veld condition will occur, associated with increased bare ground and accelerated soil erosion (Arnoldi, et al., 2023).

The transmission lines & other amendments form part of the area inside the catchment that was assessed for runoff contribution from Phases (Clusters) 1, 2 and 3 in relation with other PV projects within a 30 km radius. The results showed that the effect from these 3 PV phases would be minimal and would contribute less than 1.5% of the total runoff from the catchment and only about 10% of the runoff from all PV projects combined within a 30 km radius.

The screening tool used for the site sensitivity verification requirements (https://screening.environment.gov.za/screeningtool) was used for a screening of the area including the transmission lines and listed amendments. The results show that the roads, water pipelines, O&M office and temporary construction camp, 11 kV distribution line and 400 kV transmission line areas are dominated by low and medium agriculture sensitivity (animal production). The soil capability map confirms this result with the area that is dominated by very low to moderate soil capability (Figure 11).



Colour	No	Class	Soil depth, dominant soils and slope limitations
	1	Low to moderate soil capability	Shallow to medium deep soils, Hu, Cv, Oa, Ad, Ag, Et, Ky, Va
	2	Low soil capability	Very shallow soils, Ms, Gs, Sw, (Hu) and all areas with slopes 6%-8%
	3	Very low soil capability	Outcrops and all areas with slopes >8%
	4	Floodplains	Oa, Tu, Va, Du
	5	Streambeds	
	6	Water	

Figure 11. Soil capability map for the wider PV project areas. The access road (dark brown line) to the MTS, water pipelines (blue), boreholes (blue dots), water storage (green squares), temporary construction yard + O&M offices (grey block), 11 kV power line (orange) and 400 kV transmission lines (purple) are overlaid on the map.

The grazing capacity derived from the 2017 assessments was between 15 and 17 ha/LSU for better veld conditions, or an average of just less than 23 ha/LSU, applicable at the time when the assessment was done, for all veld conditions in the study area (Cluster 1) (De Wet, 2017). Veld Condition Assessments (VCAs) during drought conditions, in 2017, as well as later, in 2021 and 2022, when rainfall was slightly higher than the drought experienced in 2017, indicated that the veld was overgrazed. In spite of the area being generally overgrazed, it is of utmost importance not to exclude sheep from this area, but rather a holistic approach must be followed in terms of veld management where a balance must be found between planned rest and grazing rather than excluding grazing. The stated measures can be implemented within the fenced solar PV facilities, under lease and jurisdiction of the authorisation holder, which can help ensure improvements to the veld condition and grazing capacities. This should be done according to a grazing management plan, as recommended by (de Wet, 2017), (de Wet, 2021) and (de Wet & Arnoldi,

2022). The broader grazing management practices of the landowner fall outside the scope and ambit of the Environmental Authorisation (EA) and Environmental Management Programme (EMPr).

The first part of the 400 kV transmission lines passes through a floodplain of approximately 1.7 km which has very little vegetation cover and has, potentially severe sodic conditions that inhibits plant growth. For this reason the low end of the grazing capacity range is estimated as very low and in the order of the rock outcrops and koppies. Construction activities in this area, undertaken in a sensitive manner (due to sensitive sodic soils) are unlikely to impact the agricultural potential of the land, which is already very low and largely devoid of vegetation.

Advantages and disadvantages on aquatic resources

The main aquatic feature within the project area is the Brak River, a seasonal tributary within the Orange River Catchment. The Brak River and certain larger ephemeral tributaries are the only natural drainage structures in the study area with weak indicators of riparian vegetation in the riverbed and on the riverbanks. The overall Ecostatus of the drainage lines within the project area is a Category C (Moderately modified) The Brak River drains an area with a very low rainfall. As a result, the water within the river system is saline and turbid and seasonally flowing (Deacon, 2023).

Ephemeral rivers are particularly vulnerable to changes in hydrology, as they are specifically adapted to brief periods of inundation and flow. Consequently, pollutants and sediments entering these watercourses are not regularly diluted or flushed out of the catchment, leading to a lack of resilience to pollution, erosion, and sedimentation.

Despite the degraded nature of the watercourses and aquatic environments within the project area, ephemeral ecosystems provide aquatic habitat to a diverse array of faunal species that depend on brief periods of inundation for hatching, mating, feeding and refuge. Cracks and scour holes in the silts and clays on the floodplains can hold floodwaters long enough for tadpole development. The habitat type mostly available in temporary rivers is pools, in which invertebrates can survive the dry period and from where they can recolonise the stream as flow returns. Certain crustaceans e.g., copepods, ostracods, and cladocerans (including tadpole and fairy shrimps) can survive in temporary waters in ephemeral biotopes. These species can complete their life cycle in days during summer. Although ephemeral streams only temporarily support fish, they indirectly support fish populations by helping to deliver required nutrients and other materials to the perennial segments.

Several project related activities will interact with the above-mentioned aquatic environments including the LILO transmission line, limited sections of the 11kV distribution line and an approximately 800 m long underground 110 mm uPVC pressure pipe that will be laid from

Borehole (BH13) and/or BH14, to the point of abstraction alongside a farm track and inside the Cluster 1 footprint. A trench digger will provide a 300 mm wide trench to rock strata – 400 to 600 mm below ground. The pipeline crosses the active channel of unnamed FEPA drainage line D62D – 05610 SQ (a tributary of the Brak River). The length of the watercourse intersected by the trench is ± 35 m.

Additionally, an approximately 400 m long underground 80 mm UPVC or HDPE pipe will be laid from BH5 to the point of abstraction on the Switching Station Dx platform inside the Cluster 1 footprint. The exact position is still to be determined. A trench digger will provide a 300 mm wide trench to rock strata – 400 to 600 mm below ground. The length of the wetland intersected by the trench is ± 48 m.

Accordingly, construction of the powerlines and water pipelines will interact section of the abovementioned Brak River, its tributaries and associated floodplains (Figure 12). Construction associated risks will need to be mitigated in order to minimize risk to this receiving environment. Risks include compaction of sensitive soils, hydrocarbon spills, vehicle and plant breakdowns, erosion on steep slopes, especially on sodic soils and temporary habitat fragmentation. Mitigation to these risks, have been addressed by the specialist and included in the EMPr for implementation.

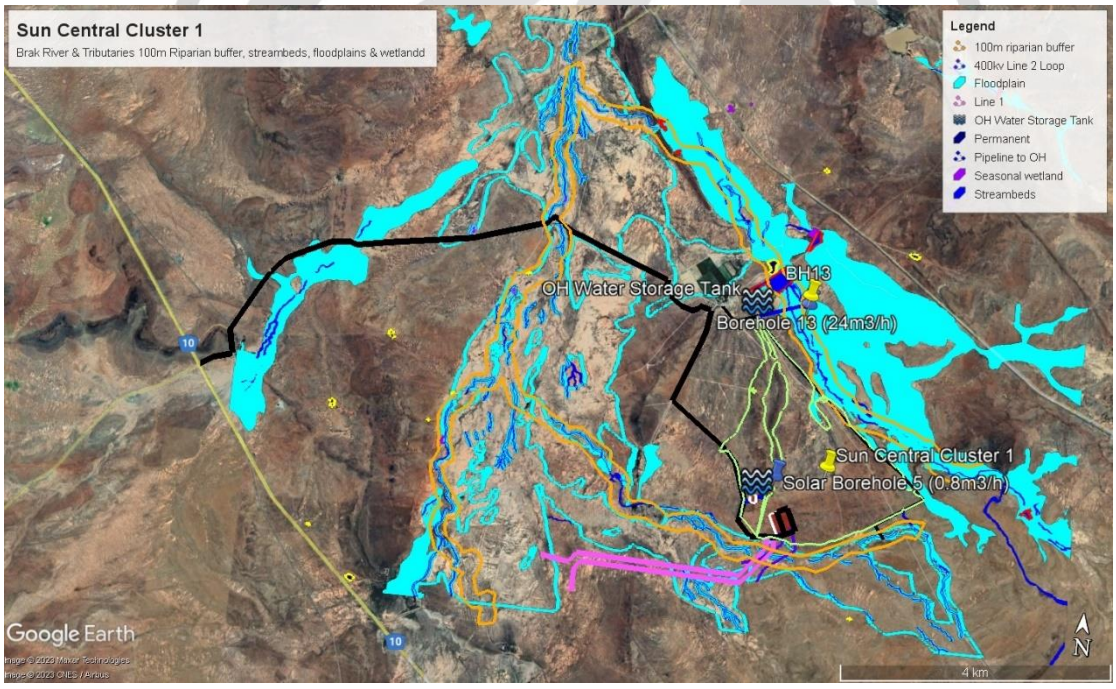


Figure 12. Brak River and tributaries with associated riparian 100m buffer, streambeds, floodplains and wetlands.

Advantages and disadvantages on air quality

The main source of particulate emissions will be entrainment of dust by vehicles on unpaved access roads. Some particulates will be generated by other construction equipment and activities, such as stockpiles, the concrete batching plant and stone crushing for aggregate for road material, but particulate emission from these activities is expected to be relatively low (Zunckel, 2023).

Although the area is rural and sparsely populated two sensitive receptors are present. Receptor 1 is 150 m from the District Road not far from the intersection with the N10, and Receptor 2 is 250 m from the main access road, being the Mr. Willem Retief's (landowner of project area/0 homestead with farm worker accommodation.

The predicted dust fallout is low and well below the limit value for acceptable dust fallout in non-residential areas for the main access road (Figure 13). Consequently, the significance of the impact of dust fallout resulting during construction on smaller access roads & routes is also low, including implementation of certain dust control measures, e.g., spraying once a day with water.

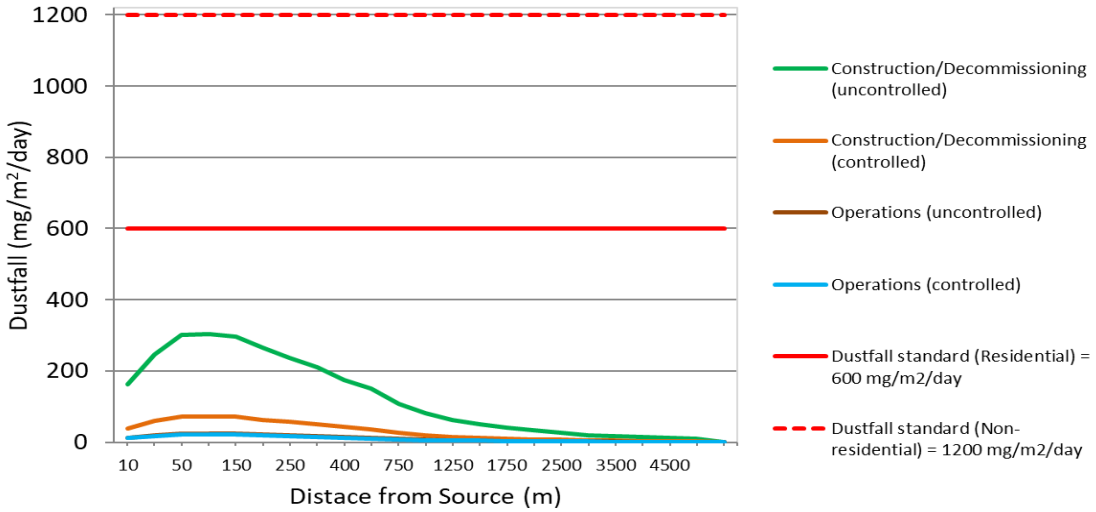


Figure 13. Predicted dust fallout resulting from vehicle entrainment on main access roads in mg/m^2/day compared with the National Dust Standard.

PM_{10} concentrations are predicted to be below the annual average NAAQS but exceed the 24-hour NAAQS for PM_{10} up to 300 m from the main access road (Figure 14). PM_{10} is thus expected to be lower for smaller access roads and routes, and with additional dust suppression measures, beyond a single water application per day, will further help to manage PM_{10} emissions effectively.

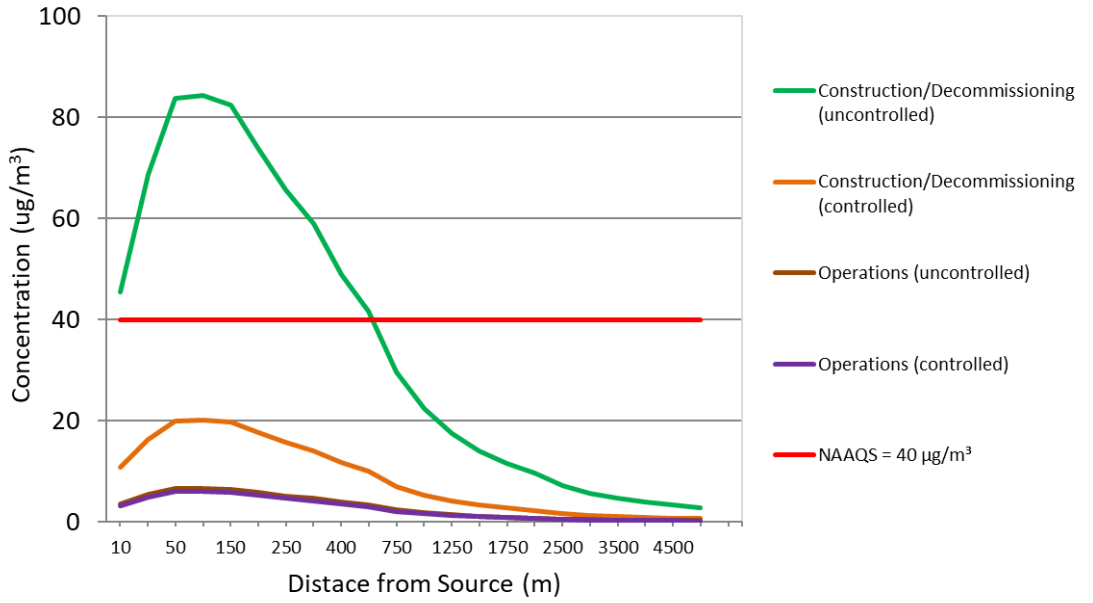


Figure 14. Predicted annual PM_{10} concentrations resulting from vehicle entrainment on the Access Road in µg/m3 compared with the NAAQS.

Advantages and disadvantages on Geohydrology

The project area overlies a moderate to high yielding aquifer (median yields of 0,5 to 2 l/sec), on average 6,9 m below ground level, and generally in bedding planes in shale or interbedded sandstone of the Beaufort Group and jointed and fractured contact zones between sedimentary rocks and dolerite dykes.

Where a series of boreholes are drilled in the same contact, and close to each other (<500 m), borehole interference may occur as the fractures are simultaneously dewatered. Over-production may lead to fracture failures which will lead to borehole collapse.

BH14 is located approximately 60 m north of BH13 and falls within BH13's estimated radius of influence (1 607.54 m). Consequently, there is a risk that simultaneous dewatering, and/or over-production may lead to fracture failures and borehole collapse. It is therefore not recommended to utilise both boreholes at the same time. However, both unused boreholes can be made operational in case something happens to the one e.g., borehole collapses, pump fails, etc.

Based on the pump test data generated, 8-hour abstraction is recommended. However, smaller size pumps (as indicated below) can be installed if 24hr pumping is required. This is however not advised, as the boreholes may be over pumped, decreasing the borehole life and increasing the probability of pump failure.

It is advised that water be pumped to dedicated storage tanks from the boreholes to build up a reserve, whereafter the boreholes are only used to top up the storage tanks. Allowing boreholes to rest/recover between pumping cycles will help to decrease the impact on the aquifer reserve

The sustainable yield of Borehole No. 13/14 in sub-catchment/HRU 4 is 6.64 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 191.23 m^3/day or 5 736.96 m^3/month.
The sustainable yield of Solar Borehole No. 5/4 in sub-catchment/HRU 5 is 0.23 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 6.62 m^3/day or 198.72 m^3/month.
The sustainable abstraction yield from both boreholes for Cluster 1 is therefore 197 m^3 per day (GCS, 2023)

The projected rainfall for the area as a result of climate change is estimated to decrease by as much as 150 mm, reducing the total rainfall to about 170 mm/yr by 2050. It should be noted that the projected changes in the annual average number of extreme rainfall days or events throughout the district over the period 2021-2050 (under the RCP 8.5 scenario) is expected to decrease or increase. It is anticipated that under the scenarios put forth, the groundwater resources in the project area may become completely replenished in the event of 1:50 and 1:100-year storm events that occur in the project area.

Advantages and disadvantages on hydrology

Based on available National Wetland Freshwater Ecosystem Priority Areas (NFEPA) (Van Deventer, 2018) no recognised wetland units are present in the study area. The floodplain areas of the Brak River and its tributary, area however recorded as riverine systems. The proposed road development and transmission lines will infringe on these ecologically sensitive zones ((GCS, 2023a)

The results of a flood line assessment indicated that the area is prone to exhibiting ponded flood occurrence zones, in the absence of clearly defined drainage channels or streams. This is due to the micro-catchment style drainage associated with the project area. The absence of clearly defined drainage channels or flow paths was confirmed in the field. Instead, sheet flow from micro-sub catchments towards lower topographical areas or isolated depressions form temporarily flooded areas. Irregular occurrences of ponded water were visible across the project area, even in areas with no defined drainage lines or stream channels.

Based on the proposed activities (including installation of transmission lines) no increases in flood peaks are anticipated. Considering scaling, the catchments will not be significantly altered which could lead to a reduction or increase in flood peak flows.

Flood damage associated with the proposed transmission lines is not anticipated due to these structures being raised > 5 m and anchored with cables. The MTS, O&M and Dx sub-station are

situated outside zones of inundation, suggesting no flooding risk for the Sun Central Cluster 1 PV development and MTS, O&M and Dx-sub-station development areas (Figure 15).

Free drainage is the preferred and least invasive stormwater management option for this project. Only two (2) non-perennial drainage lines will require stormwater management, namely Groot Brak River and one ephemeral drainage line.

Limited cumulative impacts are likely, as the development is linear where only small areas will be disturbed and this only during the construction phase.

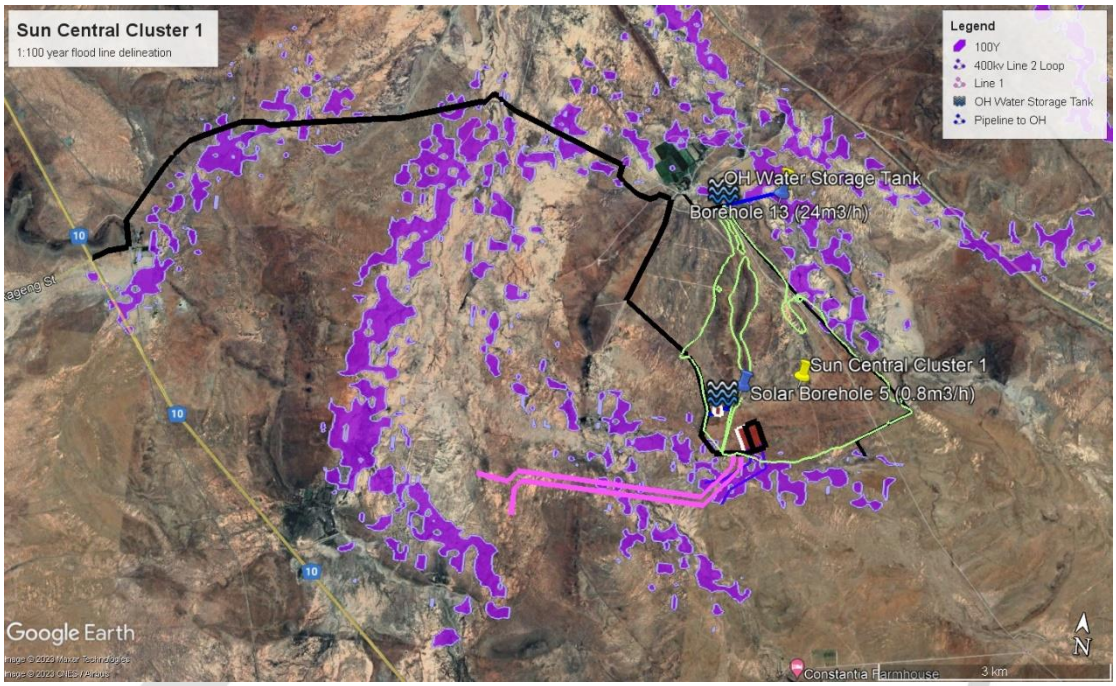


Figure 15. Ponded flood occurrence zones relative to Sun Central Cluster 1 and associated infrastructure.

Advantages and disadvantages on palaeontology

The palaeosensitivity of the 'broader' project area has been provisionally rated as Very High by the DFFE Screening Tool. However, previous palaeontological site visits to the same area indicate that this region is generally of LOW palaeosensitivity (Almond, 2023).

No High Sensitivity fossil sites have been recorded within any the Sun Central Cluster 1 solar project area (including all associated infrastructure such as grid connections, substations, access roads etc).

The construction phase of the proposed additional infrastructure is very unlikely to cause significant negative impacts on local palaeontological heritage resources. There are therefore

no objections on palaeontological heritage grounds to authorise the proposed additional infrastructure.

Advantages and disadvantages on social aspects

It must be considered that social impacts are not footprint specific but occurs in communities and affected land owners surrounding the project. It is therefore difficult to separate specific impacts relevant only to the amendment activities. Stakeholders do not separate activities but see the project as a whole. However, some impacts may increase in its intensity and be more relevant than others (Equispectives Research & Consulting Services, 2023)

There is a strong sense and spirit of place associated with the Karoo landscape. The surrounding farms are used for sheep farming, game farming and hunting. The current residents and farm owners have a strong sense of place associated with the farms. Many things can impact on a person's perception of sense of place.

Although lights are used as a security measure on farms, one of the things people values is the absence of bright lights and that they can see the stars. Lights for any other use than lighting up their direct environment is seen as invasive and disturbs the sense of place. Visual aspects are an important consideration in the experience of sense of place. If people are used to unspoiled vistas, or seeing open fields, the establishment of any buildings or infrastructure that they feel do not belong there can alter their sense of place. Sense of place refers to an individual's personal relationship with his/her local environment, both social and natural, which the individual experiences in his/her everyday daily life (Vanclay, et al., 2015). It is highly personal, and once it is affected, it cannot be restored. It is also difficult to quantify. Part of the sense of place is the emotional attachment that the farmers have to their properties, and the hopes that they have for it to serve future generations (their children).

The spirit of place associated with an area is an important factor in tourism and hunting and the marketing of these activities. Spirit of place refers to the unique, distinctive, and cherished aspects of a place. Whereas 'sense of place' is the personal feelings an individual has about a place, spirit of place refers the inherent characteristics of the place (Vanclay, et al., 2015). In this case the spirit of place includes the unique tangible and intangible heritage and biodiversity of the area.

Aspects that will impact on the sense and spirit of place include an increase in noise and activity levels from construction activities, but this will be a temporary impact during the construction phase. The construction phase will see a total transformation from the current setting and landscape of the proposed site. It is inevitable that the visual impact during the construction phase will be affected by dust, increase in vehicle traffic and other construction activities. Potential visual impacts caused by construction activities will include the visual changes brought

about by clearance of vegetation for the solar arrays, ancillary buildings, and laydown areas; visual disturbance caused by construction of roads, buildings, energy collectors, power lines, increased traffic (and number of large vehicles), worker presence and activity, and dust emissions. Other visual disturbances may include soil stockpiles (from excavation for building foundations and other structures), soil scars, as well as potential for invasive plant species to develop on disturbed soils and soil stockpiles, which may contrast with existing vegetation.

It is not anticipated that the amendment activities (relating to the batching plant and additional groundwater abstraction etc.) will create impacts that have not been identified before. None of the possible impacts is seen as a fatal flaw in the possible successful execution of the proposed project. Most of the potential impacts can be mitigated.

Advantages and disadvantages on traffic aspects

Existing road infrastructure is well developed in the area and thus well connected to surrounding major centres via regional routes. The combination of national roads and first and second order roads provides good inter- and intra- regional accessibility. The South African National Roads Agency (SANRAL) is responsible for the maintenance of the national roads which are in a good condition, however heavy traffic contribute significantly to the deterioration of the road surfaces (Sturgeon Consulting (Pty) Ltd, 2023)

The national roads maintained by SANRAL were in a good condition, while the gravel provincial roads in the vicinity of the site were in a fair to poor condition. Road freight, transport, specifically heavy vehicle transport, significantly contributed to the deterioration of the road surfaces and the maintenance of these roads are not always adequate.

While the scope of this Part 2 amendment does not explicitly include access roads and associated upgrades, a separate application is underway relating to the development and upgrade of internal project roads as well as the Burgerville district road, including the bellmouth intersection with the N10. This application is made *in lieu* of improvements to the roads, to ensure adequate access for all vehicles, transport and deliveries associated with the Sun Central Cluster 1 project. Improvements to public road sections will also benefit the broader community, while internal road improvements will also benefit the affected landowner.

Advantages and disadvantages on visual aspects

The Communication Tower will be seen from over a distance, the lights at night will create a new light source in the landscape, and if the mast is painted a blue colour, the proposed mast landscape change will be clearly visible. With the painting of the mast a mid-grey colour, the distance from the receptor would allow for atmospheric influence, and minimal visual contrast.

Due to the existing dark sky sense of place in this deep rural setting, the proposed Overhead Flood Lights will dominate the attention of the casual observer. As light spillage at night has the potential to travel long distances, it is likely that light spillage and pool of light effects would occur. It is thus strongly proposed that a review of the Eskom lighting specification is collaboratively undertaken, such that the lighting is lowered, is inward and downward facing and that Mesopic lighting is used to reduce the influence of the lights at night.

If light spillage mitigation is not implemented, light at night impacts from the Overhead Flood Lights has the potential to significantly degrade the existing rural dark sky sense of place within the Foreground/ Mid Ground areas detracting from the local receptor's scenic quality. This also has the potential for setting a negative precedent for substation development deep rural where local farmstead/ residents are sensitive to lights at night intrusion. To the extent feasible or possible, given the Eskom directives and specifications with regards to the MTS construction, it is recommended that lights at night impacts are adequately mitigated without compromising the required safety standards (VRM Africa, 2023).

The OHPL are located in Medium to Low Visual Exposure to two receptors (Figure 16). As the routing length of the Overhead Powerline (OHPL) is short and is located in close proximity to two existing power lines, the Visual Absorption Capacity (VAC) levels are higher, and it is unlikely that the OHPL landscape change would be noticed by causal observers located as the receptor locations (Figure 17).

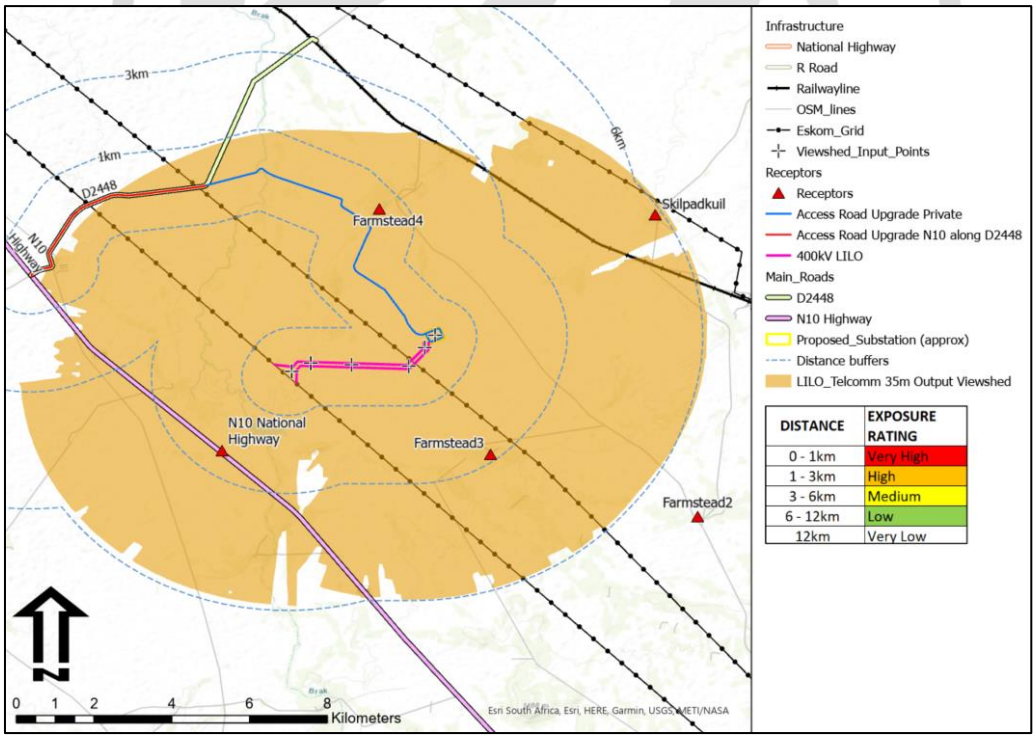


Figure 16. LILO and Communication Tower Viewshed.

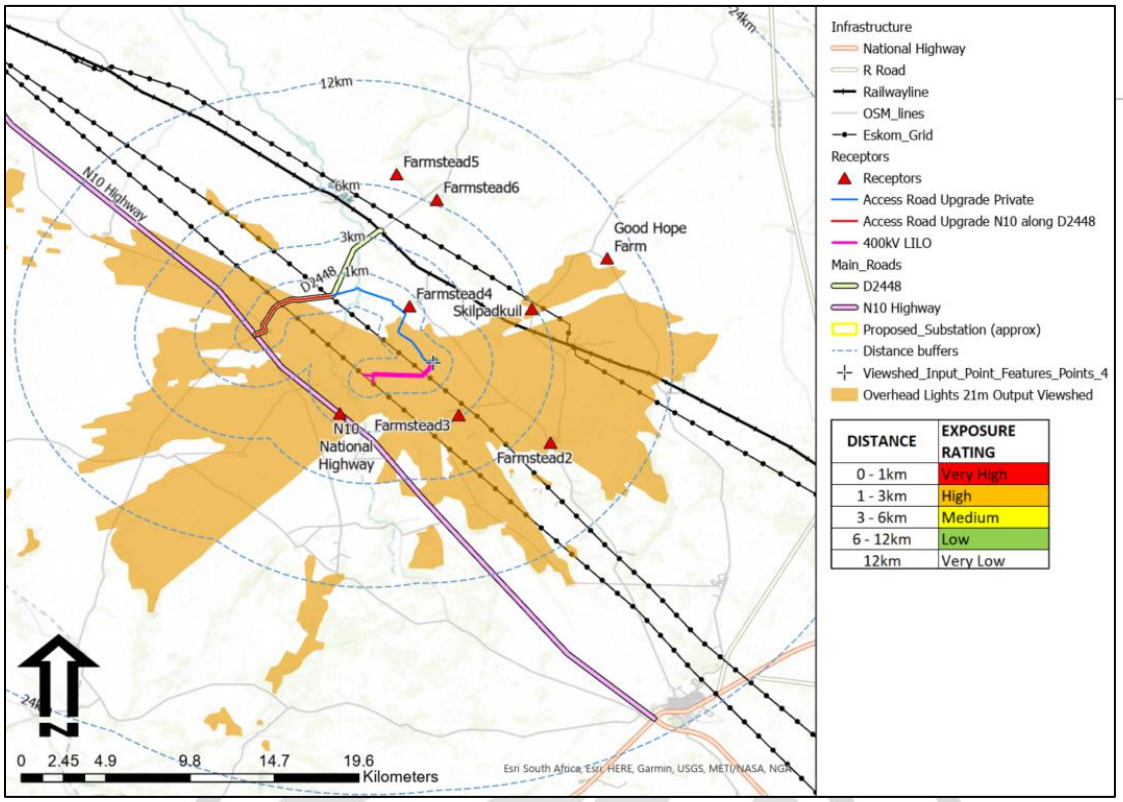


Figure 17. Overhead Lighting Viewshed.

SECTION III: MEASURES TO ENSURE AVOIDANCE, MANAGEMENT AND MITIGATION OF IMPACTS ASSOCIATED WITH SUCH PROPOSED CHANGE

AGRICULTURAL ATTRIBUTES

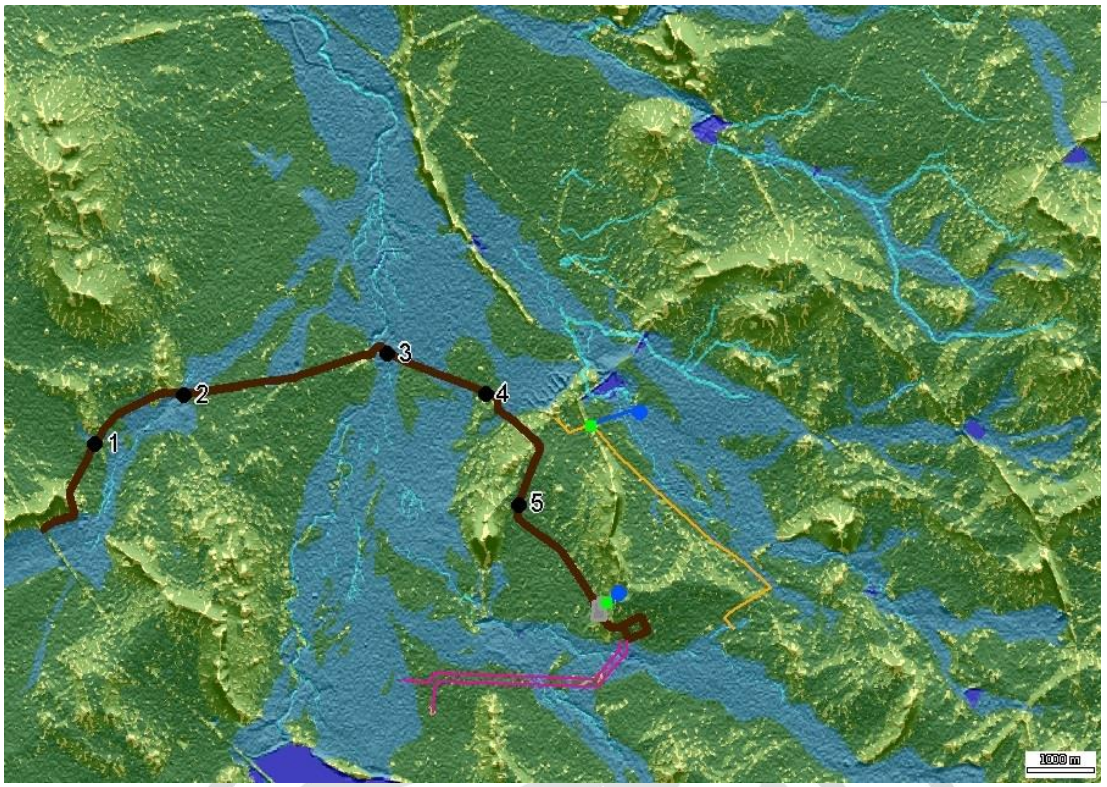
Soil and terrain mapping (Arnoldi, et al., 2023)

Previous soil studies were carried out on Sun Central Cluster 1 (Van Den Berg, 2017), Phase 2 (Van Den Berg, 2021) and Phase 3 (Van Den Berg & Botha, 2022). The dominant geology is shale with subordinate sandstone and dolerite intrusions. The area is dominated by shallow soils of the Mispah soil form.

The terrain units are integrated with floodplains and streambeds (Figure 18).

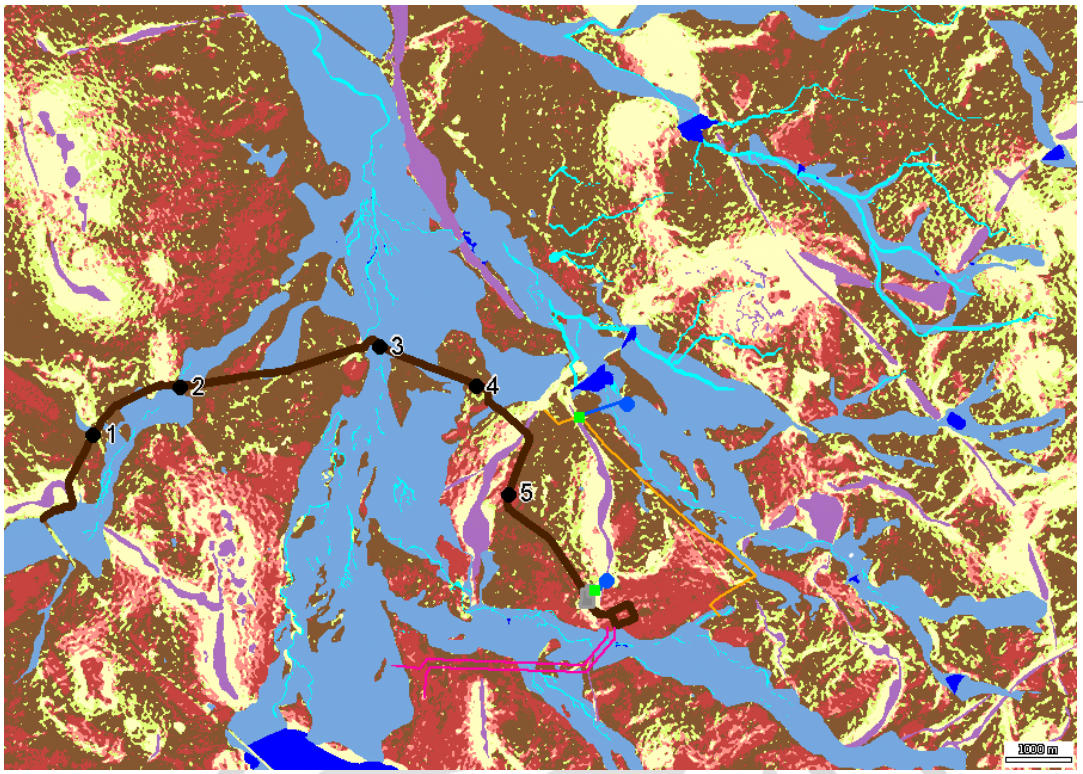
Soil mapping was done for the wider area surrounding all the PV projects (19 600ha). This was done by using the relationships between soil patterns, terrain position, geology and features on Sentinel satellite imagery as established during the field surveys and image and DSM interpretations from the 2017-2022 mapping (Figure 19).

A soil capability map was derived from the soil map (Figure 20).



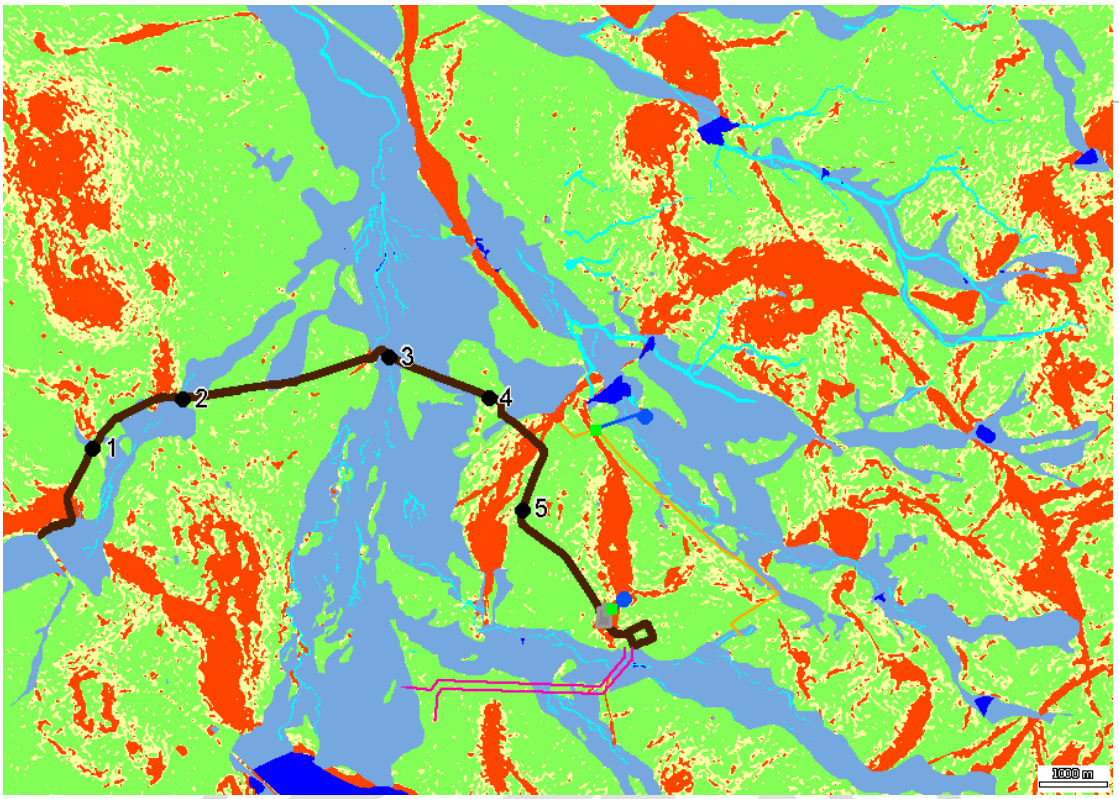
Colour	No	Class
	1	Crest
	2	Convex midslopes
	3	Concave midslopes
	4	Floodplains
	5	Streambeds
	6	Water

Figure 18. Terrain units overlaid on a hill-shading of the terrain. The access road (dark brown with black soil sampling sites no 1-5) to the MTS & water pipelines (blue) (form part of a separate basic assessment), boreholes (blue dots), water storage (green squares), temporary construction yard & O&M offices (grey block), 11 kV power line (orange) and 400 kV transmission lines (purple) are overlaid on the map.



Colour	No	Class	Dominant soils
	1	Sandstone outcrops (sub dominant dolerite)	Outcrop/Ms complex
	2	Dolerite outcrops	Outcrop
	3	Very shallow yellow brown loamy soils	Ms, (Gs)
	4	Very shallow red loamy soils	Ms, (Gs)
	5	Shallow to medium deep yellow brown loamy to clayey soils	Gs, Oa, Sw, Va, (Ms, Cv. Ad, Ag)
	6	Shallow to medium deep red loamy to clayey soils	Hu, Gs, Oa, Et, Ky, Sw, Va. (Ms)
	7	Floodplains	Oa, Tu, Va, Du
	8	Streambeds	
	9	Water	

Figure 19. Soil map for the wider PV project areas. The access road (dark brown with black soil sampling sites no 1-5) to the MTS, water pipelines (blue), boreholes (blue dots), water storage (green squares), temporary construction yard & O&M offices (grey block), 11 kV power line (orange) and 400 kV transmission lines (purple) are overlaid on the map.



Colour	No	Class	Soil depth, dominant soils and slope limitations
	1	Low to moderate soil capability	Shallow to medium deep soils, Hu, Cv, Oa, Ad, Ag, Et, Ky, Va
	2	Low soil capability	Very shallow soils, Ms, Gs, Sw, (Hu) and all areas with slopes 6%-8%
	3	Very low soil capability	Outcrops and all areas with slopes >8%
	4	Floodplains	Oa, Tu, Va, Du
	5	Streambeds	
	6	Water	

Figure 20. Soil capability map for the wider PV project areas. The access road (dark brown with black soil sampling sites no 1-5) to the MTS, water pipelines (blue), boreholes (blue dots), water storage (green squares), temporary construction yard & O&M offices (grey block), 11 kV power line (orange) and 400 kV transmission lines (purple) are overlaid on the map.

GENERAL RECOMMENDATIONS

Organic matter in the form of manure and/or humic products can be used with the chemical fertilisers to ameliorate the soil and improve soil health. These potential actions must be coordinated with the grazing recommendations.

GRAZING UNITS AND GRAZING CAPACITY

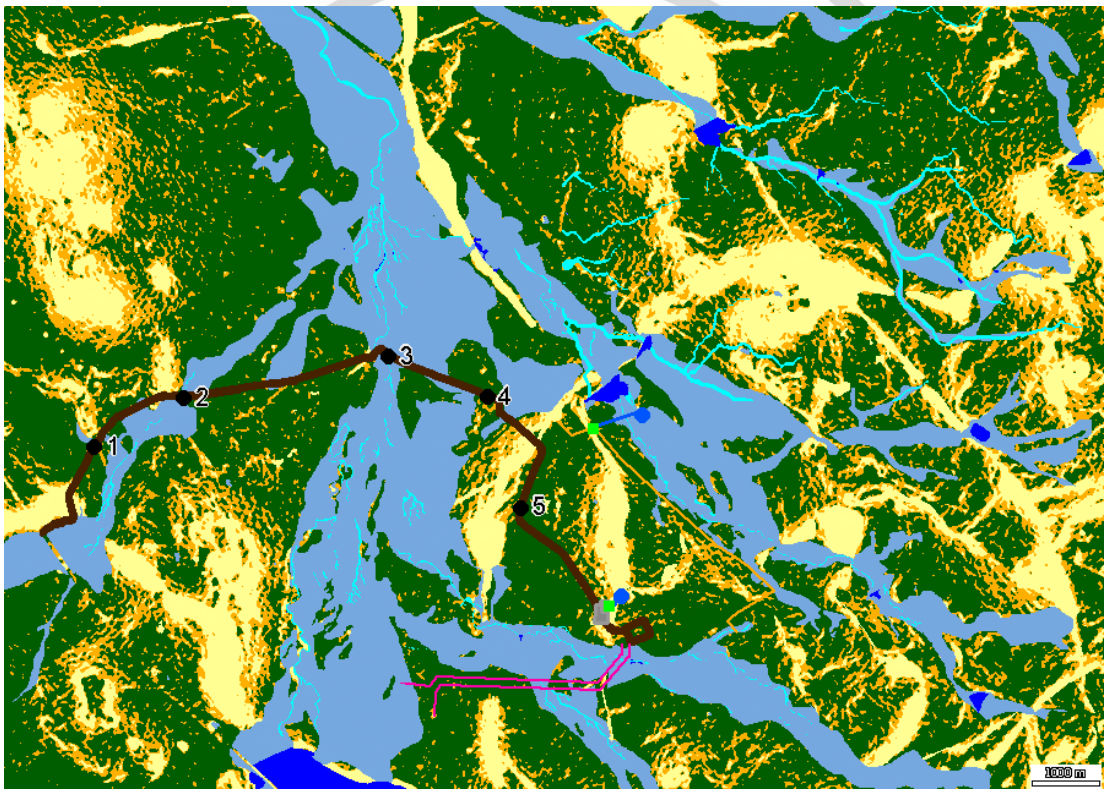
The grazing capacity derived from the 2017 assessments was between 15 and 17 ha/LSU for better veld conditions, or an average of just less than 23 ha/LSU, applicable at the time when the assessment was done, for all veld conditions in the study area (Cluster 1) (de Wet, 2017). Veld

Condition Assessments (VCAs) during drought conditions, in 2017, as well as later, in 2021 and 2022, when rainfall was slightly higher than the drought experienced in 2017, indicated that the veld was overgrazed (Figure 20).

In 2022 two VCA sampling sites were surveyed on the floodplain (bottomlands with braided streamlines) that divides the Phase 3 project area (de Wet & Arnoldi, 2022) In general the vegetation cover was very good for this small section of floodplain. This is in stark contrast with the wider floodplain area that has very little vegetation cover and has, as indicated by soil sampling site 3 (Figure 21), potentially severe sodic conditions that inhibits plant growth. For this reason the low end of the grazing capacity range is estimated as very low and in the order of the rock outcrops and koppies.

Transmission Line

The first part of the 400 kV transmission lines passes through a floodplain of approximately 1.7 km (Figure 21).



COLOUR	NO	GRAZING UNITS	GRAZING CAPACITY RANGE	MEDIAN GRAZING CAPACITY
	1	GRAZING UNIT I (Soils at lower part of catena - usually medium deep)	5-30 ha/LSU	17 ha/LSU
	2	GRAZING UNIT II (Shallow soils)	15-55 ha/LSU	35 ha/LSU
	3	GRAZING UNIT III (Koppies)	20-90 ha/LSU	55 ha/LSU
	4	GRAZING UNIT IV (Floodplains)	10-90 ha/LSU	50 ha/LSU
	5	Streambeds		
	6	Water		

Figure 21. Grazing units map for the wider PV project areas. The access road (dark brown with black soil sampling sites no 1-5) to the MTS, water pipelines (blue), boreholes (blue dots), water storage (green squares), temporary construction yard + O&M offices (grey block), 11 kV power line (orange) and 400 kV transmission lines (purple) are overlaid on the map.

GRAZING MANAGEMENT RECOMMENDATIONS

- It is of utmost importance not to exclude sheep from the areas occupied by the Solar PV facilities and the transmission line servitudes. Kraaling should be applied to specific severely degraded areas, as a first step in regenerative management. Kraaling period is for a night only. Grazers are removed to natural grazing areas after each kraaling period. The kraaled area is afterwards temporary excluded from grazing for two years, to enable seed depositied through dung to germinate and for grass to develop roots. Areas outside of the fenced solar PV facility are not under the jurisdiction of the authorisation holder, and hence, these recommendations cannot be enforced in these areas and only provided to the landowner as recommendations for consideration.

- A holistic approach must be followed in terms of veld management where a balance must be found between planned rest and grazing rather than excluding grazing (de Wet & Arnoldi, 2022).

In terms of the construction of the distribution & transmission lines (11 kV and 400 kV), the O&M office and temporary construction camp, the following grazing practices and mitigations will apply:

- Sheep must be *included* as a tool for restoration (by kraaling) and to improve the veld condition at disturbed and overgrazed areas (through regenerative grazing). This should be done according to a grazing management plan, as recommended by (de Wet, 2017), (de Wet, 2021) and (de Wet & Arnoldi, 2022).

- An option to consider is to isolate (e.g. fencing) the areas that will be disturbed temporarily during this project, such as the O&M office and temporary construction camp and 11 kV and 400 kV transmission line areas, at the start of this project. The reason for that will be

to give the rehabilitated plants a chance to establish. Note that this is only a consideration, and not a recommendation. If fencing is implemented, the following guidelines must be followed:

- When rehabilitation of plants have been done and the plants have established, the fences can be removed while restoration of bare ground can be achieved through kraaling.
- After the fences have been removed, active grazing management, based on regenerative grazing management principles, should be applied on the wider area, as referred to by (de Wet & Arnoldi, 2022).

Agricultural Sensitivity

From a grassland ecological and soil erosion perspective, the opinion is that the current planned development (and the cumulative effect of 30km from other PV-projects), will not have a significant impact on the current veld condition and potential grazing potential, reflected from the baseline study in 2017. However, if the proposed mitigations are not followed (as stipulated in all the reports from 2017 for the full project areas of PV development), it is envisaged that deterioration in veld condition will occur, associated with increased bare ground and accelerated soil erosion. The effects of enhanced soil erosion in the case of rangeland mismanagement and the effects of increased runoff and sediment load downstream, in relation with other PV developments within 30 km downstream, are quantified in the soil report (Van Den Berg & Botha, 2022).

The distribution and transmission lines from part of the area inside the catchment that were assessed for runoff contribution from Cluster 1 and phases 2 and 3 in relation with other PV projects within a 30 km radius. The results showed that the effect from these 3 PV phases would be minimal and would contribute less than 1.5% of the total runoff from the catchment and only about 10% of the runoff from all PV projects combined within a 30 km radius.

The screening tool used for the site sensitivity verifications requirments (https://screening.environment.gov.za/screeningtool) was used for a screening of the area. The results show that the O&M office and temporary construction camp and 11 kV and 400 kV distribution and transmission line areas, respectively are dominated by low and medium agriculture sensitivity (animal production). The soil capability map (Figure 18) confirms this result with the area that is dominated by very low to moderate soil capability.

It is known that the total exclusion of grazers in such environments will be detrimental to maintaining important ecological processes such as the energy cycle, mineral cycle, and water cycle.

Mismanagement through selective grazing and uncontrolled grazing and resting will affect Agricultural potential negatively.

There are examples of veld improvement and the restoration of degraded veld under holistic or regenerative grazing under the following management, where high stocking densities are applied within short periods, followed by planned rest (under time control).

The following recommendations are made:

1. Grazing should be allowed within the solar Photovoltaic facility and all their separate elements.
2. Follow-up grazing assessments and monitoring of veld condition is recommended to determine the progress of the recovery process on the disturbed, rehabilitated areas arising from this project as well as the existing sites (and possible new sites) on Cluster 1.

Conclusions

The construction of the LILO transmission lines (3,7 km) should have a very limited effect in the long term on soil erosion and rangeland potential. This includes also the O&M office and temporary construction camp and relocation of the existing 11 kV power line.

It is not foreseen that the development of the transmission lines and other project elements will have a significant negative impact on the flora or local ecological processes if the mitigation actions, as discussed above, are taken. However, good rangeland practices should be applied at all areas, including the wider area surrounding the PV project areas.

The floodplains are areas where there is evidence of extensive soil erosion, and the vegetation cover is in general very low. It is acknowledged that these "degraded" floodplains are typical of the Karoo area and a function of the geology of the area. The proposed developments are so small in terms of the wider floodplain areas that the impacts should be insignificant in the broader context.

Impacts and Mitigations

Management Category: Linear Infrastructure – transmission line
Impact: Loss in plant basal cover during vegetation clearing.
Consequence: Soil erosion, increase sedimentation and runoff.
Mitigation:

1. Limit the number of new routes through the veld, especially with the development of the transmission lines to reduce the mechanical impact on the veld.

Management Outcome: Minimize vegetation disturbance.

Management Category: Clearing and grubbing

Impact: Insufficient topsoil in areas outside floodplains and drainage lines.

Consequence: Degraded or dysfunctional terrestrial ecosystem.

Mitigation:

1. Remove all the topsoil (to a depth of 100 mm) during the construction phase.

Management Outcome: Preserve topsoil.

Management Category: Stockpiling and storing - Topsoil

Impact: Insufficient topsoil in areas outside floodplains and drainage lines.

Consequence: Degraded or dysfunctional terrestrial ecosystem.

Mitigation:

1. Topsoil should be store in berms not wider than 2 m or higher than 1 m.

Management Outcome: Preserve topsoil.

Management Category: Rehabilitation – disturbed areas

Impact: Loss in plant basal cover, increase in pioneer plants such as weedy forbs and annual grasses in floodplains and drainage lines

Consequence: Soil erosion, increase sedimentation and runoff.

Mitigation:

1. Chemical intervention is recommended at areas where topsoil has eroded, to ameliorate these soil conditions.
2. Apply 2 ton/ha gypsum and work in 15cm two weeks before planting (good drainage is a requirement for gypsum treatment).
3. It is recommended that these soils should be allowed to drain and sodium leached out of the soil profile.
4. Rip against contour, cut-off drains and artificial drains might be needed.

5. Broadcast 200 kg/ha Superphosphate and 200 kg/ha Ammoniumsulphate directly before planting and work in 5cm.

Management Outcome: Improve surface water infiltration and minimise erosion. Achieve good to excellent veld condition classes.

Management Category: Rehabilitation - Disturbed areas - terrestrial

Impact: Insufficient topsoil in areas outside floodplains and drainage lines.

Consequence: Degraded or dysfunctional terrestrial ecosystem.

Mitigation:

1. The stored topsoil must be used to cover the landscaped area at the end of the construction phase.
2. Broadcast 150 kg/ha 3:2:0(32)+Zn directly before planting and work in 5cm.
3. Topdress 120 kg/ha LAN six weeks after planting.
4. Organic matter in the form of manure and/or humic products can be used with the chemical fertilisers to ameliorate the soil and improve soil health. These potential actions must be coordinated with the grazing recommendations.

Management Outcome: Improve surface water infiltration and minimize erosion.

Management Category: Maintenance and Monitoring – veld condition

Impact: Mismanagement

Consequence: Overgrazing negatively impacts on veld condition, specifically reducing plant vigor, primary production and increasing soil erosion and sedimentation.

Mitigation:

1. Follow-up grazing assessments and monitoring of veld condition is recommended to determine the progress of the recovery process on the disturbed, rehabilitated areas arising from this project as well as the existing sites on Cluster 1.

Management Outcome: A record of veld condition and grazing capacity.

Management Category: Grazing Management

Impact: Overgrazing.

Consequence: Overgrazing negatively impacts on veld condition, specifically reducing plant vigor, primary production and increasing soil erosion and sedimentation.

Mitigation:

1. Ultra-high density kraaling with sheep is recommended at selected areas with low vegetation cover, followed by controlled recovery periods along the severely disturbed areas arising from this project.
2. Kraaling period is for a night only. Grazers are removed to natural grazing areas after each kraaling period.
3. This should be done according to a grazing management plan, as recommended by De Wet, (2017), De Wet, (2021) and De Wet and Arnoldi (2022).
4. Regenerative grazing is recommended post the initial rehabilitation period.

Management Outcome: Improve surface water infiltration and minimise erosion. Achieve good to excellent veld condition classes.

AIR QUALITY ATTRIBUTES (Zunckel, 2023)

Particulate emissions

The main source of particulate emissions will be entrainment of dust by vehicles on the unpaved access roads. Some particulates will be generated by other construction equipment and activities, such as stockpiles, the concrete batching plant and stone crushing for aggregate for road material, but particulate emission from these activities is expected to be relatively low.

PM_{10} Cumulative Impact

Windblown dust from open areas and entrainment from non-project vehicles are the only other source of PM_{10} in the area. The extent of the predicted impact is localised. It is therefore unlikely that emissions from operations on the Access Road will add significantly to ambient concentrations beyond the project area. The cumulative impact is therefore considered to be negligible and is scored low.

Cumulative Impact Assessment

The cumulative impacts of the simultaneous construction, operation and decommissioning of Cluster 1, Phase 2 and Phase 3 are discussed here. The three clusters are not co-located so the impact scores for the cumulative assessment may be applied to the individual clusters. The probability of cumulative impacts occurring however increases.

Dust fallout

The predicted dust fallout for all three phases is expected to be low and well below the limit value for acceptable dust fallout in non-residential areas. The significance of the cumulative impact is scored medium during construction and decommissioning and low during operations. In this assessment dust control measures are assumed to be limited to watering the road surface once a day. In the event of simultaneous construction and decommissioning of Cluster 1, Phase 2 and

Phase 3 it is recommended that additional dust control measures are implemented to reduce the emission and ensure that significance of the impact is low.

PM_{10}

The predicted PM_{10} concentration for all three phases is expected to be low and well below the NAAQS. The significance of the cumulative impact on air quality is therefore low without and with dust control measures. However, in the event of simultaneous construction, operation and decommissioning of Cluster 1, Phase 2 and Phase 3 it is recommended that additional dust control measures are implemented to ensure the emission are controlled so that the significance of the impact remains low.

Impacts and Mitigations

Receiving Environment:
Atmosphere

Phase
Construction

Construction activity:
PM_{10} and Total Suspended Particulate (TSP) emitted from construction activities.

Impact:
Increase in ambient PM_{10} concentrations and dust fallout.

Consequence:
Respiratory problems.
Nuisance effects of PM, e.g., settling on houses, deposition on and discolouration of buildings, and reduction in visibility.

Assumptions:
For the uncontrolled scenario the predicted ambient PM_{10} concentrations during construction exceed the annual average and 24-hour NAAQS for PM_{10} up to 1 500 m from access roads. For the controlled scenario (wetting once per day) the predicted ambient PM_{10} concentrations are below the annual average NAAQS for PM_{10} but exceed the 24-hour NAAQS for PM_{10} up to 300 m from the Access Road. Sensitive receptors have been noted within these zones. The significance of the impact of operations on air quality is therefore medium. The assumed dust control mitigation (wetting once per day) needs to be expanded to reduce the emission and lower the impact significance to low with mitigation.

The predicted dust fallout (TSP) during construction is low and well below the limit value for acceptable dust fallout in non-residential areas. Consequently, the significance of the impact of dust fallout resulting during construction and decommissioning of the access roads is also

low. This assessment considers the current dust control measures, e.g., spraying the Access Road once a day with water. It is however recommended that these are expanded to reduce the emission and ensure that the significance of the impact remains low.

Mitigations:

- Implement a dust monitoring programme for the access road and construction sites.
- Wetting of open areas and erection of wind shields.

Management Outcome:

Minimise dust generation.

Avoid exceeding NAAQS annual ambient PM_{10} concentrations (40 µg/m^3) and 24-hour ambient PM_{10} concentrations (75 µg/m^3).

Avoid exceeding the National Dust Standard for non-residential (1 200 mg/m^2/da) and residential (600 mg/m^2/day) areas.

Receiving Environment:

Atmosphere

Phase

Construction

Construction activity:

Storage and Stockpiles: emitted PM_{10} and Total Suspended Particulate (TSP).

Impact:

Increase in ambient PM_{10} concentrations and dust fallout.

Consequence:

Respiratory problems.

Nuisance effects of PM, e.g., settling on houses, deposition on and discolouration of buildings, and reduction in visibility.

Assumptions:

The main source of particulate emissions will be entrainment of dust by vehicles on the unpaved access roads. Some particulates will be generated by other construction equipment and activities, such as the stockpiles, concrete batching plant and stone crushing for aggregate for road material, but particulate emission from these activities is expected to be relatively low.

Mitigations:

- Store fine aggregate materials such as cement and sand in such a manner that dust generation is avoided or minimized.
- Additional control measures may include enclosures and covering or increasing the moisture content of the material.

- Dampen the stockpiles during dry or windy conditions where aggregate materials are exposed and located close to sensitive receptors.
- Restrict the height of stockpiles of topsoil and dry materials and gently shape these as far as practicable to minimize wind erosion and dust generation.
- Remove materials first from the bottom of the piles to minimize the generation of dust.
- Keep the hatches on material storage containers closed when not in use.

Management Outcomes:
Minimise dust generation.
Avoid exceeding NAAQS annual ambient PM_{10} concentrations (40 µg/m^3) and 24-hour ambient PM_{10} concentrations (75 µg/m^3).
Avoid exceeding the National Dust Standard for non-residential (1 200 mg/m^2/da) and residential (600 mg/m^2/day) areas.

Receiving Environment:
Atmosphere

Phase
Construction

Construction activity:
Vegetation clearance and Disturbed Areas: emitted PM_{10} and Total Suspended Particulate (TSP).

Impact:
Increase in ambient PM_{10} concentrations and dust fallout.

Consequence:
Respiratory problems.
Nuisance effects of PM, e.g., settling on houses, deposition on and discolouration of buildings, and reduction in visibility.

Assumptions:
The main source of particulate emissions will be entrainment of dust by vehicles on the unpaved access roads. Some particulates will be generated by other construction equipment and activities, such as the stockpiles, concrete batching plant and stone crushing for aggregate for road material, but particulate emission from these activities is expected to be relatively low.

Mitigations:
- Encourage natural vegetation growth in areas where a large area of soils are exposed to the elements to reduce the amount of potential loose soil especially close to sensitive receptors.

- Adopt dust suppression such as watering in areas of the worksites in close proximity to dust sensitive receptors where earthworks have been completed.
- Re-vegetate open areas with indigenous plants as soon as practicably possible to minimize the risk of wind erosion and dust generation.

Management Outcome:
Minimise dust generation.
Avoid exceeding NAAQS annual ambient PM_{10} concentrations (40 µg/m^3) and 24-hour ambient PM_{10} concentrations (75 µg/m^3).
Avoid exceeding the National Dust Standard for non-residential (1 200 mg/m^2/da) and residential (600 mg/m^2/day) areas.

Receiving Environment:
Atmosphere

Phase
Construction

Construction activity:
Concrete Batching Plant: emitted PM_{10} and Total Suspended Particulate (TSP).

Impacts:
Increase in ambient PM_{10} concentrations and dust fallout.

Consequence:
Respiratory problems.
Nuisance effects of PM, e.g., settling on houses, deposition on and discolouration of buildings, and reduction in visibility.

Assumptions:
The main source of particulate emissions will be entrainment of dust by vehicles on the unpaved access roads. Some particulates will be generated by other construction equipment and activities, such as the stockpiles, concrete batching plant and stone crushing for aggregate for road material, but particulate emission from these activities is expected to be relatively low.

Mitigations:
- Store fine aggregate materials such as cement and sand in a manner so as to avoid or minimize dust generation, with water also being used as a dust suppressant.
- Fit cement silos with alarms to prevent over filling, airtight inspection hatches and automatic cut-off switches on the filler lines where appropriate.
- To minimize dust generation the following measures are recommended:
- Drop heights from haulage trucks into bins and onto conveyors should be minimised as far as possible.

- Work surfaces should be kept clean.
- Duct work must be airtight as far as possible.
- Vehicle movement and loading areas should be enclosed as much as is practicable.
- Aggregate spills should be cleaned up.
- Conveyor belts and hoppers must be covered or enclosed where practical and appropriate.

Management Outcome:
Minimise dust generation.
Avoid exceeding NAAQS annual ambient PM_{10} concentrations (40 µg/m^3) and 24-hour ambient PM_{10} concentrations (75 µg/m3).
Avoid exceeding the National Dust Standard for non-residential (1 200 mg/m^2/da) and residential (600 mg/m^2/day) areas.

AQUATIC BIODIVERSITY ATTRIBUTES (Deacon, 2023)

The main aquatic feature within the project area is the Brak River (Sub-quaternary D62D-05613) (Figure 22), a seasonal tributary within the Orange River Catchment. The river drains the D62D quaternary catchment in the Nama Karoo Ecoregion of the Orange Water Management Area. The Brak River and certain larger ephemeral tributaries are the only natural drainage structures in the study area with weak indicators of riparian vegetation in the riverbed and on the riverbanks. The Ecostatus of the Brak River is a Category C (Moderately modified).

The Nama Karoo is regarded as a semi-desert and precipitation, which occurs predominantly in the summer months, is unpredictable and sporadic. The Brak River drains an area with a very low rainfall. As a result, the water within the river system is saline and turbid and seasonally flowing. The tributaries of the Brak River are predominantly classified as ephemeral, which means that the stream flows briefly (< 1 month) in direct response to precipitation in the immediate vicinity, and the channel is always above the ground-water reservoir.

Ephemeral rivers are particularly vulnerable to changes in hydrology, as they are specifically adapted to brief periods of inundation and flow. Consequently, pollutants and sediments entering these watercourses are not regularly diluted or flushed out of the catchment, leading to a lack of resilience to pollution, erosion, and sedimentation.

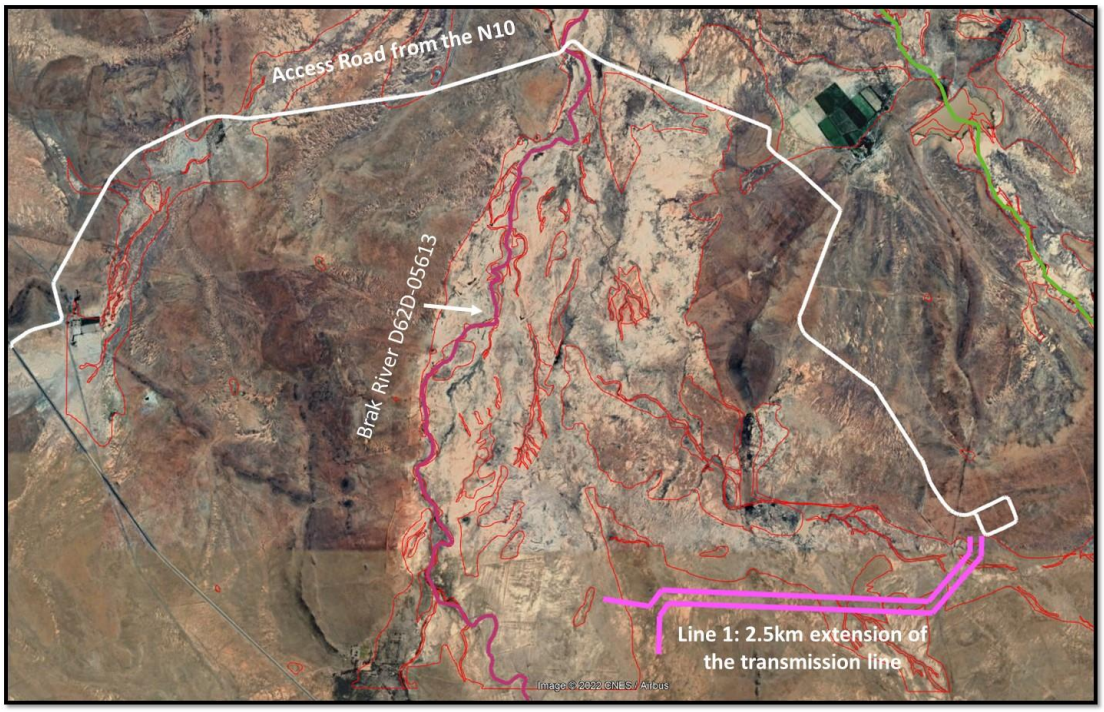


Figure 22. The Brak River and tributaries are the main aquatic features within the project area.

Ecological Importance and Sensitivity Category

The Ecological Importance and Sensitivity Category (EISC) was established for each water resource type:

- "**High**" EISC: The Brak River drainage system and other large ephemeral tributaries, including their buffers, will be considered as no-go areas except for linear infrastructure crossings, e.g., access roads, pipelines, and cables. A 15 m-wide buffer is required on both sides of the delineated Brak River drainage system and large ephemeral tributaries during the construction and operational phases to protect their current condition from any degradation. This buffer width is obtained whenever the following mitigation measures are applied to the model:
    - Ensure least possible flow impediment due to the low water drift structure,
    - the management of surface water runoff,
    - erosion monitoring, as well as constraints regarding the clearing of vegetation within these areas.

- "**Low to Moderate**" EISC: The smaller ephemeral tributaries, alluvial floodplains, and headwater drainage lines, are not considered as no-go areas. Due to the gentle slope of the terrain where headwater drainage systems originate, downpours will dissipate downhill without forming any discernible wetland habitats. Thus, the very short-lived nature of the headwater drainage systems, the EISC of this biotope is classified as "Low".

These areas are not considered as no-go areas, however, development within these areas, such as placement of power line pylons and other linear infrastructure, shall be subjected to strict mitigation measures (Figure 23). This will include the management of surface water runoff, erosion monitoring, as well as constraints regarding the clearing of vegetation within these areas.

Watercourse Crossings

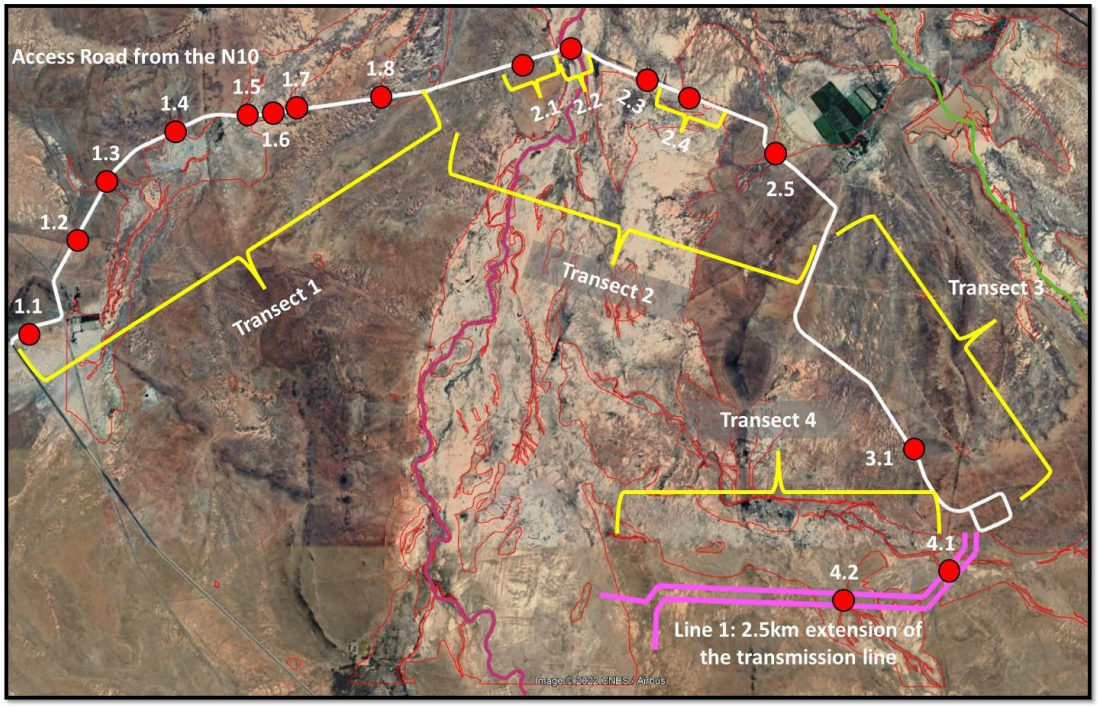


Figure 23. The 16 crossing points or sections of the access road and the 2.5 km transmission line, involving the different water resource types, including alluvial floodplains.

Watercourse crossings for the Transmission Lines

1. **Section 4.1 (Large Ephemeral Tributary northern reach):** 30°53'34.91"S; 24°18'50.35"E (west powerline), 30°53'36.75"S; 24°18'53.59"E (east powerline).

At Transmission line Section 4.1, the power lines cross over two drainage lines in an anastomosing section of the Brak River alluvial riverbed. The large drainage line and its alluvial riverbed have been altered considerably by earthen berms and dams.

2. **Section 4.2 (Large Ephemeral Tributary):** 30°53'45.96"S; 24°18'06.40"E (north powerline), 30°53'49.50"S; 24°18'09.28"E (south powerline).

At Transmission line Section 4.2 of Transect 4, the power lines cross over the Brak River and the alluvial floodplain. The large drainage line and its alluvial riverbed have been altered

considerably by earthen berms and dams. The Brak River drainage line in Section 4.1 and 4.2 consists of an incised drainage line with an alluvial riverbed and flanked by low channel banks.

Impacts

Erosion and sedimentation are important ecological processes in the Karoo. Loss and fragmentation of habitat disrupt these processes. Erosion is a particularly high risk on steep slopes, and in drainage lines that lack channel features and are naturally adapted to lower energy runoff with dispersed surface flows, and naturally less turbid freshwater systems.

Once permanent roads are built and regularly maintained and graded, there will be erosion that results from the formation of rills. This will change hydrological flows and have a detrimental effect on vegetation surrounding the roads.

Mitigations

All 11 potential impacts were assigned mitigation measures, which reduced the risk rating posed to the resource quality of the watercourses to "Low". No impact was identified to cause loss of irreplaceable resources. By implementing all the mitigation measures and managing the system on a continuous basis as prescribed by the Risk Assessment, all the impacts will be addressed to a satisfactory level. Therefore, it is proposed that the project should be authorised with the provision that the mitigation measures prescribed in this document, where applicable, are included in the EMPr.

Impacts and Mitigations

Receiving Environment
Aquatic ecosystem

Phase
Planning and Design Phase

Construction activity
Linear infrastructure crossings

Impact
Erosion and sedimentation

Mitigations

- The Brak River drainage system (Section 2.2: 30°51'6.74"S 24°16'32.57"E and 30°51'9.48"S 24°16'48.11"E) and large ephemeral tributaries (Section 1.3: 30 51 42.6 S; 24 14 00.5 E, Section 1.5: 30 51 25.7 S; 24 14 12.3 E and 30 51 25.8 S; 24 14 47.1 E, Section 4.1 (northern reach): 30°53'34.91"S; 24°18'50.35"E (west powerline), 30°53'36.75"S; 24°18'53.59"E (east powerline), Section 4.1 (southern reach):

30°53'39.93"S; 24°18'45.64"E (west powerline), 30°53'41.52"S; 24°18'48.89"E (east powerline), Section 4.2: 30°53'45.96"S; 24°18'06.40"E (north powerline), 30°53'49.50"S; 24°18'09.28"E (south powerline), including their buffers, are no-go areas except for linear infrastructure crossings, e.g., access roads, pipelines, and cables. A 15 m-wide buffer is required on both sides of the delineated Brak River drainage system and large ephemeral tributaries during the construction and operational phases to protect their current condition from any degradation.

- This buffer width is conditional upon ensuring (1) the least possible flow impediment due to the low water drift structure, and (2) the management of surface water runoff (e.g., storm water management system) from the crossings within the Brak River drainage system and large ephemeral tributaries.
- Where new watercourse crossings are required, the engineering team must provide an effective means to minimise the potential up- and downstream effect of erosion and sedimentation (erosion protection) as well as minimise the loss of riparian vegetation (reduce footprint as much as possible).
- Where diversion berms create concentrated flows, particularly in steep and/or sensitive areas, the use of swales, silt fences or other effective erosion control measures is recommended to attenuate runoff.
- No pylons should be located within an area that would be expected to become inundated during a 1:100 flood event.
- The large ephemeral tributaries crossed by the transmission lines, specifically Section 4.1 (northern reach): 30°53'34.91"S; 24°18'50.35"E (west powerline), 30°53'36.75"S; 24°18'53.59"E (east powerline), Section 4.1 (southern reach): 30°53'39.93"S; 24°18'45.64"E (west powerline), 30°53'41.52"S; 24°18'48.89"E (east powerline), Section 4.2: 30°53'45.96"S; 24°18'06.40"E (north powerline), 30°53'49.50"S; 24°18'09.28"E (south powerline) are synonymous with Crossings C2 to C7 in the Hydrological Assessment Report and can rely on free drainage.
- The small ephemeral tributaries, alluvial floodplains, and headwater drainage lines can rely on free drainage.
- All road crossing designs must not lead to the concentration of surface flow, by, where possible, designing structures, such as culverts, that span the entire width of surface aquatic ecosystems, ensuring connectivity and avoiding fragmentation.

Management Outcome:

Maintain the Present Ecological State of the Brak River drainage system, large ephemeral tributaries, small ephemeral tributaries, alluvial floodplains, and headwater drainage lines by ensuring connectivity and avoiding fragmentation.

Target:

A 15 m buffer is implemented.
Road crossings do not impede flow.
Crossing structure designs include stormwater management and erosion control systems (where applicable).
No pylons with ponded flood occurrence zones.

Receiving Environment
Aquatic ecosystem

Phase
Construction Phase

Construction activity
Linear infrastructure crossings

Impact
Erosion and sedimentation

Mitigations:

- Manage surface water runoff during construction of crossings within the Brak River drainage system and large ephemeral tributaries.
- Manage surface water runoff during construction of crossings within or within proximity to smaller ephemeral tributaries and headwater drainage lines.
- Monitor for signs of erosion during construction of crossings within the Brak River drainage system and large ephemeral tributaries, as well as within or within proximity to the smaller ephemeral tributaries, alluvial floodplains, and headwater drainage lines.
- Vegetation clearance must be restricted to the physical footprints of the construction camp, staging area, permanent and temporary roads within the road servitude, and the pipeline corridors only
- Vegetation clearance must be restricted to the physical footprints of the pylon footings.
- The operating teams responsible for construction within the watercourse crossings and 15 m buffers on both sides of the large ephemeral drainage systems must be (in their induction) exposed to the importance and sensitivity of the drainage systems they will be working in. All construction activities should be conducted with care inside the buffered drainage area.
- Construction within the watercourse crossings and buffers must be overseen by the project management.
- No temporary structures, such as camps, water treatment facilities, portable toilets, stores or stockpiles should be established inside the 15 m buffered area on both sides of the large ephemeral drainage systems.

Management Outcome:

Maintain the Present Ecological State of the Brak River drainage system and large ephemeral tributaries.

Target:
Erosion controls are in place.
Records of monitoring for signs of erosion.
Vegetation is not cleared from the road verge.
Vegetation clearance does not extend beyond the pylon footings.
No temporary or permanent construction camps or part thereof in the buffer.

Receiving Environment
Aquatic ecosystem

Phase
Construction Phase

Construction activity: Linear infrastructure crossings
- Vegetation clearance of the project footprint for distribution& transmission lines, Main Transmission Substation and Switching Substation.
- Construction activities (increased access) through drainage lines and riparian zones, have the potential to disturb soil structure.
- Installation of pylons for transmission lines may cause erosion and sedimentation in the drainage lines.

Impact:
- Any permanent clearing of vegetation and disturbance to the topsoil close to watercourses will be subject to erosion.

Consequence:
Erosion will lead to sedimentation or siltation and an increase in turbidity of watercourses.

Mitigations:
Clearance
- A construction method statement should be compiled and approved prior to the commencement of construction activities within all water resource types and where applicable their buffers.
- Vegetation and soil should be retained in position for as long as possible and should only be removed immediately ahead of construction / earthworks in any specific area.
- Vegetation clearing (and the area of disturbance) is to be kept to a minimum. No unnecessary vegetation to be cleared.
- In areas where construction activities have been completed and no further disturbance is anticipated, rehabilitation and re-vegetation should commence as soon as possible.

Access roads for construction

- Existing roads and tracks should be used for access as far as possible, rather than creating new routes.
- Any additional routes and turning areas required by the contractor must be approved by the SEO, in the form of an amended ESM&R Plan indicating the position and extent of the proposed route / area.
- Roads that cross the large flood plains and severe gulley erosion should be planned well to reduce soil erosion.
- Ensure that all access roads utilised during construction (which are not earmarked for closure and rehabilitation) are returned to a usable state and / or a state no worse than prior to construction.

General construction

- Suitable demarcation must be erected around the construction area, including the servitude, areas where material is stored and the actual footprint of the development to prevent access to sensitive areas.
- There should be reduced activity at the site after rainfall events when the soils are wet. No driving off from hardened roads should occur immediately following large rainfall events until soils had dried out and the risk of bogging down has decreased.

Stormwater Management

- Where diversion berms create concentrated flows, particularly in steep and/or sensitive areas, the use of swales, silt fences or other effective erosion control measures is recommended to attenuate runoff.
- All storm water management measures should be regularly maintained.
- Implement appropriate stormwater management around the excavated trenches to prevent the ingress of surface water run-off.

Rehabilitation

- Any areas disturbed during the construction phase should be rehabilitated as fast and effective as possible.
- Any erosion channels developing during or after the construction period should be appropriately backfilled (and compacted where relevant) and the areas restored to a condition like the condition before the erosion occurred.
- A vegetation rehabilitation plan should be prepared and implemented for areas where the original vegetation was cleared or severely disturbed.
- Site rehabilitation should as far as feasible aim to restore surface draining patterns, natural soil, and vegetation to what it was prior to construction.

Management Outcome:

Maintain the Present Ecological State of the Brak River drainage system, large and small ephemeral tributaries, alluvial floodplains, and headwater drainage lines.

Target:
Construction Method Statements for crossings.
No cleared areas exposed for extended periods.
Vegetation is not cleared from the road verge.
Vegetation clearance does not extend beyond the pylon footings.
New routes are minimal (only where necessary) and plans are approved by the SEO.
Servitude and buffers are clearly fenced off or demarcated.
No off-road driving immediately after rainfall.
Stormwater management measures in place and good working order.
Rehabilitation is underway where applicable.
Rehabilitated sites conform to the plan, surrounding landforms and plant communities.

Receiving Environment
Aquatic ecosystem

Phase
Construction Phase

Construction activity
Potential pollution due to effluent from infrastructure.

Impact:
Seepage from development areas will influence wetlands adversely: the composition and structure of the drainage vegetation (more nutrients and increased ground water seepage) and the quality of the water will deteriorate (dissolved nutrients).

Mitigations:
Construction camp

- Ensure correct placing of concrete batching plants and vehicle servicing areas etc. to avoid areas susceptible to soil and water pollution. Water runoff from the sites should be controlled as far as possible to prevent adverse effects. The seasonal drainage line should be protected from an increased inflow of poor-quality water.

Management Outcome:
Maintain the Present Ecological State of the Brak River drainage system, large and small ephemeral tributaries, alluvial floodplains, and headwater drainage lines.

Target:
No potential or actual effluent contamination of ground and vadose zone.

Receiving Environment
Aquatic ecosystem

Phase

Construction Phase

Construction activity
Spreading invasive non-native plants into degraded areas.

Impact:
Spreading invasive non-native plants into degraded areas.

Consequence:
Competing with indigenous plant species.

Mitigations:
Alien Invasive Plant Management

- A weed and alien invasive species control plan should be implemented during the contract period. Control involves killing the plants present, killing the seedlings which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion.

Management Outcome:
Maintain the Present Ecological State of the Brak River drainage system, large and small ephemeral tributaries, alluvial floodplains, and headwater drainage lines.

Target:
No mature (bearing seed) alien invasive plants observed within road servitudes, staging area or construction camp.

GEOTECHNCIAL ATTRIBUTES (Bare Rock Consulting, 2022)

Foundation solutions PV area

PV structures

The site investigation indicated that the transported soil layer material is loose to medium dense and has low shear strength, therefore poor capacity to support piled foundations. It is also generally thin and should be disregarded when considering shear friction. The siltstone is good founding material.

Ramming however is likely to result in premature refusal due to the strength of the siltstone bedrock being generally shallower than 1.0m deep. Therefore, pre-bored rammed piles are recommended as the most practical solution. Depending on the supplier used, pre bored rammed piles where the profile is rammed into a hole drilled slightly smaller than the profile will generate sufficient shear friction. Alternatively, the borehole can be drilled oversize, and the pile rammed into backfilled chips or into the hole filled with concrete.

Sand screws are not considered as practical and viable options for the PV foundations as it will not generate sufficient shear resistance and will likely suffer from premature refusal in many areas across the site.

Pile installation trials have been planned to follow the geotechnical fieldwork and the results of the trials will define the design length of pre-bored rammed piles or cast in situ piles.

Conventional Structures

For conventional structures, including control rooms and lightly loaded structures at the substations, standard re-enforced strip foot foundations are recommended for both profile areas. Heavy structures should be founded on raft foundations resting on the siltstone bedrock.

Powerline Corridors

The soil profiles along the connection corridor covers the same geology as is present on site. The proposed embedment length of the foundation piles of the pylons should be between 2.0m and 2.5m depending on the total length and loads generated and the design of the powerline.

Construction Materials and Aggregates

Aggregates

Considering the construction materials required for the project it will consist of different classes of coarse aggregate for pioneer layer, yard stone as well as course and fine aggregate for concrete production. In the Karoo the best available hard aggregate that can be used for yard stone and concrete aggregate is fresh dolerite (G1 material) of which there are no significant deposits on the farm or in the immediate surrounding areas concrete. The closest commercial supplier is De Aar Stone Crushers which is located approximately 32km from the N10 turnoff.

Borrow Areas

The borrow areas close to the property consist of two types of material: weathered siltstone and weathered dolerite.
The dolerite borrow pit is located on the eastern slope of the hill close to the N10 turn-off (Borrow Area E in Figure 24).
Borrow Area F on the other side of the hill facing the N10 is a weathered siltstone borrow area.

The other siltstone borrow areas (Borrow areas B to D) are all constrained by a upper and lower competent layer resulting in a large area that have to be disturbed to gain sufficient material for aggregate.

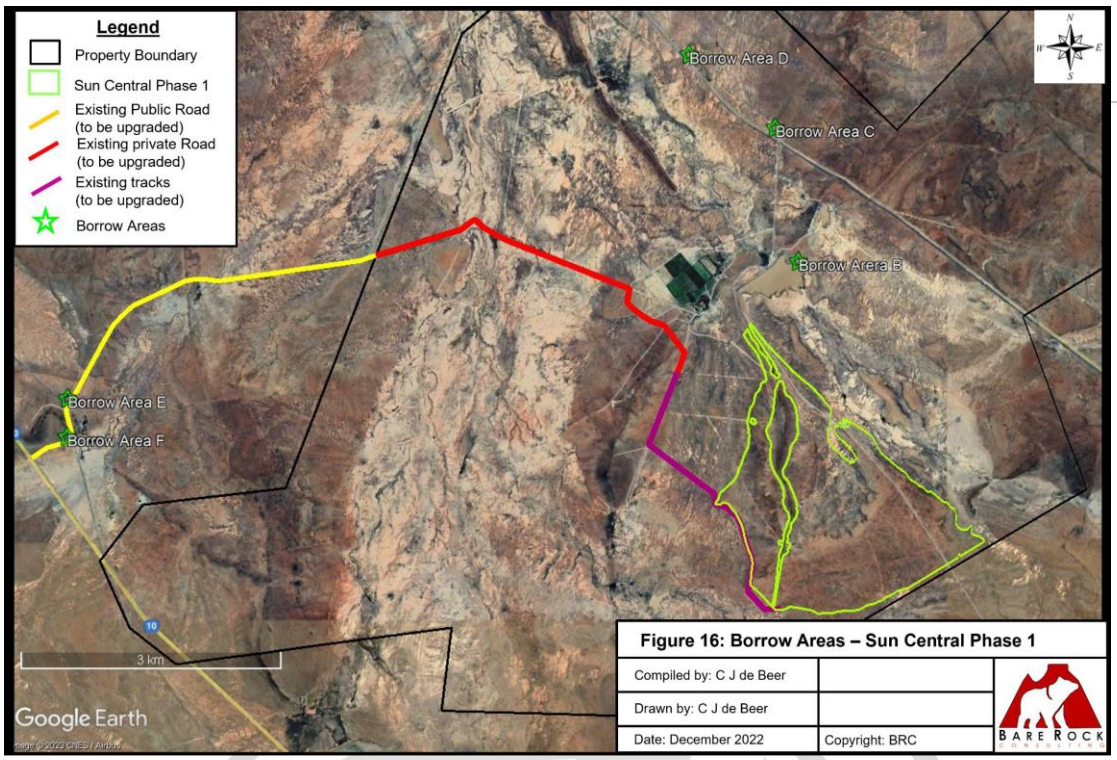


Figure 24. Location of borrow pits.

Impacts and Mitigations

Management Category:
Quarry (Sourcing material) – Importing aggregate.

Impact:
The usage of mudstone from the Karoo Supergroup for use as wearing course for the road may reduce the quality of concrete and/or roads due to its instability.

Consequence:
The usage of poor-quality aggregate is unsafe and will increase the costs of maintenance.

Mitigation:
1. It is recommended that the material (G5) for the wearing course be sourced from commercial suppliers.

Management Outcome:
Good quality aggregate material.

Target:
G5 is sourced from external suppliers.

Management Category:
Layout and Design

Impact:
Corrosion of foundation posts.

Consequence:
Increase economic cost for replacements. Safety.

Mitigation:
1. Galvanised posts will be adequate to protect the foundation post from long term corrosiveness.

Management outcome:
Minimize corrosion.

Management Category:
Drilling and/or Ram Piling (for rack foundations and fence poles).

Impact:
Poor foundation conditions or ineffective support will cause the PV structures to overturn.

Consequence:
Overturning PV structures (or arrays) will have significant financial costs.

Mitigation:
1. Pre-bored rammed piles are recommended as the most practical solution. Depending on the supplier used, pre bored rammed piles where the profile is rammed into a hole drilled slightly smaller than the profile will generate sufficient shear friction. Alternatively, the borehole can be drilled oversize, and the pile rammed into backfilled chips or into the hole filled with concrete.

Management outcome:
Good foundations for PV structures.

Management Category:
Earthworks

Impact:
Poor foundation conditions or ineffective support will cause structures to collapse.

Consequence:
Significant financial costs and safety issues.

Mitigation:

1. For conventional structures, including control rooms and lightly loaded structures at the substations, standard re-enforced strip foot foundations are recommended for both profile areas.
2. Heavy structures should be founded on raft foundations resting on the siltstone bedrock.

Management outcome:
Good foundations for conventional structures.

Management Category: Earthworks

Impact: Poor foundation conditions or ineffective support will cause powerline pylons to collapse.

Consequence: Significant financial costs and safety issues.

Mitigation:

1. The proposed embedment length of the foundation piles of the pylons should be between 2.0m and 2.5m depending on the total length and loads generated and the design of the powerline.

Management outcome:
Good foundations for pylons.

Recommendations and Conclusions

It is recommended that the following be adopted prior to final design and construction:

- That rammed piled foundations be used considering the thickness of the soil and the nature of the competent bedrock.
- The final length of the piles and the type of profile most suitable for the PV frame design will be decided after completion of the piling trials.
- The Sandstone material has a higher flakiness index and is not suitable for use as concrete aggregate, but it can be used as pioneer layer material and in the road layer works where G2 and 3 material is required. Unfortunately, only the De Aar Stone Crusher facility is an operational licenced supplier.
- The weathered dolerite as exposed in borrow area E is suitable for wearing course material. The volumes of material remaining at this borrow pit will not be sufficient and the borrow area is currently not licensed.
- It is recommended that the material (G5) for the wearing course be sourced from commercial suppliers.

The general land use potential for the site is developable with precautions due to the shallow bedrock conditions. Therefore, from a geotechnical perspective the Sun Central Phase 1 Facility PV site is suitable for the development of a Solar PV electricity generation facility, if the recommendations are adhered to.

HERITAGE ATTRIBUTES (Pelser, 2023)

Previous archaeological and heritage assessments for the Goedehoop Solar PV Project (Cluster 1 and Phases 2 & 3) recorded a fairly large number of cultural heritage (archaeological & historical) resources of varying extent and significance in the area. These included scatters of open-air surface Stone Age sites, rock engravings, later agro-pastoralist stone-walled sites, as well as historical Anglo-Boer War (1899-1902) sites. Although a fairly large number of cultural heritage (archaeological and/or historical) resources were identified and recorded during these assessments, no Grade I or II sites (National or Provincial Heritage Sites) have been identified in close proximity to the proposed development area as yet. A number of these sites are being archaeologically investigated as part of Archaeological Mitigation measures (under a SAHRA permit), while the sites are also included in a Cultural Heritage Management Plan recently submitted for implementation.

Some of the sites recorded in 2017 and 2021 are located in relative close proximity to the Additional Activities (additional boreholes, distribution and transmission lines, O&M offices and construction camp (including concrete batching)) for Sun Central Cluster 1 facility, and these will be discussed and included here (Figure 25).

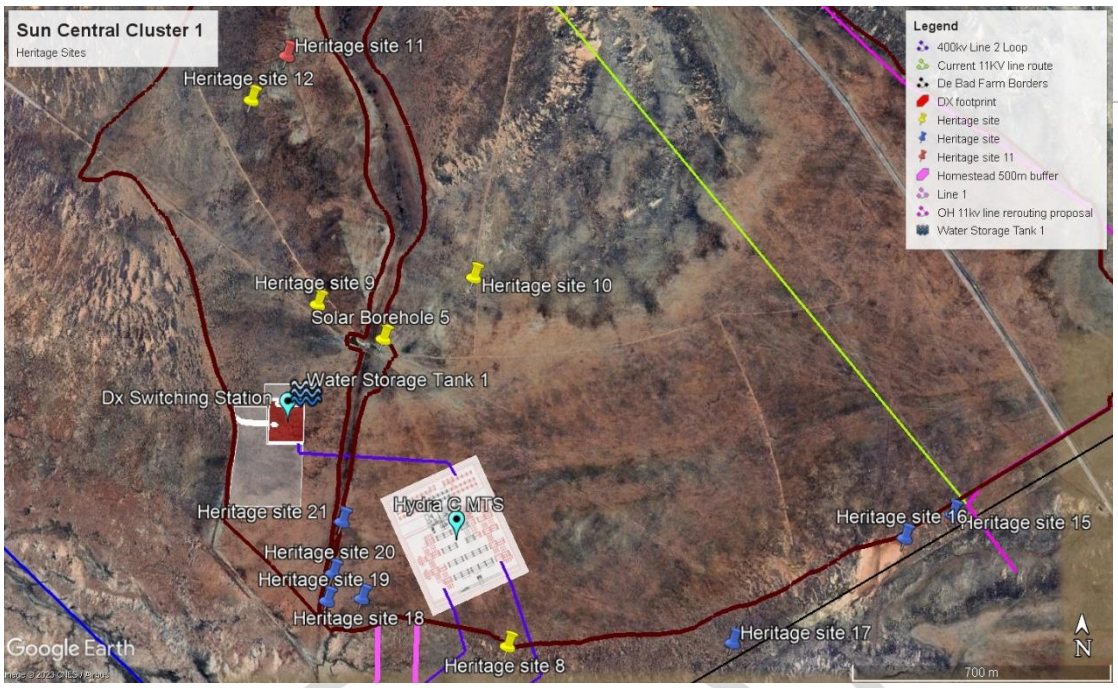


Figure 25. Map showing the location of heritage sites in close proximity to the study & development area (Google Earth 2023). The sites indicated with blue pins were recorded in 2017, with those in yellow in 2021. The red pins indicate sites of "High" heritage significance.

Sites recorded in 2017

Site 18

Site 18 is a scatter of low-density stone tools, as well as some ostrich eggshell fragments. The site was given a Medium Heritage Significance rating, and it was recommended that the site be mitigated before destruction. This site is included under SAHRA Permit for Phase 2 Mitigation.

Sites 19, 20 & 21

All three these sites are represented by stone-packed enclosures and were identified as redoubts associated with the Anglo-Boer War. Cultural material in the form of cartridges, porcelains, glass and metal objects were recorded in association with these sites.

The sites were given a Medium Significance Rating and it was recommended that they should be recorded in detail before destruction. The sites are on the banks of watercourse and development exclusion zone and a 30m no-go buffer zone was therefore recommended. These sites are also included under a SAHRA Permit for archaeological mitigation.

Sites recorded in 2021

Site 1

Site 1 is rocky outcrop with a number of rocks containing possible engravings in the form of various striations and lines (Figures 26 & 27). Although the age of the engravings could not be determined without a doubt, it could be related to proto-historic pastoralists that moved through the area. Stone Age material (tools/flakes) was also identified in the general proximity of the site. Should the site be negatively impacted by the proposed development activities it was recommended that Phase 2 Archaeological mitigation work be undertaken. This will entail the detailed mapping, photographic recording and drawing of the site and the individual engravings (through detailed rubbings) to ensure the capturing of the information contained on the site before destruction. The site was given a Medium to High Heritage Significance Rating.

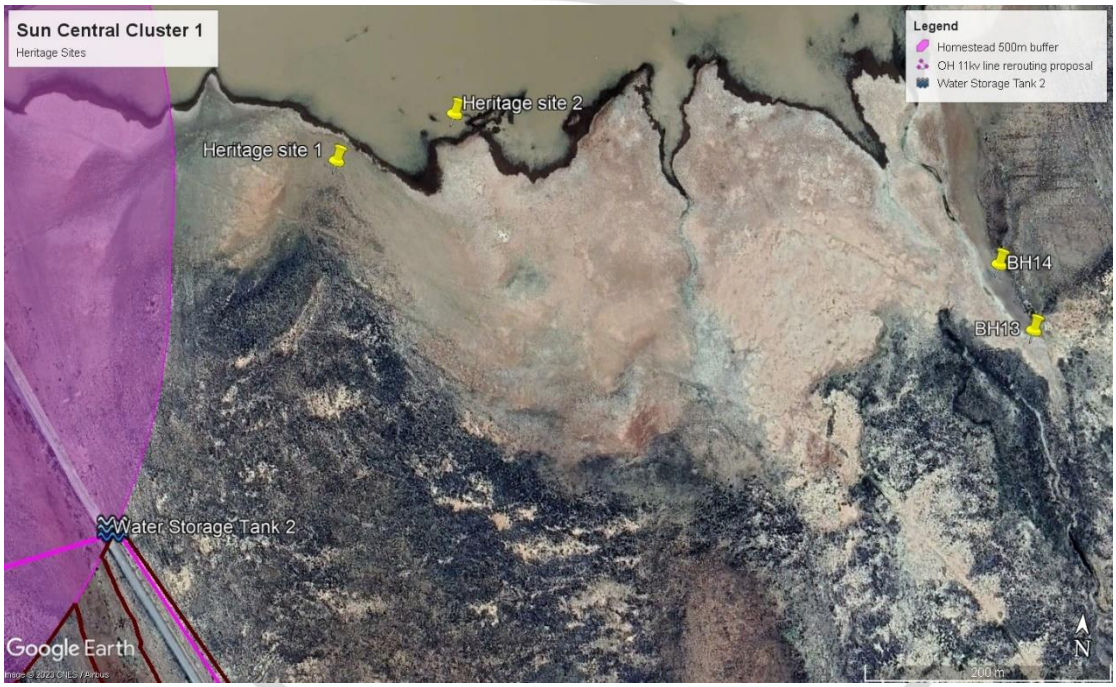


Figure 26. Heritage Sites 1 & 2, as well as landowner's homestead 500m buffer, located in proximity to Borehole 13 and the OH water storage tank.

Figure 27. View of Site 1 with rock engravings.

Sites 2, 8, 9 & 10

These sites were all open-air surface scatters with differing densities of material (flakes, more formal tools such as blades and scrapers, hammer stones) on them (Figure 28). These artefacts and sites date to between the MSA and LSA and is similar to those found in other areas during the 2017 assessments and in other studies by archaeologists in the larger geographical area. Although only 10 sites were identified, there could potentially be many more located in the area. and the focus was therefore on more open patches of ground, erosion dongas and pans. Some of the sites were located close to and around the low hill that runs through a section of the study area and around rocky outcrops. Although these sites and finds are open-air surface locations and not in a primary context, it was believed that they would contribute to our knowledge of the Stone Age of the specific and larger geographical area. The sites were given a Medium to High Heritage Significance Rating. If the sites can't be avoided by the development activities and need to be destroyed as a result then the following mitigation measures were recommended prior to development commencing:

- Mapping of surface sites to determine their extents; and
- Surface collection of material to obtain a representative sample of Stone Age material and types to determine the age of the material and sites.

Figure 28. Some of the material from Site 8. These are typical of the Stone Age scatters at most of the known sites located in the area.

Site 11

Site 11 contains the remains of what seemed to be a collapsed stone-walled enclosure close to a low hill in the area, situated on a natural rocky terrace, as well as a smaller section of stone walling (Figure 29). A grinding hollow was also recorded in close proximity. Although the age and function of these features could not be determined without a doubt at the time, it is likely related to proto-historical pastoralists and could represent the remnants of a small camp. Although the site was not completely intact, these types of sites are fairly scarce and slowly disappearing from the landscape as a result of various factors such as developments. It was therefore given a Medium to High Significance rating from a Cultural Heritage perspective. It was recommended that the site should be avoided if possible and be preserved in situ & included in a Heritage Management Plan. If the proposed development actions can't avoid the site the following was recommended:

- Detailed mapping and drawing of the site and its features; and
- Limited archaeological excavations on the site before destruction.

The developer has agreed to remove this area from the development footprint to preserve this site intact.

Figure 29. Collapsed stone-walled enclosure on Site 11.

Recommendations

Although none of the sites discussed above will be directly impacted by the additional activities (access roads, MTS, transmission & distribution lines and boreholes), it is clear from this that there are a range of archaeological and recent historical sites, features and material present in the study and development area. It is highly likely that many similar sites will be present in the areas that have not been physically assessed as yet. This will include to a large degree open-air Stone Age sites with varying densities of tool scatters.

Although there is therefore a likelihood of negative impacts on cultural heritage sites through the development of the access roads, transmission lines and MTS, the fact that there are already archaeological mitigation measures ongoing on similar sites in the area, will minimize the impacts of the Solar PV developments on the archaeological and historical heritage of the area.

It is however recommended that a Chance Find Procedure be developed and implemented for the Sun Central Cluster 1 300MW Solar PV Facility Additional Activities.

Overall rating

The impact of the proposed development on the recorded and known cultural heritage sites in the area, as well as those unknown sites likely to occur here, is therefore deemed as **Moderate** based on the Impact Assessment criteria used. There is also always a possibility of sites, features and material being missed as a result of various factors such as vegetation cover hampering visibility on the ground, as well as the often-subterranean nature of cultural heritage resources

(including low stone-packed or unmarked graves). These factors need to be taken into consideration and it is therefore recommended that a Chance Finds Protocol be drafted and implemented for the Sun Central Cluster 1 330MW Solar PV Facility additional activities.

Cumulative impacts

The cumulative impacts were not investigated as they are not particularly applicable to the Cultural Heritage sites, given the fairly localized context.

Conclusion

From a Cultural Heritage point of view it can be said that the proposed additional activities associated with the Sun Central Cluster 1 300MW Solar PV Facility on portions of various farms, between De Aar & Hanover, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province, South Africa should be allowed to continue once the recommended mitigation measures related to the archaeological & historical sites and features have been implemented.

Impacts & Mitigations

Management Category:
Clearing and Grubbing - Destruction of artefacts

Impact:
Damage to heritage sites 3, 7, 9, 10, 12 & 18 during construction.

Consequence:
Loss/damage of heritage resource.

Mitigation:
(1) If the sites can't be avoided by the development activities and need to be destroyed as a result then the following mitigation measures were recommended prior to development commencing:

- Mapping of surface sites to determine their extents
- Surface collection of material to obtain a representative sample of Stone Age material and types to determine the age of the material and sites.

Management Outcome: Preservation of cultural heritage resources.

HYDROLOGY ATTRIBUTES (GCS, 2023a)

Rainfall and run-off

The area falls within a summer rainfall area, receiving more rainfall in the high-sun half of the year (October through March). The average rainfall is in the order of 320 mm/yr. The Mean Annual Evaporation (MAP) (2 000 to 2 150 mm/yr) far exceeds the Mean Annual Precipitation (MAP) for the site, which implies greater evaporative losses when compared to incident rainfall.

Due to evaporation being about 85% more than local rainfall, non-perennial streams and rivers will only have water when there are flooding events (e.g., 1:2, 1:5, 1:50 and 1:100-year flood events). Runoff from natural (unmodified) catchments in Catchment D62D is 3.1 mm/yr, which is approximately 0.9% of the MAP and amounts to approximately 7.4 Mm^3/yr over the surface of the quaternary catchment. Average monthly rainfall peaks from October to May, whereas average monthly run-off peaks from December to April.

Climate Change Scenario

The projected rainfall for the area as a result of climate change is estimated to decrease by as much as 150 mm, reducing the total rainfall to about 170 mm/yr by 2050. It should be noted that the projected changes in the annual average number of extreme rainfall days or events throughout the district over the period 2021-2050 (under the RCP 8.5 scenario) is expected to decrease or increase.

Wetlands

Based on available National Wetland Freshwater Ecosystem Priority Areas (NFEPA) (Van Deventer, 2018) no recognised wetland units are present in the study area. The floodplain areas of the Brak River and its tributary, area however recorded as riverine systems. The proposed road development and transmission lines will infringe on these ecologically sensitive zones.

Landscape Hydrology and Flood Line Assessment

The project falls within quaternary catchment D62D of the Orange Water Management Area (WMA) (DWS, 2016). The topography of the study area is generally flat with elevations on the site typically ranging from 1310 to 1370 metres above mean sea level (mamsl).

Eight (8) hydrological response units (HRUs) describe the natural drainage for the study area. The HRUs delineated correspond well to known non-perennial rivers and drainage lines associated with the project area. Drainage in the HRUs is towards the northwest in the form of a multitude of non-perennial drainage lines, which drains towards the non-perennial Brak River. The Brak River and a tributary thereof (bounding the Sun Central 1 development) are the only recognised water courses in the area.

It was observed that the LILO 400 kV transmission line may cross three (3) ephemeral streams (but 6 crossing points).

A flood line assessment was undertaken to evaluate potential flooding risks associated with the non-perennial drainage lines in the study area. The results indicated that the area is prone to exhibiting **ponded flood occurrence zones**, in the absence of clearly defined drainage channels or streams. This is due to the micro-catchment style drainage associated with the project area. The absence of clearly defined drainage channels or flow paths was confirmed in the field. Instead, sheet flow from micro-sub catchments towards lower topographical areas or isolated depressions form temporarily flooded areas. Irregular occurrences of ponded water were visible across the project area, even in areas with no defined drainage lines or stream channels.

Based on the proposed activity (e.g., installation of transmission lines from MTS to Eskom 400 kV Line 1) no increases in flood peaks are anticipated. Considering scaling, the catchments will not be significantly altered which could lead to a reduction or increase in flood peak flows.

Site-specific sensitivity and buffers (Avoidance Areas)

The flood lines suggest a low flooding risk associated with the project area, as no clearly defined drainage lines occur. Micro-sub catchment sheet flow towards lower laying areas within the non-perennial river flood plains is likely to dominate flood propagation, and isolated flooded areas are predicted to occur. As such, no clearly defined exclusion zones/protection buffer areas could be mapped.

Flood damage associated with the proposed transmission lines is not anticipated due to these structures being raised > 5 m and anchored with cables. The MTS is situated outside zones of inundation, suggesting no flooding risk for the Sun Central Cluster 1 PV development and MTS development area.

Impacts and Mitigations

Impact:
Construction in flood occurrence zones could lead to damage to property.

Consequence:
Damage to property reduces operational efficiency and increases maintenance costs.

Mitigation:
- Care should be taken in areas where development does take place within the likely flooding zones. For these areas, proper flooding protocols (e.g., ensure drainage and stormwater systems are put in place to minimize flooding potential) and erosion prevention measures should be implemented.

Stormwater Management (CSWMP)

The ephemeral drainage line crossings can be considered critical stormwater management areas, where there will be an activity that could alter the natural conditions of the rivers/streams, which could lead to sedimentation and erosion. This is however only likely during storm events and will be limited to the construction phase of the development.

Free drainage is the preferred and least invasive stormwater management option for this project. The proposed MTS site may need some stormwater systems to manage runoff and prevent erosion.

Impacts and Mitigations

Stormwater Management (CSWMP)

Impact:

Ephemeral drainage line crossings can be considered critical stormwater management areas, where there will be an activity that could alter the natural conditions of the rivers/streams, which could lead to sedimentation and erosion if storm events occur during the construction phase.

Consequence:

Alteration of natural drainage lines may lead to ponding or increased runoff patterns (i.e., may cause stagnant water levels or increase erosion).

Mitigation:

Planning & Design

- Ensure stormwater systems are sized by a professional engineer to accommodate at least 1:100 yr flood events.
- Construction should take place during dry months, with a decreased probability of storm events.
- MTS - Free drainage is recommended. However, if erosion and ponding are noted, a vegetated swale or V-drain should be considered, that drain to outlets stabilised by rock riprap/reno mattresses. Refer to Figure 6.5 “Conceptual stormwater management system (MTS)” of the Hydrological Assessment Report.

Pre-construction

Construction should take place during dry months, with a decreased probability of storm events.

Create a Stormwater Management Plan by taking the following stormwater considerations into account:

1. Assess the site constraints and any site-specific concerns, including:
   - Specific vegetation that may need to be identified and/or isolated from the site disturbance.
   - Highly erodible soils may require additional erosion control measures.

- The type of construction should consider landform. Avoid slab-on-ground construction on steep site.
- Up-slope drainage catchments that may need to be diverted around the work site.
- Workspace limitations may require site-specific sediment control measures and/or the extensive use of skips or bins for material storage and waste management.
- Expected rainfall intensity during the period of disturbance (wet season vs dry season).

2. Stabilise the site entry/exit points

- A stabilised site access must be established and if possible, limited to one point only. The access allows for the construction vehicles to enter the work area of goods while preventing the unnecessary tracking of sediment onto the nearby environment from multiple locations. A stabilised entry/exit point normally consists of a stabilised rock pad.

3. Prevent erosion and manage stockpiles

- Suitable material storage areas must be located up-slope of the main sediment barrier (e.g., sediment fence).
- Stockpiles kept on site for more than two weeks will require an impervious cover (e.g., builder's plastic or geofabric) to protect against raindrop impact. Stockpiles of sandy material located behind a sediment fence will only need a protective cover if the stockpiles are likely to be exposed to strong winds.
- On steep sites and sites with limited available space, erodible materials may need to be stored in commercial-sized bins or minis kips before use.

4. Manage Site Waste

- Adequate waste receptacles must be provided on-site and maintained in a way that potential and actual environmental harm resulting from such material waste is minimised.
- Building activities must be carried out on a pervious surface, such as grass or open soil, or in such a manner that all sediment-laden runoff is prevented from discharging into a water body.

Construction

- Ensure access is limited to one point to prevent sedimentation.
- Construction should take place during dry months, with a decreased probability of storm events.
- Temporary stormwater systems, such as sandbags, berms or shallow channels should be used to stabilise work areas and manage stormwater runoff at watercourse crossings.
- Ensure a stormwater management plan is implemented.

- Ensure that all stormwater systems are kept clean of any debris to reduce flooding risk.
- Have fuel/oil spill kits on-site, for immediate clean-up of any hydrocarbons during the proposed activities.
- Park vehicles in dedicated areas, with drip trays to manage potential leakages.
- Conduct regular inspections and maintenance of the site to ensure that vegetation cover is adequate, and no rivulets are generated.
- MTS - Free drainage is recommended. However, if erosion and ponding are noted, a vegetated swale or V-drain should be considered, that drain to outlets stabilised by rock rip-rap/reno mattresses.

Post Construction

- Re-vegetate eroded areas to ensure reduced sedimentation risk and reduced runoff volumes to the streams.
- Don't leave excavations open or the area unrehabilitated before a rainfall month occurs.
- Stormwater management systems must be inspected annually to ensure they are operating as per the design criteria.

Management Outcome:
Minimise ponding, erosion, and sedimentation of watercourses.

Cumulative Impacts

Limited cumulative impacts are likely, as the development is linear where only small areas will be disturbed and this only during the construction phase.

Impacts and Mitigations

Receiving Environment:
Vadose zone soils

Construction activity:
Earthworks

Impact:
Disturbing vadose zone during excavations activities, contractor laydown areas.
Excavations associated with the borrow pits for road-building material may subject the surroundings to temporary sedimentation during storm events.
There is a potential for some erosion if there are storm events.

Mitigations:

- All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is essential.

- Only excavate / clear areas applicable to the project area.
- Retain as much indigenous vegetation as possible / re-vegetate.
- Exposed soils are to be protected using a suitable covering or sandbags or berms to control erosion.

Management Outcome:
Minimise disturbance to the vadose zone soils.

Receiving Environment:
Vadose zone soils

Construction activity:
Earthworks

Impact:
Hydrocarbon/oil spillages onto soils have the potential to contaminate the soils.

Mitigations:

- Have fuel/oil spill clean-up kits on site.

Management Outcome:
Remediation of any contamination of the vadose zone.

Receiving Environment:
Primary Surface water receivers/non-perennial streams

Construction activity:
Earthworks

Impact:
Erosion and sedimentation of watercourses due to unforeseen circumstances (i.e., bad weather).
Alteration of natural drainage lines may lead to ponding or increased runoff patterns (i.e., may cause stagnant water levels or increase erosion).
Installation of road culverts or pylons for transmission lines may cause temporary sedimentation after storm events.

Mitigations:

- Cover soil stockpiles with a temporary liner to prevent contamination (where required and visually determined).

Management Outcome:
Avoid sedimentation of watercourses.

Surface Water Monitoring Plan

A Surface Water Monitoring Plan must be implemented to monitor for (1) signs of erosion and contamination or pollution, and (2) water quality downstream of crossings or construction work areas (when there is water in the area to monitor AND signs of pollution). No water quantity monitoring is proposed due to the lack of flowing water in the project area. This should be enforced by the Site Environmental Officer (SEO) and all monitoring is proposed to be done by the contractor developing the site:

- Five (5) proposed monitoring points where visual inspections are recommended, upstream and downstream of the crossings, are listed in the table below as well as Table 8.1 and shown in Figures 6.3 to 6.7 of the Hydrological Assessment Report.

Likely Crossing	Latitude (WGS84)	Longitude (WGS84)	Type	Activity
C1	-30.85154438	24.27633442	Non-Perennial River (Brak River)	Road
C2	-30.89347031	24.31485336	Ephemeral Stream	400kV LO Line
C3	-30.89311282	24.31384346	Ephemeral Stream	400kV LI Line
C4	-30.89698608	24.30286398	Ephemeral Stream	400kV LO Line
C5	-30.89596689	24.30165052	Ephemeral Stream	400kV LI Line
C6	-30.89463276	24.31368255	Ephemeral Stream	400kV LO Line
C7	-30.89422033	24.31275147	Ephemeral Stream	400kV LI Line
C8	-30.86251539	24.23307474	Ephemeral Stream	Road

- Regular (e.g., weekly) visual inspections of the proposed stormwater systems, surface water resources identified in the area, active excavations and equipment / heavy machinery parking areas need to be undertaken.
- If there are visual signs of pollution, laboratory samples must be taken to screen for hydrocarbons (BTEXN).
- If erosion and sedimentation are noted, then efforts should be made to stabilise and rehabilitate the eroded areas (e.g., use temporary sandbags, earth berms, vegetation, or riprap).

- Placement and monitoring of drip trays underneath parked construction vehicles will help to determine which vehicles need to be repaired/taken off-site to prevent contamination while in service.
- Monitoring during the construction phase only. No monitoring is proposed for the operational phase of this project.

Conclusion

This hydrological assessment cannot find any grounds or identify high hydrological risks that prevent continuing with the development and licensing thereof. This is grounded on the assumption that the proposed mitigation measures, CSWMP, EMPr and EIA recommendations are implemented during the construction phase of the development.

GEOHYDROLOGY ATTRIBUTES (GCS, 2023)

Borehole No. 13 & 14 (in sub-catchment HRU4) and Solar Borehole No. 4 & 5 (in sub-catchment HRU5) have been identified for water use during the construction and operation of Cluster 1.

Radius of Influence

Available data suggest that water production boreholes in the project area dewater the fractured aquifer zone, rather than the weathered aquifer zone, as existing boreholes intercept dolerite dyke contact areas.

During pump testing on site, no interference on surrounding holes was noted, so the boreholes could be drawing from a fractured aquifer network or contact zones that are not connected. However, where a series of boreholes are drilled in the same contact, and close to each other (<500 m), borehole interference may occur as the fractures are simultaneously dewatered. Over-production may lead to fracture failures which will lead to borehole collapse.

BH14 is located approximately 60 m north of BH13 and falls within BH13's estimated radius of influence. Consequently, there is a risk that simultaneous dewatering, and/or over-production may lead to fracture failures and borehole collapse. It is therefore not recommended to utilise both boreholes at the same time. However, both unused boreholes can be made operational in case something happens to the one e.g., borehole collapses, pump fails, etc.

Impacts and Mitigations

Impact: Over-production from a series of boreholes that are drilled in the same contact, and close to each other (<500 m), may lead to fracture failures as the fractures are simultaneously dewatered. **Consequence:**

Fracture failures can lead to borehole collapse, impacting other water users.

Mitigations:

Construction

- If both BH13 and BH14 are made operational, they should not be dewatered simultaneously. The Groundwater abstraction from either borehole shall not exceed the sustainable yield calculated for BH13, that is 6.64 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 191.23 m^3/day or 5 736.96 m^3/month.
- Do not overproduce from boreholes used as part of the project. 8 hours of pumping per day is recommended.
- Routine monitoring of groundwater quality and quantity at BH13 should be sufficient to determine the impact on the local aquifer system.
- Undertake monthly field assessments of borehole groundwater for pH, Electrical Conductivity (EC)/Total Dissolved Solids (TDS), temperature and groundwater level.
- Undertake annual laboratory samples of borehole groundwater for pH, EC/TDS, COD, Turbidity, Major cations, and anions (Ca, Mg, Na, K, Cl, NO_3, SO_4, PO4, F) and Microbes (E. coli, total coliforms, and standard plate count).
- Install flow meters on any pipeline between a borehole and the point of abstraction to ensure usage remains within the sustainable yield determined in the Geohydrological Assessment Report (the sustainable yield of BH13 is 6.64 l/sec for 8hrs per 24hr day of pumping only, which is equivalent to 191.23 m^3/day or 5 736.96 m^3/month).
- Monitor abstraction rates (in litres and/or m^3) and pumping periods (duration in minutes and/or hours) from BH13 daily.
- Conduct multi borehole water level logging, to ensure that no cumulative dewatering impacts are taking place for boreholes which may be in the same contact zones, e.g., downstream and within HRU4.
- Evaluate any complaints by landowners about declining yields which may relate to the project.

Management Outcome:
Avoid risk of fracture failures and borehole collapse.

Groundwater Quality

According to the DWAF 1996 Target Water Quality Range (TWQR) for potable use, the groundwater from BH13 is suitable for domestic use, having a pH of 6.9. Only the EC of 75.5 mS/m and dissolved Calcium of 89 mg Ca/l exceed the DWAF TWQR (0 – 70 mS/m and 0 – 32 mg Ca/l, respectively).

Similarly, the groundwater abstracted from Solar Borehole No. 5 is suitable for domestic use with a pH of 6.7. Four water quality parameters exceeded the DWAF TWQR, specifically EC (82.7

mS/m > 70 mS/m DWAF TWQR), TDS (466 mg/l > 450 mg/l DWAF TWQR), Dissolved Ca (94 mg Ca/l > 32 mg Ca/l DWAF TWQR) and Dissolved Mg (37 mg Ca/l > 30 mg Ca/l DWAF TWQR).

The groundwater can be described as Ca-HCO3 and is typical of shallow fresh groundwater types or recently recharged groundwater. High EC indicates a high salt load (dominated by Ca, Mg, Cl, NO3 and HCO3 ions), which could result in scaling in piping exposed to heat, or in utensils used to boil water. Consequently, water softeners or deionisation plants will be required for the treatment of groundwater that will be used for domestic use or cleaning solar panels.

Impacts and Mitigations

Impact:
Hard water is aesthetically unpleasant for domestic use and can result in scaling in piping exposed to heat, or in utensils used to boil water.

Mitigations:
Construction

- Potable water will be supplied by the contractor(s) from a commercial source or permissible boreholes: Borehole No. 13, Borehole No. 14 and/or Solar Borehole No. 4 & 5.
- Treat the groundwater abstracted from boreholes with a deionisation (or other suitable) treatment plant if it is to be used for domestic use and/or cleaning solar panels. Groundwater need not be treated if it will only be used for road construction, e.g., road stabilisation or dust suppression.

Management Outcome:
Groundwater for domestic use falls within DWAF's TWQR (1996).

Rate of Abstraction

Based on the pump test data generated, 8-hour abstraction is recommended. However, smaller size pumps can be installed if 24hr pumping is required. This is however not advised, as the boreholes may be over pumped, decreasing the borehole life and increasing the probability of pump failure.

Impact:
Uncontrolled abstraction can lead to over pumping boreholes, reduced borehole life, pump failure and depletion of the underground aquifer.

Mitigations:
Construction

- Do not overproduce from boreholes used as part of the project: 8 hours of pumping per day is recommended.

- Water should be pumped from the boreholes to dedicated storage tanks to build up a reserve, whereafter the boreholes are only used to top up the storage tanks.
- Groundwater abstraction from BH13 (or BH14) shall not exceed its sustainable yield, that is 6.64 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 191.23 m3/day or 5 736.96 m3/month.
- Groundwater abstraction from Solar BH No. 5 (or Solar Borehole No. 4) shall not exceed its sustainable yield, that is 0.23 l/sec (for 8hrs per 24hr day of pumping only), which is equivalent to 6.62 m3/day or 198.72 m3/month.

Management Outcome:
Avoid over pumping boreholes, decreasing the life of a borehole, pump failure and unsustainable rates of abstraction that deplete the groundwater reserve faster that it can recharge.

NOISE ATTRIBUTES (dBAcoustics , 2023)

Noise receptors and projections

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

- The increase in the noise level because of the construction phase, and
- The possible overall noise level produced by access roads.

The prevailing ambient noise level may change according to the season of the year when agricultural activities, insects or wind becomes the pre-dominant contributor to the higher ambient noise levels for a specific area.

IMPACTS AND MITIGATIONS

Management Category:
Employee management - communicating.

Impact: Noise increase at the boundary of the project footprint and at the abutting houses during construction activities.

Consequence: Decrease in sense of place. Disturbance to local farmsteads.

Mitigation:
Construction activities should be limited to daytime only.
Management Outcome:
Minimize noise disturbance to noise receptors/farmhouses.

Management Category:
Construction Plant Management including Deliveries – operating equipment.

Impact: Noise increase at the boundary of the project footprint and at the abutting houses from construction equipment.

Consequence: Decrease in sense of place. Disturbance to local farmsteads.

Mitigation:

1. Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels and during daytime only.
2. The speed limit to be always adhered to.
3. Road maintenance must be done on a regular basis to avoid the creation of potholes.

Management Outcome:
Minimize noise disturbance to noise receptors/farmhouses.

Conclusion

There will be a shift in the prevailing ambient noise level in the immediate vicinity of the road and at Farmhouse C on an intermittent basis but at a distance more than 500m from the road the intrusion level will be insignificant and in line with the Noise Control Regulations, 1994 provided that the following noise mitigatory measures are in place at all times:

- The speed limit to be always adhered to;
- Maintenance to be done on a regular basis to avoid the creation of potholes.

The large variations in the meteorological conditions and the geographical relations between the traffic noise and the noise sensitive receptors allow for the decrease in the noise as it propagates from access roads.

The potential noise impact from access roads will be low and authorisation may be granted from an environmental noise point of view.

PALAEONTOLOGY ATTRIBUTES (Almond, 2023)

The palaeosensitivity of the 'broader' project area has been provisionally rated as Very High by the DFFE Screening Tool. However, previous palaeontological site visits to the same area indicate that this region is generally of LOW palaeosensitivity, despite being underlain at depth by potentially fossiliferous continental sediments of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup) of Middle Permian age, as well as small, reworked blocks of petrified wood and low diversity trace fossil assemblages of low scientific interest being recorded from older alluvial deposits and bedrocks in the area (Almond, 2017), (Almond, 2021), (Almond, 2022).

No High Sensitivity fossil sites have been recorded within the Sun Central Cluster 1 or Phases 2 or Phase 3 solar project areas (including all associated infrastructure such as grid connections, substations, access roads etc). The low overall palaeosensitivity is probably largely due to rarity of well-preserved fossil remains within the bedrocks concerned, the generally very poor levels of

bedrock exposure (especially in flat-lying regions), extensive baking of the sedimentary bedrocks by dolerite intrusions in the region as well as the generally low sensitivity of the superficial deposits in the region.

The construction phase of the proposed additional infrastructure is very unlikely to cause significant negative impacts on local palaeontological heritage resources. There are therefore no objections on palaeontological heritage grounds to authorise the proposed additional infrastructure.

If any substantial fossil remains (e.g. vertebrate bones, teeth) are exposed by surface clearance or excavations during the construction phase of the development, the Chance Fossils Finds Protocol should be fully implemented. These recommendations should be included within the EMPrs for the Sun Central Cluster 1 solar PV facility and associated infrastructure developments.

Impacts and Mitigations

Receiving Environment:
Palaeontology resources

Phase
Construction

Construction activity:
Clearance and excavations

Impact:
Earthmoving activities could damage or destroy artefacts or fossils.

Consequence:
The loss of a heritage resources undermines the understanding of previous generations that is vital to creating a sense of unity, belonging, and even pride among South Africans (direct).

Mitigations:
If any substantial fossil remains (e.g., vertebrate bones, teeth) are exposed by surface clearance or excavations during the construction phase of the development, the Chance Fossils Finds Protocol must be fully implemented.

Management Outcome:
Protection and preservation of heritage resources.
Target:
No unnecessary damage or destruction of heritage resources.

ecoleges
Environmental Consultants

CHANCE FOSSIL FINDS PROTOCOL FOR SUN CENTRAL CLUSTER 1 AND ASSOCIATED INFRASTRUCTURE ON VARIOUS FARMS NEAR HANOVER	
Province & region:	Northern Cape: Pixley Ka Seme District
Responsible Heritage Resources Agency	SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za).
Rock unit(s)	Middle Permian Adelaide Subgroup (Lower Beaufort Group, Karoo Supergroup), Late Caenozoic alluvium, pan sediments, surface gravels, soils
Potential fossils	Rare vertebrate bones and teeth, petrified wood and other plant material, trace fossils within Beaufort Group sediments. Fossil mammal bones, teeth, horn cores, freshwater molluscs, plant material in Late Caenozoic alluvium and pan deposits. Blocks of reworked silicified wood within surface gravels and older alluvium.
ECO protocol	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (*N.B.* safety first!), safeguard site with security tape / fence / sand bags if necessary.
	2. Record key data while fossil remains are still *in situ:* Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo Context – describe position of fossils within stratigraphy (rock layering), depth below surface Photograph fossil(s) *in situ* with scale, from different angles, including images showing context (*e.g.* rock layering)

	3. If feasible to leave fossils *in situ*: Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume	3. If *not* feasible to leave fossils *in situ* (emergency procedure only): *Carefully* remove fossils, as far as possible still enclosed within the original sedimentary matrix (*e.g.* entire block of fossiliferous rock) Photograph fossils against a plain, level background, with scale Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
	4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.	
	5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency	
Specialist palaeontologist	Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (*e.g.* museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Agency. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards.	

SOCIAL ATTRIBUTES (Equispectives Research & Consulting Services, 2023)

The 2023 report assessed potential additional social impacts that may be created by the access road and additional facilities. It is an addendum to the full SEIA and must be read with the August 2022 SEIA report. The socio-economic baseline described in the original ESIA provide baseline information regarding the socio-economic environment which is still relevant. The aim of the addendum is to identify possible social and economic risks/fatal flaws and to suggest ways in which these impacts can be mitigated. This will assist decision-makers on the project in making informed decisions by providing information on the potential or actual consequences of their proposed activities.

Impacts identified

The impacts described in the SIA of August 2022 are all relevant to both the amendment and access road. However, some impacts may increase in its intensity and be more relevant than others.

Impacts and Mitigations

Management Category:
Pre-construction and Construction Phases - Change in land use – livelihoods

Impact:
The construction of a solar electricity generating facility and its associated infrastructure will lead to a change of land use and livelihoods.

Consequence:
Change of land use can potentially impact negatively on the livelihood of the affected farmer, which is sheep farming.

Mitigations:
(1) Livestock must have right of way.

(2) Construction vehicles must wait for the animals to cross before they continue with their journey.

(3) The contractor must compensate the farmer for any losses of livestock due to irresponsible behaviour by the construction teams.

(4) A protocol on compensation must be agreed upon and be in place before construction commences.

(5) A claims procedure must be in place and shared with all the stakeholders before the construction commences.

(6) The farmers must be given a construction programme with sufficient leeway to ensure that they can move their livestock before construction activities commence.

(7) The principle of "locals first" must be used to ensure that neighbouring landowners benefit from requirements for accommodation or any other services that they can deliver.

Management outcomes:

Minimize change in livelihoods of surrounding communities.

Targets:

- No harm to livestock
- In the case of harm to or loss of livestock, the farmer is compensated according to accepted protocols and procedures.
- Construction programme provide to affected farmers.
- Locals including neighbouring landowners are used for services where possible.

Management Category:
Damage to Farm Infrastructure

Impact:
Damage to farm infrastructure

Consequence:
Economic costs in replacing damaged infrastructure.

Mitigations:
Pre-construction Phase

(1) SolarAfrica Energy must develop a grievance mechanism.

(2) The grievance mechanism must include a complaints procedure that allows the landowners to log their grievance and submit a claim for damages.

(3) The construction teams must be educated about the impact of damages to fences, water troughs and farm gates, through toolbox talks.

Construction Phase

(4) Affected landowners must be compensated for losses resulting from any damage to farm infrastructure.

(5) Inspections of boundary fences should be done on a daily basis in areas where there are activities.

(6) All fences should be inspected and be kept clear of debris, especially in the rainy season.

Management outcome:

Minimize damage to farm infrastructure.

Targets:

- A grievance mechanism.
- Fences are clear of debri.

Management Category:
Loss of livestock

Impact:
Farm gates being left open, or not being closed properly by construction teams.

Consequence:
Loss of livestock

Mitigations:
Pre-construction Phase

(1) The construction teams must be educated about the closing/locking farm gates, through toolbox talks.

Construction Phase

(2) Inspections of boundary gates should be done on a daily basis in areas where there are activities.

(3) Affected landowners must be compensated for their losses if any livestock losses occur.

(4) Develop a grievance mechanism and a complaints procedure that allows the landowners to log their grievance and submit a claim for damages.

Management outcome:

Minimize loss of livestock.

Targets:

- Toolbox talks include closing/locking of farm gates.
- Boundary gates are closed/locked.
- A grievance mechanism.

Conclusions and recommendations

None of the possible impacts is seen as a fatal flaw in the possible successful execution of the proposed project. Most of the potential impacts can be mitigated. The importance of addressing the potential impacts as early in the project cycle as possible must be underlined, since failure to do so may result in the development of risks and an exponential increase in project cost. The following key social impacts have been identified:

- Change of land use/Livelihoods
- Property values
- Traffic and roads
- Damage to farm infrastructure
- Economic opportunities
- Sense of place

There will also be cumulative impacts from other phases of this project and other similar projects in the area, which have been discussed in the August 2022 SIA. Based on the findings of this study, the following key recommendations are made:

- A community liaison officer that is trusted by the community and has the necessary skills must be appointed before construction commences.
- Protocols on farm access, compensation, communication, and road maintenance must be agreed upon and be in place before construction commences.
- A grievance mechanism and claims procedure in case of damage to infrastructure or loss of livestock must be in place and shared with all the stakeholders before the construction commences; and
- Economic benefits must be enhanced, and local labour and procurement should be prioritised.

Based on the findings of this report, it is recommended that the project continues, on the conditions that the mitigation measures are implemented.

TRAFFIC ATTRIBUTES (Sturgeon Consulting (Pty) Ltd, 2023)

The objective of the Traffic Impact Assessment (TIA) is to assess the impact of the proposed Main Transmission Substation and associated Eskom grid (network) integration infrastructure activities on the existing external road network surrounding the development. The report identifies the access route to the site, comments on the condition of the existing roads in the site vicinity, identifies access points to the site and recommends road improvements to minimise the impact on the surrounding road network.

During the project cycle, it is anticipated that the following vehicles will need to access the site:

- Building materials are to be transported by single-unit trucks within the road freight limitations of South Africa.

- Workers from the surrounding area will be transported by minibus taxi/shuttle/bus or private car.
- Transformers will be transported by abnormal load trucks for which a permit will need to be applied for in terms of Section 81 of the National Road Traffic Act and authorisation needs to be obtained from the relevant road authorities to modify the road reserve to accommodate turning movements at intersections.

Road Network in the Site Vicinity

National Road 10 (N10)

The N10 is a Class 1 rural principal arterial with an approximate width of 10.5m in the vicinity of the site. The N10 is a two-lane undivided road with one lane per direction and paved shoulders. The N10 is a national interprovincial road linking Gqeberha in the south with Hanover and De Aar in the north and runs all the way north-west, past Upington to the eastern Namibian border.

District Road (Burgerville Road)

Burgerville Road is a gravel two-lane undivided road with one lane per direction and an approximate width of 7.1m.

Internal Roads

Access from the Burgerville Road will be taken at an existing farm access approximately 5.2km from the N10/Burgerville Road intersection. The internal road will follow the existing road/track up to a point where a new road will be constructed to the Switching Station and Main Transmission Substation (point 2). The length and width of the new road build will be ± 2,65 km and 8 m (excluding the side/cut-off drain), but 11 m (including the side/cutoff drain).

Road Conditions

Existing road infrastructure is well developed in the area and thus well connected to surrounding major centres via regional routes. The combination of national roads and first and second order roads provides good inter- and intra- regional accessibility. The South African National Roads Agency (SANRAL) is responsible for the maintenance of the national roads which are in a good condition, however heavy traffic contribute significantly to the deterioration of the road surfaces.

During the site visit it was noted that the national roads maintained by SANRAL in the vicinity of the site were generally in a good to fair condition, except for the N10 between the Middelburg turn off and Hanover which was noted to be in a poor condition and dangerously potholed as a result of the frequent trips by manganese haulers.

The gravel provincial roads in the vicinity of the site were in a fair to poor condition. Road freight, transport, specifically heavy vehicle transport, significantly contributed to the deterioration of the road surfaces and the maintenance of these roads are not always adequate.

Recommendations

The mitigation measures to address the possible traffic impact are:

- Construction of the N10/Burgerville Road intersection; and
- Upgrading of Burgerville Road up to the access point (approximately 5.2km) at Farm Riet Fountain No. 39C.

No other remedial or mitigation measures will be required to accommodate the additional traffic generated by the proposed development of the Main Transmission Substation (MTS) as well as the construction of a Loop-in Loop-out from the MTS to the 400 kV Hydra-Poseidon Tx overhead line (Line 1), and other projects on the Sun Central Cluster 1 (300 MW) Solar PV footprint between De Aar and Hanover, Northern Cape Province.

VISUAL ATTRIBUTES (VRM Africa, 2023)

Impacts and Mitigations

Policy Fit	**High**
In terms of the local and regional planning, the expected visual/ landscape policy fit of the landscape change is rated High. Local and District Municipality guidelines are in favour of Renewable Energy (RE) for economic development opportunities. Planning also emphasises the value of eco-tourism, but no tourism activities were located within the project Zone of Visual Influence (ZVI). The limitation to planning is that the project does not fall with a Renewable Energy Development Zone (REDZ), but does fall within a Strategic Transmission Corridor, where infrastructure development associated with RE projects is encouraged. However, the project is located in close proximity to an Existing Eskom power line corridor that does include 400kV power lines, and the Substation has already been authorised (not built). In terms of regional and local planning fit for landscape and visual related themes, the expected visual/ landscape policy fit of the landscape change is rated Medium to High +VE. The moderation of the landscape Policy Fit pertains to the Lights at Night impacts from the MTS Overhead Flood Lights, that have the potential to significantly degraded the local area nigh-time sense of place/ scenic resources.	

Zone of Visual Influence (ZVI)	**Local (LILO/Communication Tower/Access Roads)** **Regional (Overhead lighting)**
The visible extent, or viewshed, is "the outer boundary defining a view catchment area, usually along crests and ridgelines" (Oberholzer, 2005). In order to define the extent of the possible influence of the proposed project, a viewshed analysis was undertaken from the	

proposed site at a specified height above ground level. The extent of the viewshed analysis was restricted to a defined distance that represents the approximate zone of visual influence (ZVI) of the proposed activities, which takes the scale, and size of the proposed projects into consideration in relation to the natural visual absorption capacity of the receiving environment.

LILO and Communication Tower:

Due to the monopoles 32m height in relation to the relatively flat gradient of the surrounding terrain within the 6km distance of the viewshed, theoretical visual incidence covers the full area for all the routing. However, due to the existing presence of pylons in the landscape that increases the Visual Absorption Capacity, as well as the limited visual footprint of these structures, the ZVI is likely to be contained to the Middle Ground and influence landscape resources within 6km from location (Figure 30). ***The Extent is defined as Local Area.***

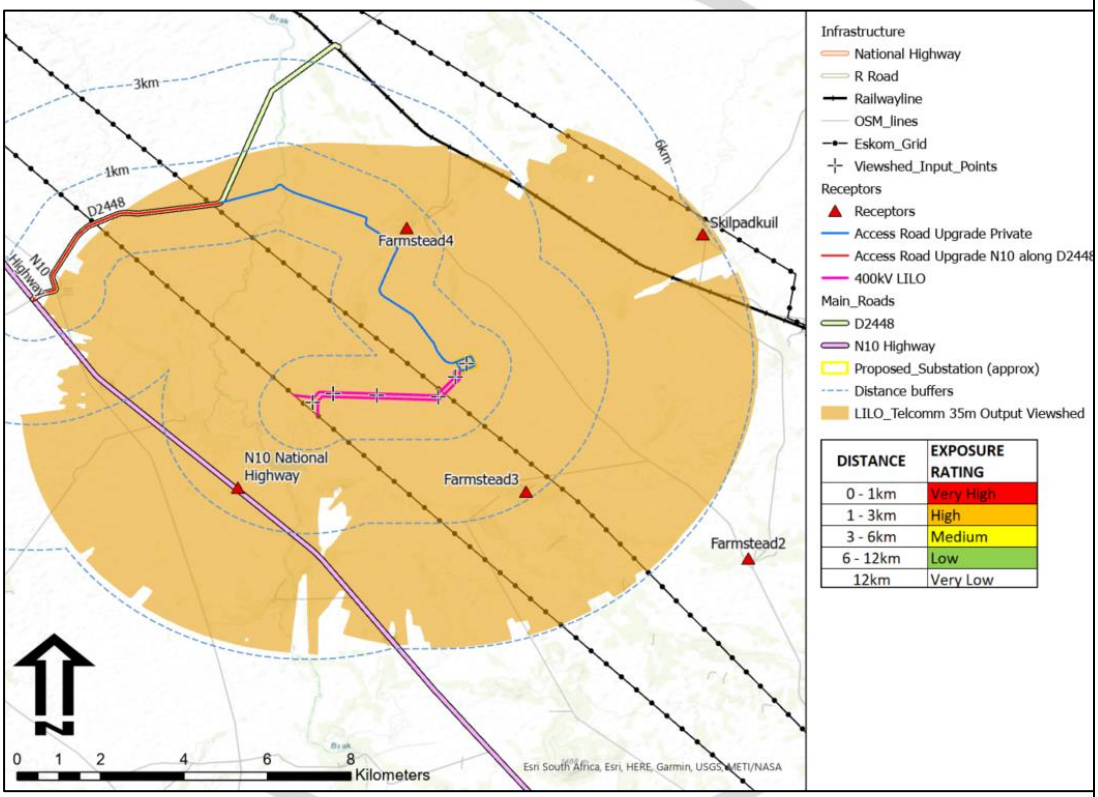


Figure 30. LILO and Communication Tower Viewshed.

MTS Overhead Lighting:

Due to the height of the overhead lights in relations to the relatively flat terrain of the surrounds, the views extents over a wide area to the west and east, with the northern low ridgeline reducing views to the north, and higher ground reducing views to the south. As the area does have a Dark Sky sense of place, the landscape change is likely to be clearly

noticeable to the surrounding areas (Figure 31). ***The ZVI is likely to extend the full area of the viewshed and is thus defined as Regional as it will extend into the Background Distance areas.***

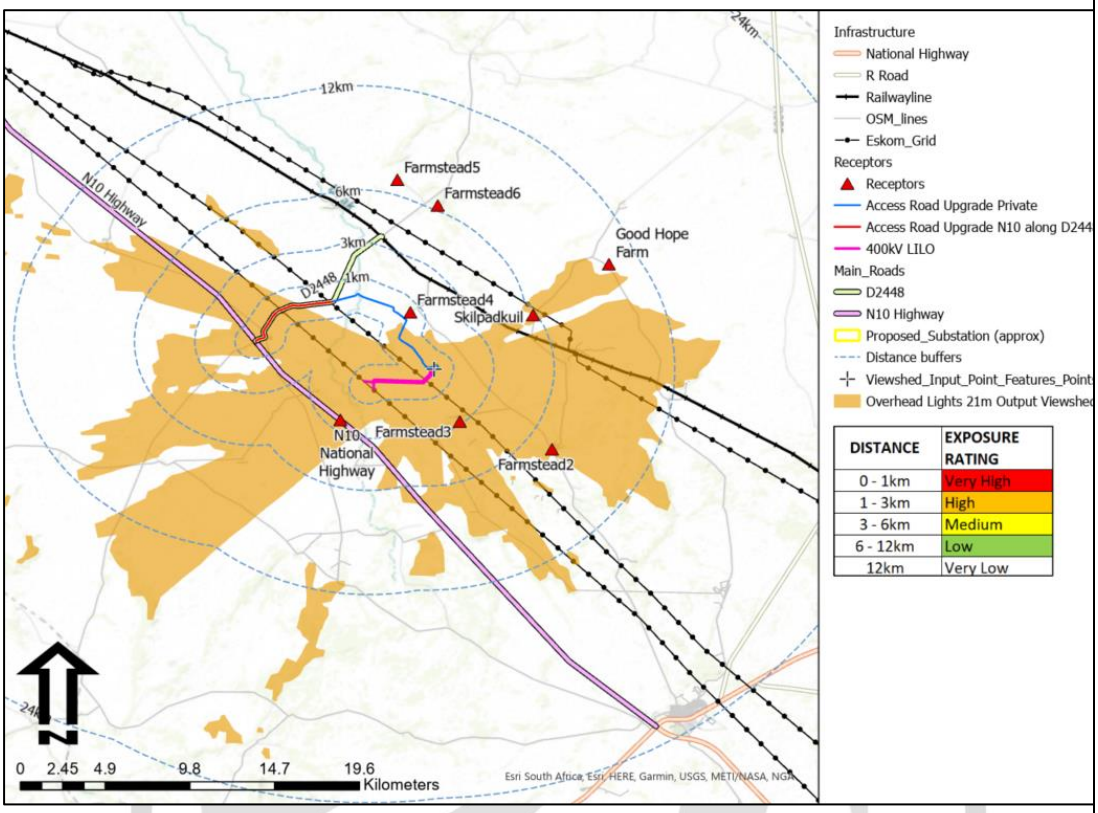


Figure 31. Overhead Lighting Viewshed.

Access Roads:

Due to the low height of the road landscape change, with vehicles and dust from moving vehicles being a temporary visual element, the viewshed is contained. However, due to the flat terrain of the road upgrade locality, the movement of vehicles will be noticeable in all sectors or the viewshed. The Zone of Visual Influence is likely to be contained to the Foreground area with the landscape change noticeable within 2km during construction and localised to the immediate surrounds for the lifetime of the operation (Figure 32). **The Visual Extent of the visual impact is thus defined as Local**. However, mitigation is required during construction to reduce the negative influence of dust from moving vehicles.

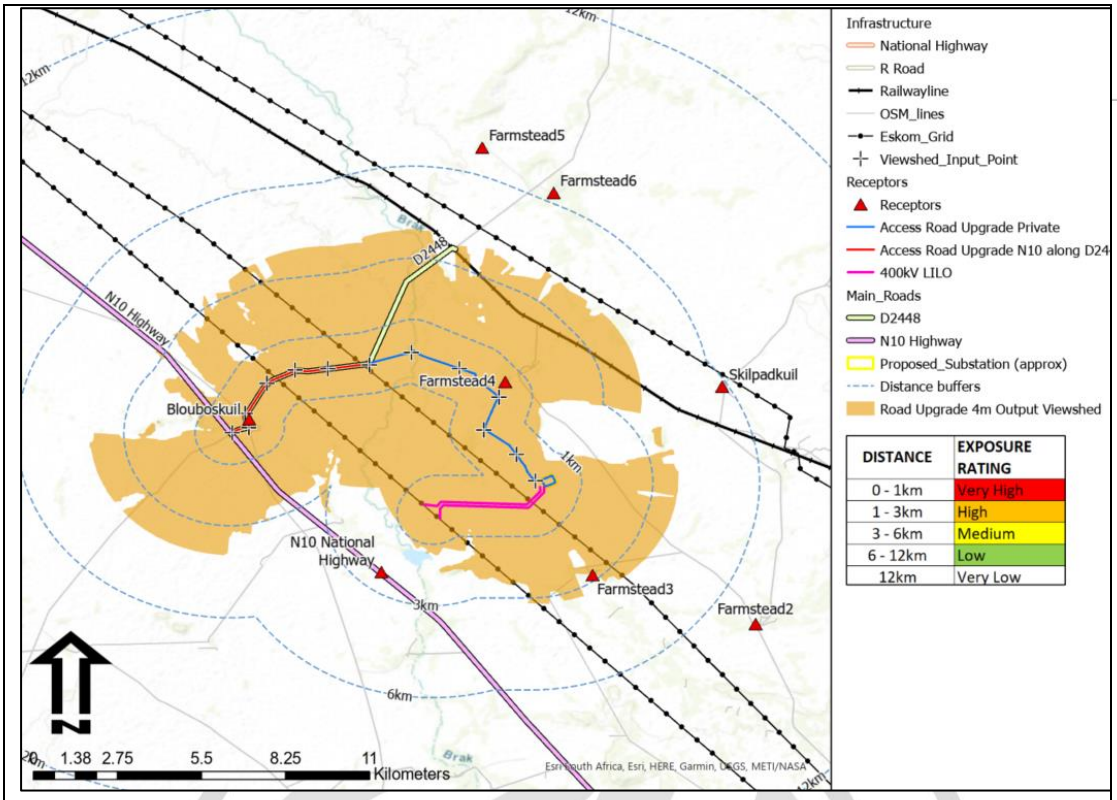


Figure 32. Access Roads Viewshed Receptors and Key Observation Points.

Receptors and Key Observation Points	**8 Receptors and 4 Key Observations Points (with no tourism activities or tourist view-corridors)**

Key Observation Points (KOPs) are the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. The viewshed analysis found four Key Observation Points located within the project ZVI (Figure 33).

Name	Theme	Exposure	Motivation
N10 National Highway.	All landscape changes	Medium	The N10 is a National Highway and is likely to be used by tourist who are likely to be sensitive to landscape change.
Farmstead 3	Overhead Lights/ OHPL/ communication Tower	Medium to High	Located in a remote and rural setting, it is likely that retaining the existing arid farming sense of place is important to the receptor.

Skilpadskuil / Good Hope Farm	Overhead Lights	Medium	Located in a remote and rural setting, it is likely that retaining the existing arid farming sense of place is important to the receptor.
Blouboskuil Labour Cottages	Road upgrades	Very High	Very High Visual Exposure to nuisance dust effect generated from moving construction and operation vehicles.

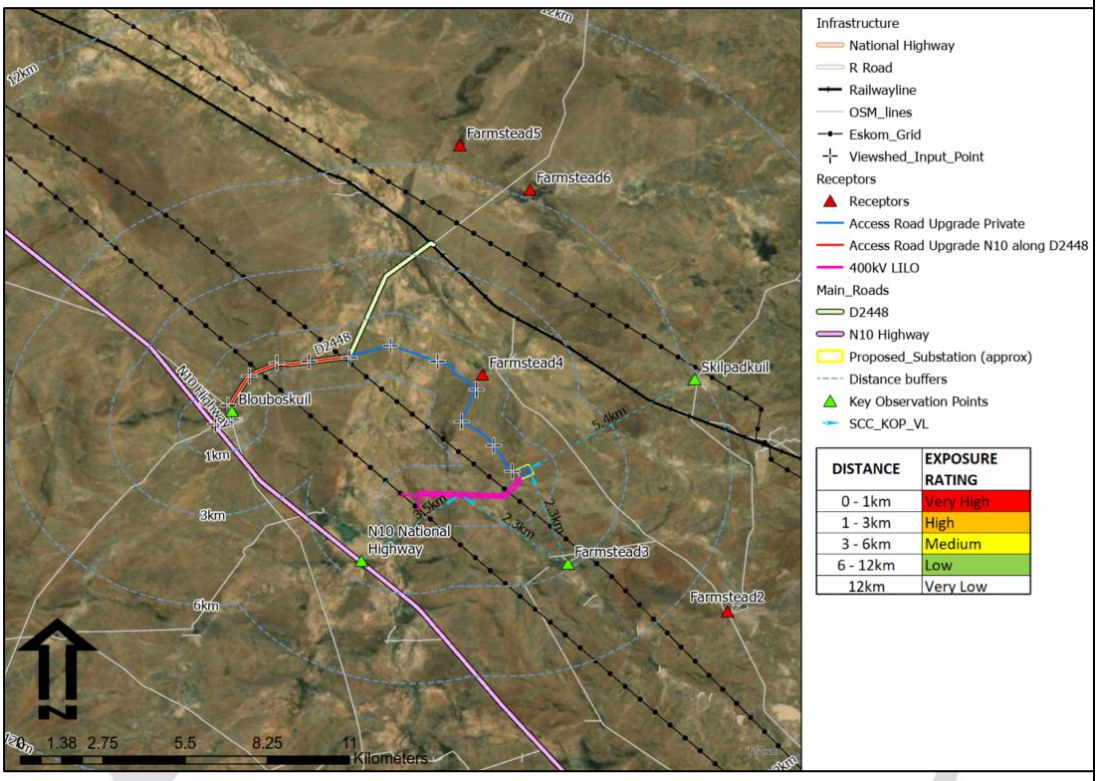


Figure 33. Receptor Map.

SCENIC QUALITY	Medium to High

The scenic quality of the proposed development site is rated Medium to High. Landform is rated medium for the more prominent areas of the property as the landform shapes and sizes are moderate in scale and are interesting, though not dominant or exceptional. Vegetation for the entire area was rated medium to low as it is primarily covered by grasslands and, while offering some variety of vegetation, only one or two major types are visually dominant. As water features are absent or not noticeable in the landscape, scenic quality for water is rated nil. Colours in the landscape are mainly provided by the vegetation and, while there is some variety and colour contrast, this is not a dominant scenic element. Adjacent scenery is rated medium to high due to the undulating karoo landscape that includes low hills

and wide valleys where a clear absence of manmade modifications enhances the visual quality of the locality. Landscape Scarcity is rated medium as the scenic quality of the landscape with its distinctive colour is similar to the surrounding landscape within the region. As there are no dominating manmade modifications in the landscape, the category for Cultural Modification is rated as a positive landscape element as the existing rural agricultural land use favourably enhances visual harmony and adds to the Medium to High levels of Scenic Quality.

Landforms on the site include:

- Minor drainage lines.
- Several minor landform features.
- Minor ridgelines.
- Road crossing of the Brak River.

Other than the road crossing over the Brak River, no significant topographic features or steep slopes were identified within the study area. The Brak River will need to be flagged as a risk area as this is a unique landform. Recommendations on the suitability of the crossing will need to be informed by the Surface Water Hydrologist findings.

RECEPTOR SENSITIVITY TO LANDSCAPE CHANGE	**Medium**

Receptor sensitivity to landscape changes is rated Medium. As the area is rural and remote with the adjacent property owners who are farmers, maintenance of visual quality was rated High for the more prominent and bordering areas of the site. As the area is remote, the amount of use is rated Low and with Medium regional visual resources, public interest in maintaining the site visual resources is also rated low. Maintenance of visual quality to sustain adjacent land uses is rated Medium to High as eastern property owners have indicated concern regarding the semi-industrial type of development in a deep rural setting. The maintenance of visual quality to sustain special area management objectives is rated Medium for the rural karoo area, but High for the River Washes, that would need to be regarded as Special Areas.

Visual Resource Management (VRM) Assessment

The Bureau of Land Management (BLM) has defined four Classes that represent the relative value of the visual resources of an area and are defined making use of the VRM Matrix:

i. Classes I and II are the most valued

ii. Class III represent a moderate value

iii. Class IV is of least value

Class I (No-go)

- Any river / streams and associated flood lines buffers identified as significant in terms of the WULA process.
- Any wetlands identified as significant in terms of the WULA process.
- Any ecological areas (or plant species) identified as having a high significance.
- Any heritage area identified as having a high significance.

Class II (As per Surface Water Hydrologist Recommendations)

- Hydrological washes (The OHPL do cross over areas that fall within Hydrological Washes. While this does not preclude development, management of these areas needs to be carefully considered to ensure that the road does not wash away and result in landscape degradation)

Class III (suitable with mitigation)

- Nama Karoo Rural (These areas are suitable for development with mitigation to ensure that the existing rural karoo sense of place is retained to some degree.)

Refer to Figure 34 visual representation.

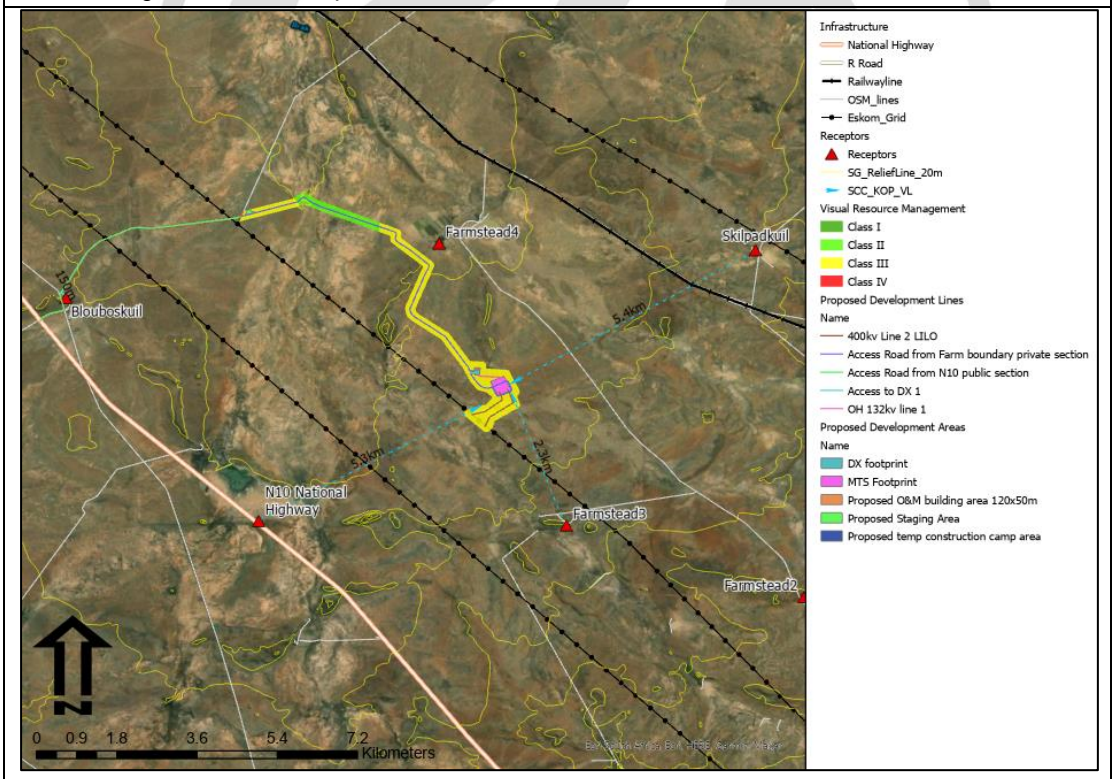


Figure 34. Detailed Visual Resource Management Classes map.

EXPECTED Impact significance	
COMMUNICATION TOWER	
Medium (without mitigation)	Without mitigation the visual contrast generated has the potential to be Strong for Colour and Texture. Although seen from over a distance, the lights at night will create a new light source in the landscape, and if the mast is painted a blue colour, the proposed mast landscape change will be clearly visible. With the painting of the mast a mid-grey colour, the distance from the receptor would allow for atmospheric influence, and minimal visual contrast. With mitigation that Class III Visual Objective would be met.
Low (with mitigation)	As the proposed tower landscape change is located within the context of the substation (authorised but unbuilt), once the substation is built the VAC levels will be higher. The distance from the receptors allows for atmospheric influence, where with mitigation, the landscape change would meet the Class III Visual Objectives.
OVERHEAD POWERLINE	
Moderate (-ve) (without mitigation)	The OHPL are located in Medium to Low Visual Exposure to two receptors. As the routing length is short and is located in close proximity to two existing power lines, the VAC levels are higher, and it is unlikely that the OHPL landscape change would be noticed by causal observers located as the receptor locations. As such, not Visual Impact specific mitigation is proposed, but generic best practice is required to ensure that local landscape resources are not degraded by soil erosion along access tracks.
Minor (-ve) (with mitigation)	The existing Eskom power lines already defines the landscape along of the routing. Local impacts could occur with low probability from soil erosion. Limited receptors are included in the project ZVI.
MTS OVERHEAD FLOODLIGHTS	
High (-ve) *(without mitigation)*	Due to the existing dark sky sense of place in this deep rural setting, the proposed Overhead Flood Lights will dominate the attention of the casual observer. As light spillage night has the potential to travel long distances, it is likely that light spillage and pool of light effects would occur that would not meet the Class III Visual Objects. Mitigation is recommended and should include light spillage reduction management where lighting is side shielded and downward facing, the overhead poles are reduced in height to approximately 8m, and that Mesopic lighting is used to reduce the influence of the lights at night. With mitigation, the Class III Visual Objects would be met. As this could a negative precedent for deep rural development, ***potential negative***

	Cumulative Effects are flagged as Medium to High, and mitigation is recommended.
Medium (-ve) *(with mitigation)*	As the proposed tower landscape change is located within the context of the substation (authorised but unbuilt), once the substation is built the VAC levels will be higher. The distance from the receptors allows for atmospheric influence, where with mitigation, the landscape change would meet the Class III Visual Objectives during the day. However, night time light spillage will significantly influence the local dark sky sense of place.

Cumulative Impacts from Other Renewable Energy Projects

Numerous other renewable energy projects are located in the region around the town of De Aar as mapped in Figure 35 below.

The cluster of PV projects around the town of De Aar to the northwest of the project are located further than 12km were the intervisibility would not take place. Also located in the landscape and visible from the property, are the wind farm lights at night. Set in the background, this effect is limited and as PV does not require Aircraft Warning Lights at Night (ALW), intervisibility of lights at night is likely to be a limited effect. As indicated in the landscape context section, should the Phase 2 and Phase 3 be authorised, the locality will become strongly associated with a PV development with a semi-industrial sense of place. *Given the deep rural location where the dark sky at night sense if place is applicable, it is recommended that light at night mitigation is required for the substation.*

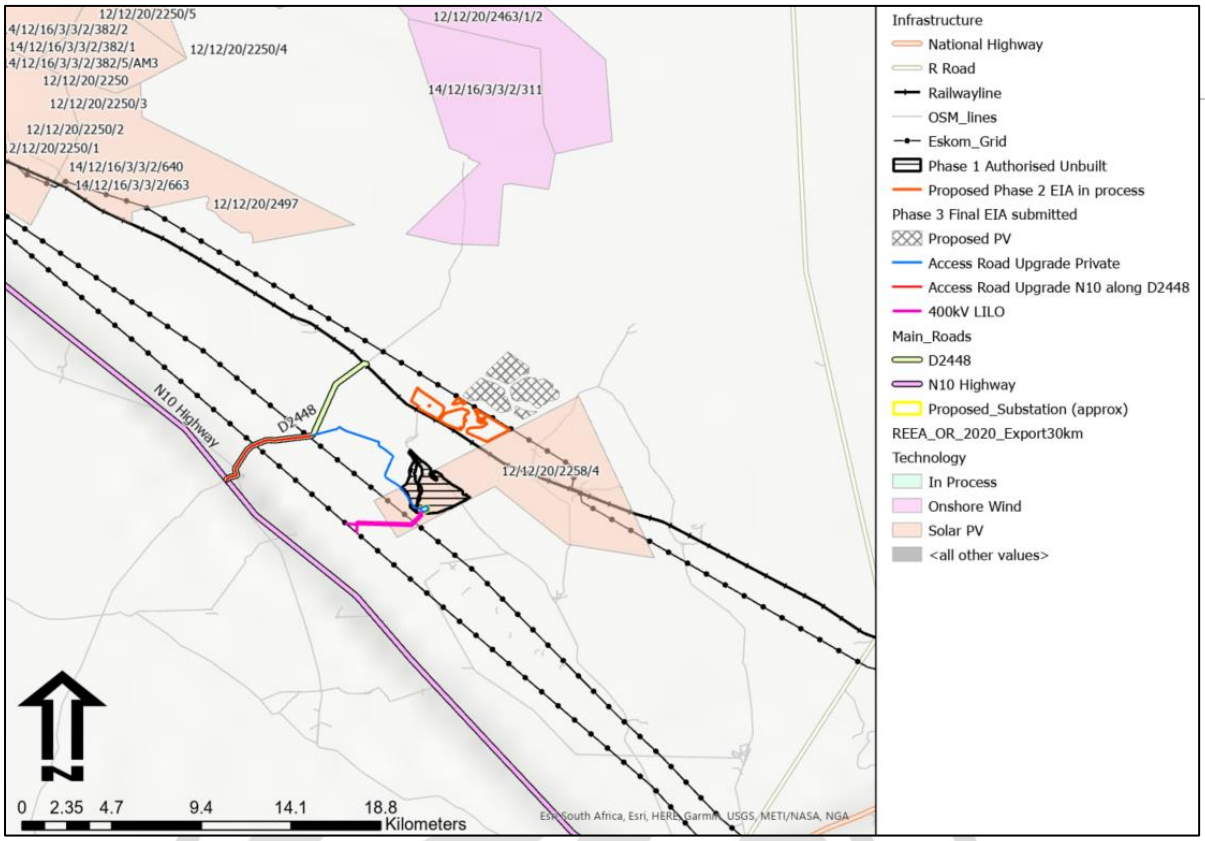


Figure 35. Map depicting DFFE Renewable Energy project status.

Rrecommended mitigations measures

Landscape Element	Mitigation	Motivation
Communication Tower	Control of Lights	• Control of lights at night to allow only local disturbance to the current dark sky night landscape (refer to appendix for general guidelines of Visual Impact Assessment).
OHPL	Monitor Soil erosion	• Soil erosion along the maintenance road needs to be adequately monitored on a Bi-Annual basis. • Continuation of monitoring to ensure that the rehabilitated areas are restored.
Substation Overhead Flood Lights	Review design for lower light spillage such that current dark night sky	• Reduce height to 8m height.

	sense of place is retained as seen from surrounding farmstead receptors.	• Shielding of light to reduce light spillage and repositioned to allow for downward & inward facing. • Use of Mesopic lighting such that light requirements are provided without creating a pool of light effect (Refer to Annexure D: General Lights at Night Mitigations in the Visual Impact Assessment).

Opportunities and constraints

	Communication Tower	Communication Tower No-Go Option
Opportunities	• No tourist activities or tourist view-corridors were located within the project ZVI. • Existing multiple powerlines create vertical elements in the local landscape increasing the local VAC levels.	• Retain existing semi-degraded landscape character. • Agricultural productivity from sheep farming creates some employment opportunities.
Constraints	• Wide area ZVI that will be visible to surrounding receptors. • Increased massing effects from multiple masts and towers. • Increased lights at night light spillage altering local dark sky sense of place.	• National energy objectives for renewable energy and job creation will not be met.
	Powerline	**Powerline No-Go Option**
Opportunities	• National energy objectives for renewable energy and job creation will be met. • Existing powerline increase VAC level where the local landscape is partially degraded, and the proposed change will not result in significant Visual Impacts. • Limited receptors with Medium Visual Exposure.	• National energy objectives for renewable energy and job creation will not be met. • Retain existing semi-degraded landscape character.

Constraints	• Some vegetation would be lost to the substation development footprint.	• National energy objectives for renewable energy and job creation will not be met.
Overhead Flood Lights		**Overhead Flood Lights No-Go Option**
Opportunities	• No tourist activities or tourist view-corridors were located within the project ZVI. • Existing multiple powerlines create vertical elements in the local landscape increasing the local VAC levels.	• Retain existing semi-degraded landscape character. • Agricultural productivity from sheep farming creates some employment opportunities.
Constraints	• Wide area ZVI that will be visible to surrounding receptors. • Increased massing effects from multiple masts and towers. • Increased lights at night light spillage altering local dark sky sense of place (High Significance without mitigation).	• National energy objectives for renewable energy and job creation will not be met.

Impacts and mitigations

Communications tower

Management Category:
Layout and design

Impact:
Landscape change from the current rural agricultural sense of place due to artificial lighting at night.

Consequence:
Increase the visual exposure of the proposed project.

Mitigations:

1. No overhead lighting to be used for security purposes (refer to appendix of Visual Impact Assessment for general guidelines).
2. Control of lights at night to allow only local disturbance to the current dark sky night landscape (refer to appendix of Visual Impact Assessment for general guidelines).

3. The laydown and building structures should be located away from neighbouring property farmsteads and banked into the ground to the eastern areas as much as possible.
4. Structures need to be painted mid-grey colour.

Management Outcome: A less dominant landscape change.

Overhead flood lights

Management Category:
Layout and Design - Lighting

Impact:
Light spillage from overhead Security lights at night.

Cumulative Impact:
Intervisibility of multiple overhead lights from surrounding substation creating glowing 'pool' of light that significantly alters the current dark sky sense of place is rated as High Negative. This can also set a negative precedent for substation development in rural areas.

Consequence:
Night time light spillage will significantly influence the local dark sky sense of place.

Mitigations:

1. Shielding of light to allow for lowered, downward & inward facing such that light spillage is minimalised.
2. The overhead poles are reduced in height to approximately 8m.
3. Use of Mesopic lighting such that light requirements are provided without creating a pool of light effect (Refer to Annexure D: General Lights at Night Mitigations of the Visual Impact Assessment).

Management Outcome:
A less dominant landscape change due to artificial lighting.

SECTION IV: ANY CHANGES TO THE EMPR

This section captures the recommended changes to the EMPr to adequately capture the outcomes of the Part 2 amendment process. This information has also been updated to the amended EMPr which is submitted as an appendix to this report.

Table 10: Proposed changes to EMPr in **BOLD** text.

Page No.	Current details:	Amended to:
Cover page		
1	The proposed development of a 300MW solar photovoltaic (PV) facility and associated infrastructure on Portion 1 of Farm Riet Fountain 39C, Portion 1 of Kwanselaars Hoek 40C and Portion 4 of Taaibosch Fontein 41C in the Hanover district, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality; Northern Cape province.	The proposed development of a 300MW solar photovoltaic (PV) facility and associated infrastructure on Portion 1 of Farm Riet Fountain 39C, Portion 1 of Kwanselaars Hoek 40C, Portion 4 of Taaibosch Fontein 41C **and Portion 1 of Farm No. 56** in the Hanover district, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality; Northern Cape province.
1	Prepared for: Soventix South Africa (Pty) Ltd Tel: +27 (0)21 852-7333 Fax: +27 (0)21 852-5089 Email: jp.devilliers@soventix.com Unit E2 and E3, 8 Quantum Road, Firgrove Business Park Somerset West 7130 South Africa	Prepared for: **SolarAfrica Energy (Pty) Ltd** **Tel: 012 881 4800** **Cell: 072 729 9890** **Email: david@solarafrica.com** **49 Via Salara, Irene Corporate Corner, Nellmapius Drive, Irene Farm Villages, Centurion, 0133**
1	Submission Date: 05 August 2022 Report Status: Amendment 2 (Final 00)	Submission Date: **11 March 2023** Report Status: Amendment **3 (Draft** 00)
2	**Document Control and Revision Table**	
	Status / Revision / Date: Amendment **2** / **Final** 00 / **05 August** 2022	Status / Revision / Date: Amendment **3** / **Draft** 00 / **16 February** 2023
3	**Executive Summary**	

	Soventix South Africa proposes to establish a commercial solar electricity generating facility between the towns of De Aar & Hanover in the Northern Cape province. The solar facility intends to accommodate photovoltaic (PV) components and associated infrastructure comprising of: • Solar panels arranged in blocks with a total generating capacity of approximately 300 MW_{AC} to be constructed as three separate yet integrated facilities of 100MW_{AC} each. A total footprint of approximately 170 ha is normally required per 100MW_{AC} facility, totalling approximately 510 ha, but the developer has managed to design the facility to fit comfortably within a 448 ha footprint. • Each 100 MW_{AC} facility will have an operations building to be contained within a 30 000 m² lay down area for each facility. The facility will include areas used for security management and control room, maintenance as well as changing facilities. • On-site substations (132Kv switching yard and MTS) with the necessary infrastructure to feed the electricity generated from solar PV facilities, via a loop in loop out into the immediately adjacent 400	**SolarAfrica Energy (Pty) Ltd received environmental authorisation to develop** a commercial solar electricity generating facility between the towns of De Aar & Hanover in the Northern Cape province. The solar facility intends to accommodate photovoltaic (PV) components and associated infrastructure comprising of: • Solar panels arranged in blocks with a total generating capacity of approximately 300 MW_{AC} to be constructed as three separate yet integrated facilities of 100MW_{AC} each. The total **solar PV** footprint is approximately **450** hectares. • **An operations & maintenance (O&M) building, partitioned to accommodating three separate Independent Power Producers (IPPs), each of which will manage 100 MW_{AC} of the solar PV facility. The O&M facility will include areas used for security management and control room, workshops for maintenance & servicing of vehicles, plant and equipment and storerooms; equating to approximately 5,000 m².** • **A construction camp will be provided including a lay down area of 40,000 m² (4 ha).** • On-site substations (132Kv switching yard **(Dx)** and **Main Transmission Sub-station** (MTS)) with the necessary infrastructure **required to meet Eskom specification (including**

	kV Eskom network. The MTS will be increased from 300MW to 1GW. Impacts and mitigations governing the substations and associated distribution (power) lines are managed by the Generic EMPr appended to the main EMPr.	**provision of lightning conductors, microwave communication & overhead lighting)**, will feed the electricity generated from solar PV facilities, via a loop in loop out into the immediately adjacent 400 kV Eskom network. **The footprint of Dx sub-station is approximately 1.1 ha and the MTS 10 ha.** • **Provision of a 132 kV distribution line from the solar PV facility to the MTS and Loop-In, Loop-Out transmission lines from the MTS into both the existing Line 1 & Line 2 Eskom 400 kV transmission lines.**
	• Containerised battery storage and dual-fuel (diesel and Liquefied Natural Gas (LNG)) backup generation with associated fuel storage. This will require 500MWh of Lithium-Ion battery storage, equating to sixty-six (66) forty-foot (40') containers. Each shipping container is 12.2(l) x 2.43(w) x 2.59(h) in dimensions, with a collective/total footprint of approximately 2000m^2. Additionally, nine (9) generator units (1kW each) will be required to generate <10MW of backup electricity. Above-ground fuel storage will be required of less than 80m^3 to provide the generators with fuel. • Development of a "staging area" where large transport vehicles can offload infrastructure and equipment for transfer onto smaller	• **Provision is retained for the potential future use of** containerised battery storage and dual-fuel (diesel and Liquefied Natural Gas (LNG)) backup generation with associated fuel storage. This will require 500MWh of Lithium-Ion battery storage, with a collective/total footprint of approximately 2000m^2. Additionally, nine (9) generator units (1kW each) are provided for to generate <10MW of backup electricity. Above-ground fuel storage of less than 80m^3 will provide the generators with fuel and **provide for construction and operational vehicle and plant fuel requirements.** • **A** "staging area" where large transport vehicles can offload infrastructure and equipment for transfer onto smaller vehicles for

	vehicles for localised distribution to site. The staging area will also act as an access control point, for staff and contractor's entering and exiting the PV sites. • Inclusion of an existing access road across a watercourse, as the main access to the Phase 1 facility, in addition to the current property owner's main access road.	localised distribution to site. The staging area will also act as an access control point, for staff and contractor's entering and exiting the PV sites. • Inclusion of an existing access road across a watercourse, as the main access to the Sun Central Cluster 1 facility, in addition to the current property owner's main access road. • **On-site concrete batching facilities for the construction of the sub-station platforms and other construction requirements.** • **Use of four existing boreholes for the supply of construction and operational water requirements.** • **Relocation of the existing 11 kV distribution line servicing the land owner's premises, to the northern perimeter of the solar PV facility.**
3 & 4	This Environmental Management Programme (EMPr) is developed in compliance with section 24N of the NEMA, 1998, as amended and contains those requirements prescribed in the EIA Regulations, 2014, including regulation 23, 32 and Appendix 4 of GN No. R. 326 of 7 April 2017, as amended.	This Environmental Management Programme (EMPr) is developed in compliance with section 24N of the NEMA, 1998, as amended and contains those requirements prescribed in the EIA Regulations, 2014, including regulation 23, 32 and Appendix 4 of GN No. R. 326 of 7 April 2017, as amended. **Impacts and mitigations governing the substations and associated distribution & transmission powerlines are managed by the gazetted Generic EMPr''s (GG No. 42323, 22 March 2019) appended to this EMPr.**

	The EMPr is to be read in conjunction with the EIA Report (EIAr) providing detail on the affected environment as well as an impact assessment for the anticipated environmental impacts and the Environmental Authorisation (EA) (once issued). The developers propose to establish the project on the approved footprint which affects 3 properties namely, Portion 1 of Farm Riet Fountain 39C, Portion 1 of Kwanselaars Hoek 40 C & Portion 4 of Taaibosch Fontein 41C, registration district Hanover, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality; Northern Cape Province.	The EMPr is to be read in conjunction with the EIA Report (EIAr) providing detail on the affected environment as well as an impact assessment for the anticipated environmental impacts and the Environmental Authorisation (EA). The developer **will establish** the project on the approved footprint which affects **4** properties namely, Portion 1 of Farm Riet Fountain 39C, Portion 1 of Kwanselaars Hoek 40 C, Portion 4 of Taaibosch Fontein 41C **and Portion 1 of Farm No. 56**, registration district Hanover, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality; Northern Cape Province.

4 & 5	Activities to be undertaken during the construction, operational and decommissioning phases include:
	
	<u>Construction Phase</u>
	
	• Site preparation;
	  ○ Clearly delineate the construction footprint to avoid construction creep outside the approved development footprint,
	  ○ Search & rescue fauna & flora of conservation concern & protected status ahead of any construction activities,
	• Installation of perimeter fencing, during but preferably prior to construction commencement (improved access control and assurance of no construction creep);
		Activities to be undertaken during the construction, operational and decommissioning phases include:
		
		<u>Construction **& Post-Construction Monitoring** Phase</u>
		• Site preparation;
		  ○ Clearly delineate the construction footprint to avoid construction creep outside the approved development footprint,
		  ○ Search & rescue fauna & flora of conservation concern & protected status ahead of any construction activities,
		• Installation of perimeter fencing, during but preferably prior to construction commencement (improved access control and assurance of no construction creep),

	• Upgrade existing roads and establish service tracks;
	• Transport components and equipment to site;
	• Establish "Staging Area" for large vehicle and equipment offloading and access control;
	• Establishment of laydown areas;
	• Establishment of ancillary infrastructure;
	  ○ Installation of containerised lithium-ion battery storage;
	  ○ Installation of containerised dual-fuel (diesel & LNG) backup generators;
	  ○ Installation of above-ground fuel storage with a combined capacity of <80m^3;
	• Construction of infrastructure foundations;
	• Establishment of PV panels;
	• Connection of PV panels to the on-site substations;
	• Connection of on-site substations to the grid;
		• Upgrade existing roads and establish service tracks,
		• Transport components and equipment to site,
		• Establish "Staging Area" for large vehicle and equipment offloading and access control,
		• Establishment of **temporary construction camp** & laydown areas,
		• **Relocation of 11 kV distribution powerline,**
		• Construction of infrastructure foundations,
		• **Installation** of PV panel **arrays and associated infrastructure**,
		• **Construction of Dx (132 kV switching yard) & Main Transmission Sub-stations (MTS),**
		• **Connection of PV panels from infield transformers to the on-site Dx substation,**
		• **Connection of Dx substation to the MTS by way of 132 kV distribution powerlines,**
		• **Loop-In, Loop-Out MTS into existing Eskom 400 kV transmission powerlines,**
		• **Connection of underground water pipelines and overhead storage tanks to existing boreholes,**

	• Site rehabilitation; and • Environmental management & monitoring throughout the construction process, inclusive of; ○ Continuous monitoring and removal of alien & invasive plant species, ○ Avifauna monitoring and management, ○ Traffic monitoring & management, including dust emissions, ○ Dust monitoring & management, including drilling operations, ○ Storm water monitoring & management, ○ Erosion monitoring and remediation, ○ Fire management, ○ Vegetation & habitat monitoring & management, ○ Hazardous substance monitoring & management, including detecting any leakage or spillage, and ○ Monitoring & management measures to protect hydrological features.	• Site rehabilitation; and • Environmental management & monitoring throughout the construction process, inclusive of; ○ Continuous monitoring and removal of alien & invasive plant species, ○ Avifauna monitoring and management, ○ Traffic monitoring & management, including **nuisance & disturbing noise**, ○ Dust monitoring & management, including **access roads**, drilling **& concrete batching** operations, ○ Storm water monitoring & management, ○ Erosion monitoring and remediation, ○ Fire management, ○ Vegetation & habitat monitoring & management, ○ Hazardous substance monitoring & management, **including containment measures for workshops, maintenance, servicing and re-fuelling of vehicles and plant, remediation of spills** and ○ Monitoring & management measures to protect hydrological **& aquatic biodiversity** features. ○ **Monitor & manage surface and groundwater quantity & quality.**

5	<u>Operational Phase</u> • Maintenance and repairs of PV and associated equipment inclusive of; ○ Maintenance of roads, ○ Cleaning and maintaining / replacing panels, ○ Maintaining buildings and other infrastructure, and ○ Maintain and repair fencing. • Environmental management & monitoring throughout the operational process, inclusive of; ○ Continuous monitoring and removal of alien & invasive plant species, ○ Avifauna monitoring and management, ○ Storm water monitoring & management, ○ Erosion monitoring and remediation, ○ Fire management, ○ Vegetation & habitat monitoring & management, ○ Monitoring & management measures to protect hydrological features. • Waste management; and	<u>Operational Phase</u> **The operational & decommissioning phases of the project fall outside the scope of the environmental authorisation for the solar PV footprint, but have been retained in terms of best practice and full project life-cycle management.** • Maintenance and repairs of PV and associated equipment inclusive of; ○ Maintenance of roads, ○ Cleaning and maintaining / replacing panels, ○ Maintaining buildings and other infrastructure; and ○ Maintain and repair fencing. • Environmental management & monitoring throughout the operational process, inclusive of; ○ Continuous monitoring and removal of alien & invasive plant species, ○ Avifauna monitoring and management, ○ Storm water monitoring & management, ○ Erosion monitoring and remediation, ○ Fire management, ○ Vegetation & habitat monitoring & management, ○ Monitoring & management measures to protect hydrological features. ○ **Surface & groundwater management & monitoring.** • Waste management; and • Health and safety implementations.

	• Health and safety implementations.	
8	**CHECKLIST**	
	An environmental management programme (EMPr) must comply with section 24N of the NEMA, 1998, as amended and contain those requirements prescribed in the EIA Regulations, 2014, as amended, including regulation 23, 32 and Appendix 4. Additional requirements relating to content of the EMPr were specified in the departmental communication dated 29/05/2017 as part of the approval of the final Scoping Report as well as department correspondence dated 05/09/2017 as part of the approval of the Draft Environmental Impact Assessment report, as well as departmental comments received on the Part 2 amendment report (dated 24/03/2001) which too have been included. The full suite of requirements are listed in Table 2, which have dictated the layout and content of this EMPr.	An environmental management programme (EMPr) must comply with section 24N of the NEMA, 1998, as amended and contain those requirements prescribed in the EIA Regulations, 2014, as amended, including regulation 23, 32 and Appendix 4. Additional requirements relating to content of the EMPr were specified in the departmental communication dated 29/05/2017 as part of the approval of the final Scoping Report as well as department correspondence dated 05/09/2017 as part of the approval of the Draft Environmental Impact Assessment report, as well as **additional mitigations emanating from prior Part 2 amendments in 2021 & 2022.** The **requirements of Appendix 4 of the EIA Regulations (2014) as amended have** dictated the layout and content of this EMPr (Table 2).
17	**SECTION 1: DETAILS & EXPERTISE OF THE EAP AND APPLICANT**	
	Details of Justin Bowers.	Details of Justin Bowers **and Shaun MacGregor.**
17	**SECTION 2: INTRODUCTION & BACKGROUND**	
	An on-site substation will be required with the necessary infrastructure to feed the electricity generated, via a loop-in, loop-out, into the immediately adjacent **132kv or** 400kv Eskom network.	On-site substation**s** will be required with the necessary infrastructure to feed the electricity generated, via a loop-in, loop-out, into the immediately adjacent 400kv Eskom network.
17	This EMPr forms part of the feasibility study and prerequisite by National Energy Regulator of South Africa (NERSA) for awarding a Power	This EMPr **originally** form**ed** part of the feasibility study and prerequisite by **the** National Energy Regulator of South Africa (NERSA) for awarding a Power

	Purchase Agreement (PPA) under the Renewable Energy Feed in-Tariff (REFIT) program. The REFIT program is also a key project component due to the fact that the next scheduled phase includes Solar PV as an option and the project proponent will take the opportunity to submit the project proposals. The requirement for the successful establishment of a Solar PV plant does include, inter alia, proximity to existing Eskom infrastructure in order to feed electricity into the grid.	Purchase Agreement (PPA) under the Renewable Energy Feed in-Tariff (REFIT) program. **However, Soventix SA has now obtained a Cost Estimate Letter (CEL) from Eskom for an increase in the interconnection of embedded generation grid access, from renewable energy to Eskom infrastructure. This increased capacity of the on-site sub-station will facilitate additional generation capacity into the Eskom grid for "wheeling" to private consumers, from the authorised Phase 1 project as well as potential from the Phase 2 & 3 projects as well as other local renewable energy projects requiring grid access.**
20	**SECTION 3: DESCRIPTION OF THE ACTIVITY**	
	Expansion and repositioning of a substation, addition of a switching yard sub-station, additional access road from a proposed staging area (offloading and access control area) to the development of a 300MW solar photo-voltaic (PV) facility, comprising 3 interconnected 100MW plants, that ties into existing overhead ESKOM 400kV transmission lines, and associated infrastructure including containerised lithium-ion battery storage and dual-fuel backup generators with associated above-ground fuel storage.	**Paragraph deleted.**
45	**SECTION 5: ACTIVITIES, ASPECTS AND IMPACTS AND THEIR MANAGEMENT, MITIGATION & DESIRED OUTCOMES**	
		Additions to the legislation, guidelines used to inform content of the EMPr.
20	**Table 5: Planning & Design Phase**	

20	Details of Listed Activities	**Reduced details of Listed Activities to remove redundant information**
21	Activity: Compliance Sub-Activity: Water use (Section 21(e) of the National Water Act (Act 36 of 1998)) Aspects: Reuse of treated effluent.	**Remove activity, no Section 21(e) authorisation required.**
21	No previous entry.	Activity: **Compliance** Sub-Activity: **Civil Aviation Regulations** Aspects: **Obstacle application to CAA for microwave tower, lighting, lightning conductors and Line 1 LILO as well as supplying "As build".**
23	Activity: Readiness Sub-Activity: Awarding of preferred bidder Aspects: Socio-economic benefits	Activity: Readiness Sub-Activity: **Conclusion of PPA & wheeling agreements** Aspects: Socio-economic benefits
48	**TABLE 6. COMPLIANCE MANAGEMENT: Section 6.1.4.2 in WATER USE AUTHORISATION FOR ABSTRACTION & STORAGE OF RAW & TREATED WATER**	
		Inclusion of sustainable yield limits derived from the Geohydrology Assessment in Desired Outcomes, Targets & Indicators and Management Actions & Mitigation Measures.
50	**TABLE 6. COMPLIANCE MANAGEMENT: Section 6.1.5 in WATER USE AUTHORISATION FOR IRRIGATION/DUST SUPPRESSION WITH TREATED WASTEWATER**	
	Delete section 6.1.5 relating to 21(e) water uses in terms of the National Water Act (Act 36 of 1998).	Include amended conditions under Section 6.1.3 (WATER USE AUTHORISATION FOR TREATING, STORING **OR REUSE** OF WASTEWATER) relating to Section 21(g) water uses under the National Water Act (Act 36 of 1998).
52	**TABLE 6. COMPLIANCE MANAGEMENT: Section 6.1.6.2 in Servitudes & Wayleaves**	
	No previous entry.	**Inclusion of approval in terms of Municipal Spatial Planning and Land**

		Use Management Bylaw (No.: 192 of 2015).
52	**TABLE 6. COMPLIANCE MANAGEMENT: Section 6.1.7 in Compliance Monitoring**	
	A qualified, suitably experienced & accredited independent ECO must be appointed (registered with SACNASP & EAPASA) to monitor and report to the competent authority on compliance with the EA and EMPr, and where necessary oversee or facilitate the identification and permitting / licensing of protected species prior to clearing of any vegetation.	A qualified, suitably experienced & accredited (registered with SACNASP & **preferably** EAPASA) independent ECO must be appointed to monitor and report to the competent authority on compliance with the EA and EMPr. [**Removal of vegetation permit requirements].**
53	**TABLE 6. COMPLIANCE MANAGEMENT: Section 6.1.9 in Environmental Authorisation amendment approval**	
	A Part 2 amendment must be approved prior to implementation of expansion of the project scope to include containerised battery storage and backup generators (with associated fuel storage)	A Part 2 amendment must be approved prior to implementation of expansion of the project scope.
54	**TABLE 6. COMPLIANCE MANAGEMENT: Section 6.1.10 in Approval for leasing of agricultural land**	
	Mitigation: The project may not commence without the necessary approvals relating to Sub-division of Agricultural Land Act (SALA, Act 70 of 1970).	**Remove condition as approval has already been secured.**
54	**TABLE 6. COMPLIANCE MANAGEMENT: Section 6.1.11 in Design capacities & criteria**	
		Change numbering to 6.1.10.
59	**TABLE 7. CONSTRUCTION CAMP, LAYDOWN AREAS, STOCKPILES, STORES & EQUIPMENT: Section 7.2.1 in Construction Phase**	
		Amendments to and additional mitigations added, relating to the increased scope.

	TABLE 10. WATER USE MANAGEMENT: Section 10.1.4 in Planning & Design Phase	
		Inclusion of the following mitigations: **Large ephemeral tributaries, including their buffers, are no-go areas except for linear infrastructure crossings, e.g., access roads, pipelines, and cables.** **Pylons should not be located within an area that would be inundated during a 1:100 flood event.**
	TABLE 10. WATER USE MANAGEMENT: Section 10.2.1 in Construction Phase	
		Inclusion of the following mitigations: **Manage surface water runoff during construction of crossings within small & large ephemeral tributaries.** **Vegetation clearance must be restricted to the physical footprints of the pylon footings.** **A construction method statement should be compiled and approved prior to the commencement of construction activities within all water resource types and where applicable their buffers.** **Vegetation and soil should be retained in position for as long as possible and should only be removed immediately ahead of construction / earthworks in any specific area.**

		Vegetation clearing (and the area of disturbance) is to be kept to a minimum. No unnecessary vegetation to be cleared. **In areas where construction activities have been completed and no further disturbance is anticipated, rehabilitation and re-vegetation should commence as soon as possible.** **There should be reduced activity at the site after rainfall events when the soils are wet. No driving off from hardened roads should occur immediately following large rainfall events until soils had dried out and the risk of bogging down has decreased.**
	TABLE 10: WATER USE MANAGEMENT: Section 10.2.3 in Construction Phase	
		Inclusion of the following mitigation: **Ensure correct placing of concrete batching plants and vehicle servicing areas etc. to avoid areas susceptible to soil and water pollution. Water runoff from the sites should be controlled as far as possible to prevent adverse effects. The seasonal drainage line should be protected from an increased inflow of poor-quality water.**

109	**TABLE 10: WATER USE MANAGEMENT: Section 10.2.4 in Construction Phase**	
		Inclusion of the following mitigations: **Where diversion berms create concentrated flows, particularly in steep and/or sensitive areas, the use of swales, silt fences or other effective erosion control measures is recommended to attenuate runoff.** **All storm water management measures should be regularly maintained.** **Implement appropriate stormwater management around the excavated trenches to prevent the ingress of surface water run-off.** **Any areas disturbed during the construction phase should be rehabilitated as fast and effective as possible.** **Any erosion channels developing during or after the construction period should be appropriately backfilled (and compacted where relevant) and the areas restored to a condition like the condition before the erosion occurred.** **Site rehabilitation should as far as feasible aim to restore surface draining patterns, natural soil, and**

		vegetation to what it was prior to construction.
111	**TABLE 11: AIR QUALITY MANAGEMENT**	
		Additional impacts and mitigations added relating to increased scope of work.
137	**TABLE 13: SOCIAL-ECONOMIC MANAGEMENT: Section 13.1.1 in Planning & Design Phase (including Pre-Construction)**	
		Inclusion of the following mitigation: **Develop a grievance mechanism. The grievance mechanism must include a complaints procedure that allows the landowners to log their grievance and submit a claim for damages.**
138	**TABLE 13: SOCIAL-ECONOMIC MANAGEMENT: Section 13.1.2 in Planning & Design Phase (including Pre-Construction)**	
	Following awarding of Preferred Bidder Status, formalised commitments must be made to socio-economic initiatives that will benefit surrounding communities, including the compilation of a Detailed Labour Plan which must include details pertaining to skills development opportunities especially for the Youth and Women, bursary opportunities / learnerships and other educational facilities in the municipal area. The Plan must be supplied to the Local Municipality.	Following **finalisation of PPA & wheeling agreements**, formalised commitments must be made to socio-economic initiatives that will benefit surrounding communities, including the compilation of a Detailed Labour Plan which must include details pertaining to skills development opportunities especially for the Youth and Women, bursary opportunities / learnerships and other educational facilities in the municipal area. The Plan must be supplied to the Local Municipality.
139	**TABLE 13: SOCIAL-ECONOMIC MANAGEMENT: Section 13.1.2 in Planning & Design Phase (including Pre-Construction)**	
	No previous entry.	Inclusion of the following mitigation: **The principle of "locals first" must be used to ensure that neighbouring landowners benefit from requirements for accommodation or**

		any other services that they can deliver.
139	**TABLE 13: SOCIAL-ECONOMIC MANAGEMENT: Section 13.2.1 in Construction Phase**	
		Inclusion of the following mitigations: **The construction teams must be educated about the impact of damages to fences, water troughs and farm gates, through toolbox talks.** **Affected landowners must be compensated for losses resulting from any damage to farm infrastructure.** **Inspections of boundary fences should be done on a daily basis in areas where there are activities.** **All fences affected by construction should be inspected and be kept clear of debris, especially in the rainy season.**
143	**TABLE 13: SOCIAL-ECONOMIC MANAGEMENT: Section 13.2.6 in Construction Phase**	
		Inclusion of the following mitigations: **The contractor must compensate the farmer for any losses of livestock due to irresponsible behaviour by the construction teams.** **A protocol on compensation must be agreed upon and be in place before construction commences.**

		A claims procedure must be in place and shared with all the stakeholders before the construction commences. **Livestock & wildlife must have right of way.** **The landowner must be given a construction programme with sufficient leeway to ensure that they can move their livestock before construction activities commence.** **Inspections of boundary gates should be done on a daily basis in areas where there are activities.**
163	**TABLE 16: VISUAL ASPECT MANAGEMENT: 16.1 in planning & design phase (including pre-construction)**	
	No previous conditions.	Inclusion of the following mitigations: **Control of lights at night to allow only local disturbance to the current dark sky night landscape (refer to appendix of Visual Impact Assessment for general guidelines (VRM Africa, 2023)).** **Shielding of light to allow for lowered, downward & inward facing such that light spillage is minimalised.** **The overhead poles are reduced in height to approximately 8m.**

		Use of Mesopic lighting such that light requirements are provided without creating a pool of light effect (Refer to Annexure D: General Lights at Night Mitigations of the Visual Impact Assessment (VRM Africa, 2023)).
164	**TABLE 16: VISUAL ASPECT MANAGEMENT: 16.2 in planning & design phase (including pre-construction)**	
	No previous conditions.	Inclusion of the following mitigations: **The laydown and building structures should be located away from neighbouring property farmsteads and banked into the ground to the eastern areas as much as possible.** **Structures need to be painted mid-grey colour.**

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AFFIRMATION OF THE APPOINTED INDEPENDENT EAP

(r) An undertaking under oath or affirmation by the EAP in relation to-

Report Information Accuracy.

(i) the correctness of the information provided in the report;

EAP AFFIRMATION.

Appendix 2 Section 3 (s) of the Environmental Impact Assessment (EIA) Regulations, 2014 (promulgated in terms of the National Environmental Management Act 107 of 1998, as amended - NEMA), require an undertaking under oath or affirmation by the Environmental Assessment Practitioner (EAP) in relation to;
(i) the correctness of the information provided in the reports;
(ii) the inclusion of comments and inputs from stakeholders and I&APs;
(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and
(iv) any information provided by the EAP to interested and affected parties and any

I, **Shaun D. MacGregor**, on behalf of Ecoleges, hereby affirm that all comments and inputs received from stakeholders, specialists, interested and affected parties have been accurately recorded herein and, insofar as comments and recommendations are relevant and practicable, accommodated in the Part 2 amendment report submitted to the Competent Authority, thereby attaining a desirable level of agreement for undertaking the Part 2 amendment application.

_____
Signature of the EAP

DATE: _____

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APPENDICES

APPENDIX A: PUBLIC PARTICIPATION PROCESS FOLLOWED

Annexure A: Level of Public Participation
Annexure B: Displayed Site Notices
Annexure C: Close-up & wording of Site Notices
Annexure D: Background Information Document (BID) in English and Afrikaans
Annexure E: BID Distribution via Registered Mail and Email
Annexure F: Advertisement Wording
Annexure G: Proof of Placed Advertisement
Annexure H: List of Interested and Affected Parties
Annexure I: Comments and Response Sheet
Annexure J1: Proof of distributed draft report
Annexure J2: Proof of attempts to obtain comments on draft report

APPENDIX B: AMENDED ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

APPENDIX C: SPECIALIST STUDIES

Annexure A: Specialist Declarations
Annexure B: Aquatic Biodiversity & Risk Assessment
Annexure C: Geotechnical Assessment
Annexure D: Palaeontology Assessment
Annexure E: Agricultural Compliance Statement including soils and grazing
Annexure F: Air Quality Assessment
Annexure G: Heritage Assessment
Annexure H: Hydro & Geo -logical Assessment
Annexure I: Noise Assessment
Annexure J: Socio-economic Assessment
Annexure K: Terrestrial Assessment
Annexure L: Traffic Assessment
Annexure M: Visual Assessment

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APPENDIX A: DETAILS OF THE PUBLIC PARTICIPATION PROCESS

(ii) details of the public participation process undertaken in terms of regulation 14 of the Regulations, including copies of the supporting documents and inputs;

Table: Checklist of PPP requirements in terms of Chapter 6 of the EIA Regulations (2014), as amended.

Regulation	Yes	No
If the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.	☑ The applicant has a lease agreement in place with the landowner.	
Report submitted in terms of regulation 21 and the environmental impact assessment report and EMPr submitted in terms of regulation 23; was subjected to must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on each of the basic assessment report, EMPr, scoping report and environmental impact assessment report, and where applicable the closure plan, as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times.	☑ This is the Draft Motivational Report in terms of regulation 32 to be circulated to interested and affected parties for the 30-day commenting period.	
The public participation process contemplated in this regulation must provide access to all information that reasonably has or may have the potential to influence any decision with regard to an application unless access to that information is protected by law and must include consultation with- (a) the competent authority;	☑ A background information document was distributed to all potential interested and affected parties. Advertisements were placed. Notices	

(b) every State department that administers a law relating to a matter affecting the environment relevant to an application for an environmental authorisation; (c) all organs of state which have jurisdiction in respect of the activity to which the application relates; and (d) all potential, or, where relevant, registered interested and affected parties.	were erected. All reports will be distributed to all parties on the I&AP register, including relevant state departments, commenting & competent authorities, for a 30-day commenting period prior to departmental submission.	
The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by-	☑ Relevant guidelines have been taken into account for the public participation process.	
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of- (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site;	☑ Notices were erected which complied with the regulation requirements.	
(b) giving written notice, in any of the manners provided for in section 47D of the Act, to- (i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken; (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	☑ Notification and background information documents were distributed to all potential interested and affected parties, including land occupiers and owners.	

(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) the municipality which has jurisdiction in the area; (v) any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) any other party as required by the competent authority;		
(c) placing an advertisement in- (i) one local newspaper; or (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations; (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);and (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to- (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	☑ Advertisements were placed in both a local and provincial newspaper.	
(3) A notice, notice board or advertisement referred.to in subregulation (2) must-	☑	

(a) give details of the application or proposed application which is subjected to public participation; and (b) state- (I) whether basic assessment or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made.	Notices were erected around the site in compliance with the regulation requirements.	
(4) A notice board referred to in subregulation (2) must- (a) be of a size at least 60cm by 42cm; and (b) display the required information in lettering and in a format as may be determined by the competent authority.	☑ The Notices were 60cm by 42cm.	
(5) Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that- (a) such process has been preceded by a public participation process which included compliance with subregulation (2)(a), (b), (c) and (d); and (b) written notice is given to registered interested and affected parties regarding where the-	☑ This public participation process is conducted in terms of Regulation 32.	

(I) revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b); (ii) revised environmental impact report or EMPr as contemplated in regulation 23(1)(b); or (iii) environmental impact report and EMPr as contemplated in regulation 21(2)(d); may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.		
(6) When complying with this regulation, the person conducting the public participation process must ensure that- (a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and (b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.	☑ All reports will be distributed for a 30-day commenting period prior to departmental submission.	

1. Introduction

The Public Participation Process (PPP) was and is undertaken in accordance with Chapter 6 of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended, and take into consideration the Public Participation 2017 Guideline Document (DEA, 2017).

2. Objectives of the public participation

The level of public participation was determined by taking into account the scale of the anticipated impacts of the proposed project/amendments, the sensitivity of the affected environment and the degree of controversy of the project/amendments, and the characteristics of the potentially affected parties. Based on the findings of the above considerations, the PPP will not elaborate on the minimum requirements of the public participation process outlined in the EIA Regulations, 2014. The previous public participations undertaken for the Original EA and its Amendments have proven that there is no need for alternative methods, as there are no people who are unable to participate in the process due to illiteracy, disability or any other disadvantage.

3. Identification of interested and affected parties

Over and above the placement of site notices on site and an advert in the local newspaper inviting I&APs to participate in the amendment application process, certain stakeholders were specifically & directly approached (organs of state, the owner or person in control of the land etc.) who are automatically regarded as I&AP's.

The following means of identifying stakeholders was used:

- a property and deeds search will be undertaken of all adjacent properties and included as directly affected I&APs.
- the newspaper advert invited and/or called for any other potential I&APs that were not included in the initial EIA process.
- the existing list of I&APs from the original EA Application (authorized under 14/12/16/3/3/2/998) and its Amendments was used for this Part 2 EA Amendment Application.
- network or chain referral systems according to which key stakeholders were asked to assist in identifying other stakeholders, including requesting ward councillors to notify and engage with community members within their ward.
- potential I&APs were provided a tailored Background Information Document (BID)/Notification in Afrikaans, which is the most widely spoken local language, for distribution to their land occupiers.

4. Notification of interested and affected parties

All potential and registered I&APs have a right to be informed early and in an informative and proactive way regarding proposals that may affect their lives or livelihoods. Early communication aims to build trust among participants, allow more time for public participation, and improve community analysis. It also increases opportunities to modify the proposed development to effectively address relevant issues and comments received during the PPP.

4.1 Method of notification

The notification of a development/amendment proposal to I&APs can be given through a number of methods including fixing of notice boards, providing written notice and placing advertisements. Potentially interested and affected parties will be notified of the proposed development application by –

a. fixing a notice board at a place conspicuous to the public at the boundary or on the fence of –
    i. the site where the activity to which the application relates is or is to be undertaken; and
    ii. any alternative site mentioned in the amendment application.

Three (3) notices (**Annexure E**) were erected at the below-mentioned locations.

Location 1: 30°52'31.43"S & 24°13'26.71"E (by the N10 turn off) Location 2: 30°51'17.06"S & 24°15'52.27"E (on the property fence boundary) Location 3: 30°50'37.43"S & 24°18'49.23"E (by the entrance gate to De Bad Farm)

b. giving written notice to –

We already had a database of Interested and Affected Parties from the Original EA Application and its amendments. Therefore, a Background Information Document (BID) or Notification (in both English and Afrikaans) was prepared and distributed via email to the parties on the I&AP register. Email submissions requested a "delivery receipt" and "read receipt". The notification included the contact details that the I&AP can use to contact and communicate with the EAP.

Written notice (Notification Letter – **Annexure B**) was given to the landowner and occupiers and owners and occupiers of land adjacent to the various farms in the Hanover District (Portion 3 and Remainder of Farm Goedehoop 26 C, Portion 6 of Leuwe Fountain 27 C, Remainder of Farm Riet Fountain 39 C, Portions 1 & 6 and the Remainder of Kwanselaars Hoek 40 C, Portion 4 of Taaibosch Fontein 41C) and organs of state having jurisdiction in respect of the proposed activity, whose details are captured in the Table below.

The BID/Notification was prepared and distributed via email to all parties on the I&AP register as per section 47D of NEMA. Email submissions requested a "delivery receipt" and "read receipt"; to track receipt of the document. The BID/Notifications were sent on the 25th of November 2022 of which proof of distribution is included as **Annexure C**.

List and details of landowners, land occupiers and organs of state.

The owner or person in control of that land if the applicant is not the owner or person in control of the land: • Willem Retief: wretief@webmail.co.za; 082 944 7167
Owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken:

Remainder of FARM No. 149 (Farm Goodhope): Ricky Vimpany, richard.vimpany@bravospace.co.za **Remainder of LEUWE FOUNTAIN No. 27 (Farm: Leeuwfontein):** Corneulis Oosthuizen, cmo.karoo@gmail.com, 074 114 3950 **Portion 1,2 & 4 LEUWE FOUNTAIN No. 27 (Farm Weltevrede):** Pieter du Toit, psdutoit4@gmail.com, 083 278 2590 **Remainder of TAAIBOSCH FONTEIN No. 41 and Portion 1 (Farm: Constancia):** Andries Pienaar, andriespienaar@hotmail.com, 082 762 2206 **Portion 2 & 5 TAAIBOSCH FONTEIN No. 41 (Farm: Skilpadskuil):** Manual Orfao, morfao@worldonline.co.za, 082 784 1972 **Portion 3 of TAAIBOSCH FONTEIN No. 41:** Dawie du Plessis, l.duplessis@live.com, 083 544 4139 **Remainder & Portion 7 &9 of KAFFERSPOORT No. 56 (Farm: Dieprivier):** Andries Pienaar, andriespienaar@hotmail.com, 082 762 2206 **Remainder of BARENDS KUILEN No. 38, Remainder & Portion 1 of BLAAUWBOSCH KUILEN OUTSPAN No. 37 (Farm: Blaawboschkuil):** Christiaan Venter, wortelfontein@vodamail.co.za, 082 378 3601
The municipal councillor of the ward in which the site or alternative site is situated and any organisation of rate payers that represent the community in the area: • Lena Elizabeth Andrews (Ward 6), leandrews@emthanjeni.co.za, 0718089336 • Mr Patrick Mhlawuli (Ward 8), ppmhlauli@emthanjeni.co.za; 083 8829 450 • Ms Nontobeko Mkontwana (Ward 3); npmkontwana@emthanjeni.co.za; 076 505 9292. • Jaco Blom (Rate Payers Association), blomdeaar@gmail.com, 072 780 1288 • Hentie vd Merwe (Rate Payers Association), vdm@deaarsa.co.za
The municipality which has jurisdiction in the area: **Emthanjeni Local Municipality** • Mr Isak Visser (Municipal Manager); visser@emthanjeni.co.za; Tel: 053 632 9101 • Ms Marushel Meyers (PA); mmeyers@emthanjeni.co.za; Tel: 053 632 9101 • Ms Lucy Billie (Town Planner)); lbillie@emthanjeni.co.za, Tel: 053 632 9111 • Mr M Joka (Director Technical Services), mjoka@emthanjeni.co.za • Ms Lelethu Thiso, thiso@emthanjeni.co.za **Pixley ka Seme District Municipality** • Mr Rodney Pieterse (Municipal Manager); mm@pksdm.gov.za; Tel: 053 631 0891; • Mr Nomapaseka Present (PA); mm@pksdm.gov.za; Tel: 053 631 0891 • Mr Sonwabile Nkondeshe (Env Director); snkondeshe@pksdm.gov.za; Tel: 053 631 0891 • Mr Simon Baas (Town Planner); sbaas@pksdm.gov.za; Tel: 053 631 0891
Any organ of state having jurisdiction in respect of any aspect of the activity: **Department of Fisheries, Forestry and the Environment (DFFE)** • Ms Masina Letsoana; MLetsoane@environment.gov.za;

- Mr Lunga Dlova; LDlova@environment.gov.za;
- Ms. Mmatlala Rabothata; MRabothata@environment.gov.za
- Ms. Tsholofelo Sekonko; tsekonko@environment.gov.za
- Mr Stanley Tshitwamulomoni , stshitwamulomoni@environment.gov.za

Department of Water & Sanitation (DWS)

- Mr Shaun Cloete; CloeteS@dws.gov.za; Tel: 054 338 5800
- Ms Chantel Schwartz; schwartzc@dws.gov.za; Tel: 054 338 5800
- Ngidi Ziyanda, NgidiZ@dws.gov.za
- Hlengani Alexia, HlenganiA@dws.gov.za
- Mokhoantle Lerato, MokhoantleL@dws.gov.za
- Feni Ntombizanele, FeniN@dws.gov.za
- Moalosi Kelebogile, MoalosiK@dws.gov.za
- Rasikhanya Tendamudzimu, RasikhanyaT@dws.gov.za
- Franks Lindiwe, FranksL@dws.gov.za

Department of Environment & Nature Conservation (DENC)

- Thulani Mthombeni; tmthombeni@ncpg.gov.za; Cell: 072 409 2277
- Isaac Gwija, mr.gwija@gmail.com
- Doreen Werth; dwerth@ncpg.gov.za; 060 991 4675
- Dineo Moleko; dmoleko@ncpg.gov.za; 053 807 7467

Department of Roads & Public Works (DPW)

- Ms N. Corns (Secretary to HOD); ncorns@ncpg.gov.za; Tel: 053 839 2109
- Mr J Roelofse (Director); roelofse.j@vodamail.co.za; Tel: 053 839 2249

Department of Transport, Safety & Liaison

- Ms T. Modiakgotla; tmodiakgotla@ncpg.gov.za; Tel: 053 839 1702

Department of Agriculture Fisheries and Forestry (DAFF)

- Samkelisiwe Lubanga; SamkelisiweL@daff.gov.za; Cell 083765 4691
- Jacoline Mans; JacolineMa@daff.gov.za; Cell: 0828082737
- Ms Thoko Buthelezi (AgriLAnd Liason office); ThokoB@daff.gov.za; Tel: 012 319 7634
- Ms Hettie Buys (Act 70/70 Registry); HettieB@daff.gov.za

Department of Agriculture, Land Reform & Rural Development

- Mr Hannes Roux; hroux@ncpg.gov.za; Tel: (053) 631 0074
- Ms Mangalane Du Toit (Chief Director: Land Restitution Support); Mangalane.DuToit@drdlr.gov.za; Tel: (053) 807 5700
- Ms Samantha Rabie (PA); samantha.rabie@drdlr.gov.za

Department of Energy (DoE)

- Johannes Mokobane; johannes.mokobane@energy.gov.za; 0124067804

Department of Mineral Resources (DMR)

- Mr Pieter Swart (Regional Manager); pieter.swart@dmr.gov.za;

- Ms Lungi Mondela (Secretary); lungi.mondela@dmr.gov.za; Tel: (053) 807 1700
- Mr Vincent Muila (Env Officer); vincent.muila@dmr.gov.za; Tel: 053 807 1716

Any other party as required by the competent authority/EAP:

SAHRA

- Loaded onto SAHRIS

EWT

- Head Office, ewt@ewt.org.za; Tel: 011 372 3600
- Cobus Theron; cobust@ewt.org.za; Tel: 021 788 5661
- Bonnie Schumann; bonnies@ewt.org.za; Tel: 021 788 5661

WESSA

- Sandy Crake; admin@wessa.co.za; Tel: (021) 701 1397

South African Civil Aviation Authority (SACAA)

- Themba Thabete; thabethet@caa.co.za

SENTECH

- Leticia Vollner; info@sentech.co.za; Tel: 021 525 3609;
- Sonwabo Helesi; HelesiS@sentech.co.za
- Simon Munyai; MunyaiS@sentech.co.za

Square Kilometre Array (SKA)

- Dr. Adrian Tiplady; atiplady@ska.ac.za; Cell; 0723720134

Bird Life SA

- Ernest Retief; Email: ernst.retief@birdlife.org.za; Cell: 082 325 6608

South African Large Telescope (SALT)

- Dr Ramotholo Sefako; rrs@saao.ac.za; Cell: 084 770 5100

Northern Cape Chamber of Commerce and Industry

- Sharon Steyn, sharon@nocci.co.za

South African Photovoltaic Industry Association (SAPVIA)

- Lineo Masopha, lineo@sapvia.co.za

South African National Energy Development Institute (SANEDI)

- Funanani Netshitomboni, funananin@sanedi.org.za

Independent Power Producer Office

- Desiree Otto; desiree.otto@ipp-projects.co.za

Centre for Environmental Rights

- Phumla Yeki, pyeki@cer.org.za

Vodacom

- 111; 0821951@vodacom.co.za

MTN

- 0831231800; customercare@mtn.co.za

Cell C

- 0841744227; customerservice@cellc.co.za

Telkom • 10217; customercare@telkom.co.za
Servitude Holders: **ESKOM** • Henk Wydeman; WydemaH@eskom.co.za • Daan Liebenberg; LiebenDa@eskom.co.za • Keketso Mbete; MbeteKC@eskom.co.za **SANRAL** • Nicole Abrahams; abrahamsn@nra.co.za; Email: 021 957 4602 **TRANSNET** • Joey Bowers; joey.bowers@transnet.net; Tel: 053 632 8303/8 • Dylan McLeod; Dylan.McLeod@transnet.net

c. placing an advertisement in –
   i. one local newspaper; or
   ii. any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
   iii. one provincial newspaper or national newspaper if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken.

An advertisement was placed in Nooordkaap Bulletin (a provincial newspaper) on 24 November 2022 and Volksblad (a local newspaper) on 25 November 2022. The proposed activity will not have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it will be undertaken (**Annexure F**).

d. using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person desires of but unable to participate in the process due to illiteracy, disability or any other disadvantage.

Potential I&APs were provided a tailored Background Information Document (BID)/Notification in Afrikaans, which is the most widely spoken local language, for distribution to their land occupiers. Additionally, weather-proof notices were erected around the site and the Emthanjeni Local Municipality was asked to place the advert in their Facebook page.

4.2 Proof of notification

Proof of Notification via email was provided.

4.3 Notification of interested and affected parties of reports and other studies

Proof of Notification via email will be provided. The "Draft" Motivation Report will be disseminated to all Interested and Affected Parties (full list of I&APs in **Annexure D**), for a 30-day commenting period.

5. Engagement with interested and affected parties

- I&APs were listed and will be given access and opportunity to comment on the Draft Motivational Report via email, which requests a "delivery receipt" and "read receipt"; to help ensure they received the document. The notification includes the contact details that the I&AP can use to contact and communicate with the EAP.
- Responses will be provided to all comments received,
- Feedback to interested and affected parties will be recorded in the Comments and Response sheet, which will be used as a disclosure of interested and affected parties' interests, and
- Once a decision has been made, all registered interested and affected parties will be notified via email.
- The email correspondence included the below excerpt in compliance with the Protection Of Personal Information Act, 2013 (POPIA).
- **POPIA Consent.** Kindly be advised that should you receive unsolicited correspondence directly from us, and you are (i) an occupier, owner or person in control of the site or any alternative site where the activity is to be undertaken, (ii) an owner, person in control or occupier of land adjacent to the site or any alternative site where the activity is to be undertaken, (iii) the municipal councillor of a ward, (iv) any organisation of ratepayers that represents the community, (v) a municipality, (vi) any organ of state having jurisdiction in respect of any aspect of the activity, or (vii) any other party as required by the competent authority, then we were required to give you notice in terms of EIA Regulation 41(2), and had to therefore derive your information, including name, contact details and address, from a public record. Alternatively, you may have been referred to us. If you are not an organ of state, did not submit written comments or attend meetings, did not request in writing for your name to be placed on the register, then we are not obligated in terms of EIA Regulation 42 to retain a record of your personal information in a register of interested and affected parties, and as such, must obtain proof of consent provided by yourself. To this effect, kindly complete and return the last two pages of the Background Information Document, called POPIA Consent Form, or alternatively, reply to this email and confirm your consent as described below. Failure to provide consent (or comments) may impact your eligibility as a registered I&AP and opportunity to comment on reports and plans. Alternatively, should you not wish to participate or provide comments, then you are welcome to request that we delete your information from our records (the register of I&APs). Thank you.
- ☐ I, in my capacity as the data subject, give consent to ecoleges, in its capacity as the responsible party, to process my personal information for purposes of pursuing its

legitimate interests or those of a third party to whom the information is supplied, but limited to (1) the submission of reports or plans for comment, (2) transferring the same information to a third party, including registered interested and affected parties, the competent authority and applicant or holder of the environmental authorisation, (3) submitting a copy of an appeal against a decision to grant or refuse environmental authorisation, and/or (4) submission of environmental audit reports (containing recommendations for amending the EMPr) for comment.

5.1 Access and opportunity to comment on all written submissions

All communication, including but not limited to the reports, will be disseminated to registered interested and affected parties for a 30-day commenting period.

5.2 Response to comments received: feedback to interested and affected parties

The Comments and Response sheet will be made available to all I&APs.

5.3 Disclosure of interested and affected parties' interests

The Comments and Response sheet will be made available to all I&APs.

5.4 Notifying interested and affected parties of the decision

Once a decision has been made, all registered interested and affected parties will be notified.

5.5 Record of issues raised

The Comments and Response sheet will be made available to all I&APs.

5.6 Addressing the comments and concerns raised by the interested and affected parties

The Comments and Response sheet will be made available to all I&APs.

Annexure A – Level of Public Participation

Checklist questionnaire to determine level of public participation.

Questions and Answers	Expand Geographical Area	Expand Interest Groups	Expand Process (i.e. no. of meetings, languages, means, etc.)
Scale of anticipated impacts			
1) Are the impacts of the project likely to extend beyond the boundaries of the local municipality?			
The assessed negative impacts are largely contained within the boundaries of the local municipality, with the exception of low significance impacts linked to transport & deliveries, which extend beyond the local municipal boundary. Positive impacts, associated with the generation of renewable energy to be wheeled to private off-takers, will occur beyond the boundaries of the local municipality. Newspaper adverts were placed in local and provincial newspapers.	X	X	X
2) Are the impacts of the project likely to extend beyond the boundaries of the province?			
The assessed negative impacts are largely contained within the boundaries of the province, with the exception of low significance impacts linked to transport & deliveries, which extend beyond the provincial boundary. Positive impacts, associated with the generation of renewable energy to be wheeled to private off-takers, will occur beyond the boundaries of the province. A Traffic Impact Assessment was undertaken looking at impacts on traffic and logistics from major ports & towns to the site.	X	X	X
3) Is the project a greenfields development (a new development in a previously undisturbed area)?			

Questions and Answers	Expand Geographical Area	Expand Interest Groups	Expand Process (i.e. no. of meetings, languages, means, etc.)
Yes. The current and dominant land use is livestock grazing and the design of the Solar PV plant will ensure that grazing can continue in harmony with the proposed renewable energy project. During the S&EIA, exemption was granted by the Department of Agriculture in terms of Section 2 & Regulation 6 of CARA relating to cultivation of virgin soil and authorisation issued in terms of LA27 of LN1 of the EIA Regulations (2014) as amended.			
4) Does the area already suffer from socio-economic problems (e.g. job losses) or environmental problems (e.g. pollution), and is the project likely to exacerbate these?			
The area already suffers from socio-economic problems; most of the youth are seeking employment. Upon commencement, there will be both temporary (construction phase) and permanent employment opportunities (operational phase) (extracted from IDP & Social Impact Assessment). The authorisation holder will develop and undertake effective stakeholder engagement including formal skills development and socio-economic upliftment projects in the surrounding towns in consultation with the municipalities.	X	X	X
5) Is the project expected to have a wide variety of impacts (e.g. socio-economic and environmental)?			
The scope of the Part 2 amendment will have several negative impacts, which have been assessed and mitigated by a suite of specialists. These mitigations have been incorporated into the EMPr for implementation. it is anticipated that the project will have positive impacts on job			

Questions and Answers	Expand Geographical Area	Expand Interest Groups	Expand Process (i.e. no. of meetings, languages, means, etc.)
creation, skills development and local businesses. The area of De Aar and proximity to the N10 have been identified within the IDP to create a renewable energy hub which the project will help achieve.			
Public and environmental sensitivity of the project			
6) Are there widespread public concerns about the potential negative impacts of the project?			
To date there have been no comments or responses from I&AP's that reflect widespread public concerns. Subsequent phases have drawn some concerns from neighbouring landowners.			
7) Is there a high degree of conflict among I&AP's?			
To date there have been no comments or responses from I&AP's that reflect a high degree of conflict.			
8) Will the project impact on private land other than that of the applicant?			
No.			
9) Does the project have the potential to create unrealistic expectations (e.g. that a new factory would create a large number of jobs)?			
Yes, but the Social Impact Assessment (SIA) has provided measures to help ensure effective stakeholder engagement which have been captured for implementation in the EMPr.			
Potentially affected parties			
10) Has very little previous public participation taken place in the area?			
This project has undergone several previous public participation processes, associated with the S&EIA as well as subsequent amendments in 2020, 2021 & 2022. Furthermore, additional phases		X	X

Questions and Answers	Expand Geographical Area	Expand Interest Groups	Expand Process (i.e. no. of meetings, languages, means, etc.)
(Phases 2 & 3) are also in the process of environmental authorisation application, for which PPP is currently being undertaken. The consolidated I&AP registers for all three phases have been used to ensure all relevant parties are informed of changes.			
11) Did previous public participation processes in the area result in conflict?			
No.			
12) Are there existing organizational structures (e.g. local forums) that can represent I&AP's?			
Depending on the relationship between the public and Municipal Ward Councillors, the councillors can best represent the I&AP's. Relevant ward councillors are included in the I&AP database.		X	
13) What is the literacy level of the community in terms of their ability to participate meaningfully within the public participation process?			
About two fifths of the people in Wards 3, 6 & 8 (affected project properties occur in these wards), aged 20 years or older, have no schooling or only some primary education. This illiteracy level is higher than on local, district or provincial level. These levels of illiteracy were taken into consideration when consulting with the I&APs on the project.			
14) Is the area characterized by high social diversity (i.t.o socio-economic status, language or culture)?			
No.			
15) Were people in the area victims of unfair expropriations or relocation in the past?			

Questions and Answers	Expand Geographical Area	Expand Interest Groups	Expand Process (i.e. no. of meetings, languages, means, etc.)
Not according to the EAPs knowledge or specialist inputs, especially Social & Heritage.			
16) Is there a high level of unemployment in the area?			
According to the IDP and SIA, the unemployment levels reflect the national average.			
17) Do the I&AP's have special needs (e.g. a lack of skills to read or write, disability, etcetera)?			
There is a higher-than-average illiteracy level in wards 3, 6 & 8. The original S&EIA included two public meetings, one in Hanover and the other in De Aar.			

Conclusion:

Based on the information provided in the table above, there was reason to elaborate on the minimum requirements of the public participation process as described in the EIA Regulations, 2014, including advertising in a provincial newspaper and utilising a consolidated I&AP register from all three solar PV phases.

Annexure B (1) – Background Information Document (BID) in English

NOTIFICATION & BACKGROUND INFORMATION DOCUMENT (BID)

P.O. Box 516
3 Generaal Street
Machadodorp
1170
083 644 7179
info@ecoleges.co.za
www.ecoleges.co.za

March 17, 2023

Applications for (1) a Basic Assessment, (2) a Part 2 Amendment to an existing Environmental Authorisation, and (3) an Integrated Water Use License associated with the Sun Central Cluster 1 solar PV project, located on several farms between the towns of De Aar & Hanover, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province.

PURPOSE OF THIS DOCUMENT

The purpose of this document is to provide background information on the proposed project and associated environmental and water use authorisations, and to provide for objections, comments and contributions from stakeholders, with regards to potential environmental and water use impacts – which includes (but is not limited to): ecological, social, economic, physical, aesthetic, etc.

Ecoleges has been appointed, in its capacity as an independent Registered Environmental Assessment Practitioner (Reg. EAP), to manage the Public Participation Process (PPP) as part of the Water Use Authorisation and Environmental Authorisation processes. The integrated Public Participation Process must be undertaken in accordance with Chapter 6 of the Environmental Impact Assessment Regulations, 2014, as amended, and Section 17 of the Water Use License Application (WULA) and Appeals Regulations, 2017 (GN No. R. 267 of 24th March 2017), respectively. Ecoleges has taken the Public Participation 2017 Guideline Document (DEA, 2017) and other relevant guidelines, into consideration.

Water use authorisation is proposed in terms of an Integrated Water Use License Application (IWULA) which will be undertaken in terms of the Water Use License Application and Appeals Regulations, 2017.

The Environmental Authorisations are to be undertaken via a Basic Assessment (BA) and Part 2 Amendment in accordance with Regulations 19 and 31 – 33 of the amended EIA Regulations, 2014, respectively; promulgated in terms of sections 24(5) and 44 of the National Environmental Management Act (Act 107 of 1998), as amended.

BACKGROUND

In 2016, Ecoleges undertook an application for Environmental Authorisation (EA) by way of Scoping & Environmental Impact Assessment (S&EIA) for the development of a 225 MW Solar photovoltaic (PV) facility and associated infrastructure, including an on-site substation and loop-in loop-out transmission powerline, into the existing 400 kV Eskom Transmission Powerline. Three alternative footprints (PV01, PV02, PV03) were investigated during the assessment process. The central footprint (PV02) was identified as the preferred option because of its lower environmental impact and proximity to an existing 400 kV Eskom powerline when compared with PV 01 and PV03. The National Department of Environmental Affairs granted an environmental authorisation (DEA Reference: 14/12/16/3/3/2/998) on 16th April 2018. Water Use Authorisation was also granted for the project by way of General Authorisation (Ref. No.: 25174935, issued on 12th October 2018).

An amendment (Part 1 amendment) to increase the capacity (not the footprint) of the facility to 300 MW, due to technological advancements in solar photovoltaic efficiency and electrical output, was granted on 24th November 2020.

A second amendment (Part 2 amendment) was granted on 26th August 2021 for the inclusion of containerised lithium-ion battery storage and dual-fuel backup generators with associated fuel storage as part of the Risk Mitigation Independent Power Producers Procurement Program (RMIPPPP).

A third amendment is currently underway relating to the expansion of the Main Transmission Sub-station (MTS), inclusion of a 132 kV switching yard, additional access road and staging area (used for offloading and access control). This third amendment (but second Part 2 amendment) to the existing environmental authorisation is currently sitting with the competent authority (Department of Forestry, Fisheries and the Environment - DFFE) for decision. The additional activities and associated infrastructure require additional water use (section 21 (a), (b), (c), (i) & (g)) authorisations, which are in the process of being registered against the applicable General authorisations.

A fourth amendment (Part 1 amendment) is also currently underway, following the sale of shares and project rights to SolarAfrica Energy (SAE). Change of details and responsible party of the water use authorisations is also being applied for.

PROJECT DESCRIPTION

Electricity generated by the project will be “wheeled” on existing Eskom infrastructure for private offtake. The growing demand for the generation and supply of renewable energy by Independent Power Producers (IPPs), has resulted in the expansion of the project scope, which will now require additional authorisations. The increased scope includes:

1. Additional access road upgrades leading to the MTS are required, due to the size and weight of the MTS transformers and associated delivery vehicles as well as ensuring compliance with

Eskom minimum road specifications. The required road upgrades will result in "triggering" additional Listed & Specified Activities not currently included in the existing Environmental Authorisation (EA), necessitating application for additional EA by way of a Basic Assessment.

2. Electricity generated by the Solar PV Facility will be connected to the national grid, using Loop-In, Loop-Out (LILO) into the existing 400 kV Eskom transmission powerline closest to the MTS (known as Line 2), but provision needs to be made to allow LILO into Line 1, a parallel Eskom transmission line approximately 2.5 kms away from Line 2. This additional transmission line forms part of the Part 2 Amendment.

3. Due to the size of the MTS, local supply of ready-mix concrete will no longer be feasible, and on-site batching will be required. So, the Part 2 amendment will also include on-site concrete batching, which was not included in the original scope of the project. Furthermore, additional construction camps will be required, as provision needs to be made for multiple contractors during the construction phase, as well as changes to Operational & Maintenance (O&M) facilities, which need to accommodate more than one Independent Power Producer (IPP).

4. Finally, application will be made to consolidate all the current water uses authorised under General Authorisation into an Integrated Water Use License. Additional water uses will be added into the IWULA for road building activities within the DWS regulated area of a watercourse, as well as the provision of additional water, by way of groundwater, to ensure adequate water provision for the road upgrades and on-site concrete batching activities.

APPLICABLE LEGISLATION

Water Use

An application for Water Use Authorisation in terms of the National Water Act, 1998 (Act No. 36 of 1998) will be submitted to the Department of Water & Sanitation (DWS): Orange Proto Catchment Management Agency for:

Water Uses as defined in Section 21 of the National Water Act (Act 36 of 1998)	
Section 21(a)	taking of water
Section 21(b)	storing of water
Section 21(c)	impeding or diverting the flow of water in a watercourse
Section 21(e)	engaging in a controlled activity
Section 21(g)	disposing of waste in a manner which may detrimentally impact on a water resource
Section 21(i)	altering the bed, banks, course or characteristics of a watercourse

Environmental Authorisations

An Environmental Authorisation is required for the development and/or upgrading of the access road as per the following Listed Activities through a Basic Assessment (BA) process:

Listing Notice 1 (GN No. 983, 4 December 2014) as amended	
Listed Activity 12	**The development of**— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or **(ii)**

	infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.
Listed Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving— (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.
Listed Activity 24	**The development of a road –** (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road – (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter.

Listed Activity 48	**The expansion of –** **(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;** or (ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; where such expansion occurs- **(a) within a watercourse;** (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding - (aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such expansion occurs within an urban area; or (ee) where such expansion occurs within existing roads, road reserves or railway line reserves.
Listed Activity 56	**The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre**— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, **where the existing road is wider than 8 metres;** excluding where widening or lengthening occur inside urban areas.
Listing Notice 3 (GN No. 985, 4 December 2014) as amended	
Listed Activity 4	**The development of a road wider than 4 metres with a reserve less than 13,5 metres. g. Northern Cape** i. In an estuary; ii. **Outside urban areas**: (aa) A protected area identified in terms of NEMPAA, excluding disturbed areas; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority** or in bioregional plans; (ff) Core areas in biosphere reserves; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other

	protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas; or (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or iii. Inside urban areas: (aa) Areas zoned for use as public open space; (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; or (cc) Seawards of the development setback line or within urban protected areas.
Listed Activity 14	The development of – (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or **(ii) infrastructure or structures with a physical footprint of 10 square metres or more;** where such development occurs - **(a) within a watercourse;** (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **g. Northern Cape** i. In an estuary; **ii. Outside urban areas:** (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; no (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas identified in terms of an international convention; as above (**ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;** (gg) Core areas in biosphere reserves; (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.

Listed Activity 18	**The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.** **g. Northern Cape** i. In an estuary; **ii. Outside urban areas:** (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;** (ff) Core areas in biosphere reserves (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or **(ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland;** or iii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose
Listed Activity 23	The expansion of— (bb)dams or weirs where the dam or weir is expanded by 10 square metres or more; or **(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs—** **(a) within a watercourse**; (b) in front of a development setback adopted in the prescribed manner; or I if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **g. Northern Cape** i. In an estuary; **ii. Outside urban areas**: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted

	by the competent authority; (dd) Sites or areas identified in terms of an international convention; **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans**; (ff) Core areas in biosphere reserves; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or iii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.
Listed Activity 26	Phased activities for all activities— i. listed in this Notice and as it applies to a specific geographical area, which commenced on or after the effective date of this Notice; or ii. similarly listed in any of the previous NEMA notices, and as it applies to a specific geographical area, which commenced on or after the effective date of such previous NEMA Notices— where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold; — excluding the following activities listed in this Notice— 7; 8; 11; 13; 20; 21; and 24.

PURPOSE OF THE PROJECT

The overall objective is to undertake and complete robust and defendable BA, Part 2 Amendment and IWULA processes that will serve to inform the Competent Authority (DFFE or NCDEA's) & Responsible Authority (DWS) decision on the acceptability of the proposed project.

LOCATION

The proposed location is on Portion 6 of Farm Leuwe Fontein 27C, The Remainder of Farm Riet Fontein 39C, Portion 1, 6 and the Remainder of Farm Kwanselaars Hoek 40C, Portion 4 of Farm Taaibosch Fontein 41C, Remainder of Blaauwbosch Kuilen Outspan No. 37; Remainder of Barends Kuilen No. 38, and Portion 1 of Farm No. 56 all within the Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province, South Africa (Figure 1).

Affected road reserves (for public road sections of the proposed access road) include the intersection of the N10 with the District 'Burgerville' (2448) turn-off, and a 5.2 km section of the District 'Burgerville' (2448) road.

DESCRIPTION OF TASKS

- An advertisement will be placed in the Volksblad and Noordkaap Bulletin Newspapers,

- Stakeholders, including landowners and land occupiers of neighbouring properties, other interested & affected parties, including the relevant authorities; will be notified of the proposed development in writing, and
- Notice boards advertising the applications will be placed in and around the site.

ANTICIPATED ISSUES

Environmental issues that may be addressed in the reports could include the following:

- Agricultural Assessment,
- Air Quality Assessment,
- Cultural Heritage Impact Assessment,
- Geohydrology Assessment,
- Geotechnical Assessment,
- Hydrology Assessment,
- Noise Impact Assessment,
- Paleontology Impact Assessment,
- Social Impact Assessment,
- Terrestrial Biodiversity Impact Assessment (incl. Animal and Plant Species Assessment),
- Traffic Impact Assessment,
- Visual Impact Assessment; and
- Wetland & watercourse delineation.

YOUR COMMENTS PLEASE!

Your comments on the proposed projects, the public participation process, and issues needing investigation, will assist the technical studies and the authorities in their consideration of the relevant environmental and social aspects.

You are invited to register as an Interested and Affected Party (I&AP) and to assist us in:

- identifying possible impacts of the proposed development on the environment,
- making suggestions for mitigation and/or alternatives, and

considering the “Need and Desirability”.

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LOCATION

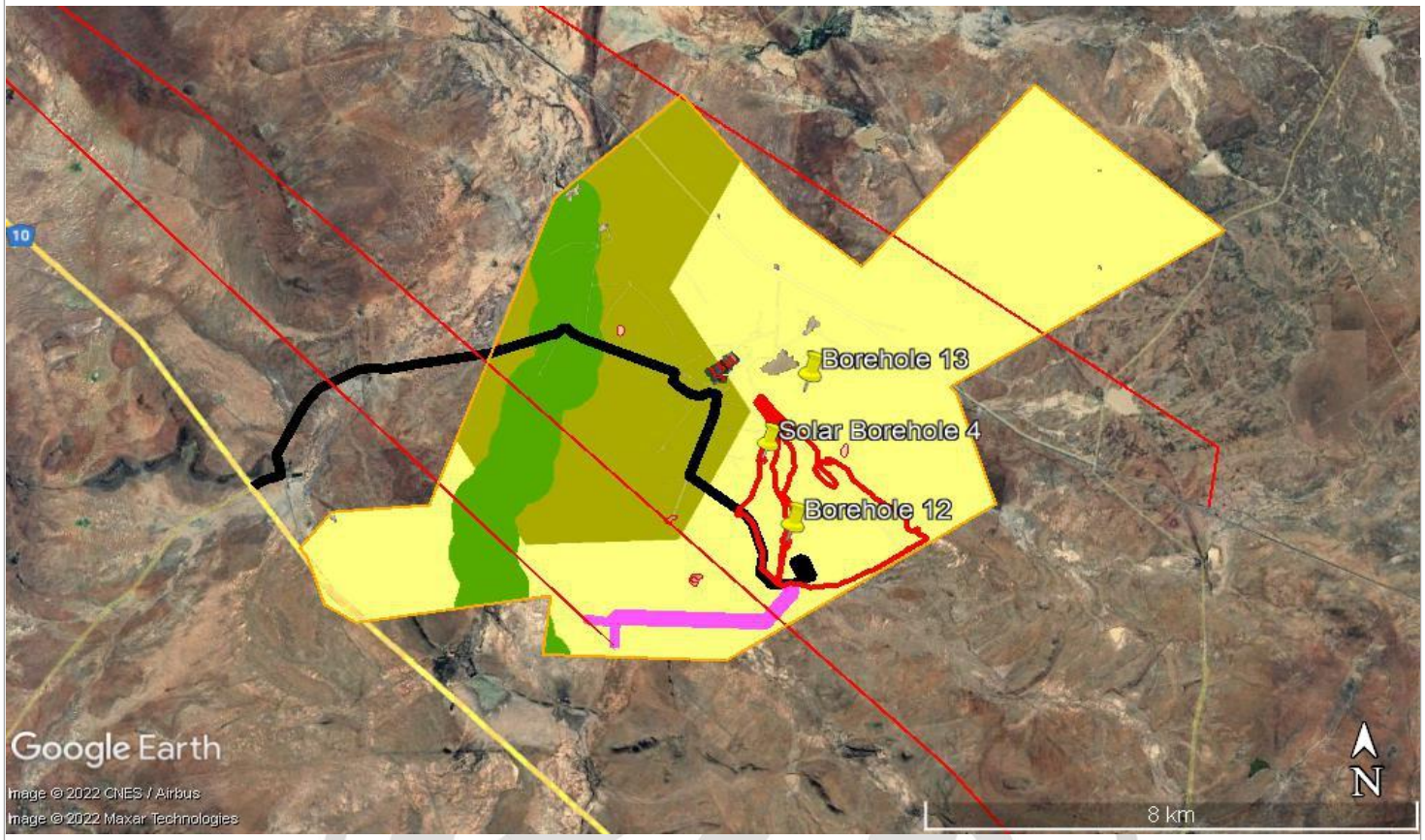

Figure 1. Location map of proposed Access Road (black line) and 400 kV Transmission Line (pink line) relative to already approved Sun Central Cluster 1 Solar PV Facility (thick red line).

Mitigations

Mitigation measures will be developed for the anticipated issues/impacts. Stakeholders are, however, welcome to comment on these issues and provide additional observations.

The Impact Mitigation Hierarchy

- *Firstly,* alternatives must be investigated to avoid negative impacts altogether.
- *Secondly*, after it has been found that the negative impacts cannot be avoided, alternatives must be investigated to reduce (mitigate and manage) unavoidable negative impacts to acceptable limits.
- *Thirdly*, alternatives must be investigated to remediate (rehabilitate and restore).
- *Fourthly,* unavoidable impact that remain after mitigation and remediation must be compensated for through investigating options to offset the negative impacts.
- While *throughout*, alternatives must be investigated to optimise positive impact.

Alternatives

Consideration of Alternatives is one of the most critical elements of this process. Its role is to provide a framework for sound decision-making based on the principle of sustainable development.

Alternatives should be identified as early as possible in the project cycle.

Ecoleges welcomes stakeholders' inputs/suggestions, to submit possible reasonable and feasible alternatives for consideration.

It is important to note that an alternative is defined as a different means of meeting the same general purpose and requirements of the activity, which may include alternatives to-

(a) the property on which or location where it is proposed to undertake the activity;
(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;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

When submitting alternatives, the recommended alternative must be:

- Practicable,
- Feasible,
- Relevant,
- Reasonable, and
- Viable.

Need and Desirability

According to Regulation 13(1)(b) and 13(1)(e) read together with Regulation 18 of the amended EIA Regulations, 2014, EAPs and specialists must have knowledge of any guidelines that have relevance to the proposed activity and have regard to the need for and desirability of the undertaking of the proposed activity.

Considering that 'Need and Desirability' is determined by considering the broader societal/community needs and public interests, that is NOT the needs of the applicant/developer, we encourage you to also consider the Guideline on Need and Desirability published by DEA (2017) to help you identify key issues in respect of the need for and desirability of undertaking the proposed activity/development. The guideline is freely available on the web. However, we have also prepared a YouTube video that explains the intended concept of Need and Desirability (https://www.youtube.com/channel/UC0iHr-zE4TPzwhZjzoTPQMw).

The aim of the BA process is to find that (reasonable and feasible) alternative that will ensure sustainable development. Consistent with the aforesaid aim and purpose of BA, the concept of "need and desirability" relates to, amongst others, the nature, scale and location of development being proposed, as well as the wise use of land.

Strictly speaking, "need" primarily refers to time and "desirability" refers to place, e.g. is this the right time and is it the right place for locating the type of land-use/activity being proposed? However, "need and desirability" are interrelated and the two components collectively can be considered in an integrated and holistic manner by engaging the **Questions** provided in the guideline document. The questions are divided into two broad categories relating to ecological sustainability (e.g. how the development will impact on ecosystems and biological diversity) and justifiable economic and social development.

We suspect the ecological category of questions address desirability and whether it is the right place, while the economic and social category of questions addresses broader societal needs, and whether this is the right time.

Need and desirability is like a drawstring that pulls the assessment process together to decide on the best option. When the sum of the impacts (evaluated during the impact assessment) is considered holistically through the lens of Need and Desirability, that is by presenting them within the framework of questions posed by the guideline, then Need and Desirability becomes the overall impact summary to determine if the proposed activity is the best option or to decide on the fate of the application.

When collectively considering ecological, social and economic impacts it is important to remember that while there might be some trade-offs between the considerations, all development must in terms of Section 24 of the Constitution be ecologically sustainable, while economic and social development must be justifiable. Consequently, there are specific "trade-off rules that apply, namely environmental integrity may never be compromised, and the social and economic development must take a certain form and meet certain specific objectives for it to be considered justifiable.

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REGISTRATION

To ensure that you are registered as an interested and/or affected party, please complete the enclosed REGISTRATION AND COMMENT SHEET and forward it to the address, fax or email provided below.

Postal Address:
P.O. Box 516
Machadodorp
1170
Fax: 086 697 9316
E-mail: info@ecoleges.co.za or shannon@ecoleges.co.za

ENQUIRIES

Please do not hesitate to visit us at our office or give us a call should you have any further queries or concerns regarding the listed activity(ies) or development that is being proposed.

Physical address (Office):
3 Generaal Street
Machadodorp
1170
Cell: 083 644-7179 (office) or 064 885 2240 (Shaun MacGregor)

Please be assured that your comments will form part of the documents to be submitted to the decision-making authority.

Please complete and return the below Registration and Comment Sheet and/or POPIA Consent Form at your earliest convenience:

- **Written comments or objections relating to the application for a water use license must be lodged within 60 days of this notice, no later than 14th February 2023.**

Note: To withdraw your consent at any time please email us directly, and we will immediately delete your information from our records. Thank you.

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REGISTRATION AND COMMENT SHEET

UPGRADING & DEVELOPMENT OF AN ACCESS ROAD (REF #: 2022_008P), PART 2 AMENDMENT TO THE ENVIRONMENTAL AUTHORISATION FOR THE DEVELOPMENT OF A SOLAR PV FACILITY (REF #: 2022_009P) AND INTERGRATED WATER USE LICENSE APPLICATION (REF #: 2022_010P) ON VARIOUS FARMS WITHIN THE REGISTRATION DISTRICT OF HANOVER, EMTHANJENI LOCAL MUNICIPALITY, PIXLEY KA SEME DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE.

Title: _____Name: _____

Surname: _____

Company Name / Interest Group: _____

_____

Postal or Residential Address: _____

_____

_____

_____

Town/City: _____

Postal Code: _____

Tel: (_____) _____

Cell: _____

Fax: (_____) _____

E-mail address: _____

A registered interested and affected party is entitled to comment, in writing, on all written submissions including draft reports made to the competent authority provided

that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application. Please supply such information in the space provided below:

Please indicate with an **X** whether you would like to be kept informed of the WUA & S&EIA process.

YES, I would like to be kept informed	
NO, I am not interested	

If "YES", how would you like to be informed? (please mark the appropriate block with an "**X**")

E-mail	
Fax	

COMMENTS: (If you require more space than that which is provided, please attach additional pages)

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POPIA CONSENT FORM

Kindly be advised that should you receive unsolicited correspondence directly from us, and you are (i) an occupier, owner or person in control of the site or any alternative site where the activity is to be undertaken, (ii) an owner, person in control or occupier of land adjacent to the site or any alternative site where the activity is to be undertaken, (iii) the municipal councillor of a ward, (iv) any organisation of ratepayers that represents the community, (v) a municipality, (vi) any organ of state having jurisdiction in respect of any aspect of the activity, or (vii) any other party as required by the competent authority, then we were required to give you notice in terms of EIA Regulation 41(2), and had to therefore derive your information, including name, contact details and address, from a public record. Alternatively, you may have been referred to us. If you are not an organ of state, did not submit written comments or attend meetings, did not request in writing for your name to be placed on the register, then we are not obligated in terms of EIA Regulation 42 to retain a record of your personal information in a register of interested and affected parties, and as such, must obtain proof of consent provided by yourself. To this effect, kindly confirm your consent by ticking the boxes below.

☐ I, in my capacity as the data subject, give consent to ecoleges, in its capacity as the responsible party, to process my personal information for purposes of pursuing its legitimate interests or those of a third party to whom the information is supplied, but limited to (1) the submission of reports or plans for comment, (2) transferring the same information to a third party, including registered interested and affected parties, the competent authority and applicant or holder of the environmental authorisation, (3) submitting a copy of an appeal against a decision to grant or refuse environmental authorisation, and/or (4) submission of environmental audit reports (containing recommendations for amending the EMPr) for comment.

☐ I hereby acknowledge that only the minimum personal information that is required to be processed for the purpose of the EIA Regulations (2014) will be processed, including my name, contact details, address, and disclosure on any direct business, financial, personal, or other interest which that party may have in the approval or refusal of the application.

☐ I hereby confirm that the personal information, which I shall provide is mine, and that it is complete, accurate, not misleading and updated.

☐ I hereby acknowledge that my personal information is being collected explicitly for public participation processes associated with this project.

☐ Irrespective of the decision to grant or refuse an environmental authorisation, and irrespective of whether the scope of the authorisation includes operational or development aspects only, I hereby give consent to ecoleges to retain my records indefinitely for historical and/or research purposes.

☐ I understand, upon submitting my personal information to ecoleges, that it will be saved on their server, which meets the various conditional “Minimum Security Requirements” of their Cyber Insurance company, including *inter alia* firewalls to restrict access to digitally

stored sensitive information, anti-virus software implemented on all desktops, laptops and sensitive systems, password controls implemented on sensitive systems, etc.

☐ I understand that ecoleges shall inform me when there are reasonable grounds to believe that my personal information has been accessed or acquired by any unauthorised person.

☐ I have read and understand my Section 5 Rights as a data subject including *inter alia*, the right to -

- request access to my personal information,
- request information about the identity of all third parties,
- request ecoleges to correct, update, destroy or delete my personal information, and
- lodge a complaint in writing to the Information Regulator if in my opinion the processing of information is not reasonable.

For more information about the Protection of Personal Information Act, 2013 (POPIA), which commenced on 01st July 2020, it is available at the following link: www.popia.co.za

Your participation in the Public Participation Process (PPP) is voluntary, but it is mandatory in terms of Regulation 42 and 43(1) of the amended EIA Regulations (2014) that we receive the relevant personal information for us to register you as an Interested and Affected Party, and for you to be entitled to comment, in writing, on all reports or plans that we submit to you, respectively.

Failure to supply the information or incomplete information may impact your eligibility as a registered Interested and Affect Party.

Annexure B (2) – Background Information Document (BID) in Afrikaans

KENNISGEWING EN AGTERGRONDINLIGTINGSDOKUMENT

Posbus 516
Generaal Straat 3
Machadodorp
1170
083 644 7179
info@ecoleges.co.za
www.ecoleges.co.za

Aansoeke vir (1) 'n Basiese Assessering, (2) 'n Deel 2 Wysiging van 'n bestaande Omgewingsmagtiging, en (3) 'n Geïntegreerde Watergebruikslisensie wat verband hou met die Sun Central Cluster 1 sonkrag-PV-projek, geleë op verskeie plase tussen die dorpe De Aar & Hanover, Emthanjeni Plaaslike Munisipaliteit, Pixley Ka Seme Distriksmunisipaliteit, Noord-Kaap Provinsie.

DIE DOEL VAN HIERDIE DOKUMENT

Die doel van hierdie dokument is om agtergrondinligting te verskaf oor die voorgestelde projek en gepaardgaande omgewings- en watergebruikmagtigings, en om voorsiening te maak vir besware, kommentaar en bydraes van belanghebbendes met betrekking tot potensiële omgewings- en watergebruiksimpakte – wat insluit (maar nie beperk is tot): ekologiese, sosiale, ekonomiese, fisiese, estetiese, ens.

Ecoleges is in sy hoedanigheid as 'n onafhanklike geregistreerde omgewingsassesseringspraktisyn (Reg. EAP) aangestel om die openbaredeelnameproses (ODP) as deel van die watergebruikmagtigings- en omgewingsmagtigingsprosesse te bestuur. Die geïntegreerde openbare deelnameproses moet onderneem word in ooreenstemming met Hoofstuk 6 van die Omgewingsimpakbepalingsregulasies, 2014, soos gewysig, en Artikel 17 van die Watergebruikslisensie-aansoek (WULA) en Appèlregulasies, 2017 (GN No. R. 267 van 24 Maart 2017), onderskeidelik. Ecoleges het die Openbare Deelname 2017-riglyndokument (DEA, 2017) en ander relevante riglyne in ag geneem.

Watergebruikmagtiging word voorgestel ingevolge 'n geïntegreerde watergebruiklisensie-aansoek (IWULA) wat ingevolge die watergebruiklisensie-aansoek en appèlregulasies, 2017, onderneem sal word.

Die Omgewingsmagtigings moet onderneem word deur middel van 'n Basiese Assessering (BA) en Deel 2-wysiging ooreenkomstig Regulasies 19 en 31 – 33 van die gewysigde EIA (Omgewingsimpakstudie)-regulasies, 2014, onderskeidelik; gepromulgeer ingevolge artikels 24(5) en 44 van die Wet op Nasionale Omgewingsbestuur (Wet 107 van 1998), soos gewysig.

AGTERGROND

In 2016 het Ecoleges 'n aansoek om omgewingsmagtiging (EA) by wyse van 'n "Scoping & Environmental Impact Assessment" (S&EIA) onderneem vir die ontwikkeling van 'n 225 MW Solar fotovoltaïese (PV) fasiliteit en gepaardgaande infrastruktuur, insluitend 'n substasie op die perseel en "loop-in loop-out" transmissie kraglyn, in die bestaande 400 kV Eskom Transmission Powerline. Drie alternatiewe voetspore (PV01, PV02, PV03) is tydens die assesseringsproses ondersoek. Die sentrale voetspoor (PV02) is geïdentifiseer as die voorkeuropsie vanweë die laer omgewingsimpak en nabyheid aan 'n bestaande 400 kV Eskom-kraglyn in vergelyking met PV01 en PV03. Die Nasionale Departement van Omgewingsake het op 16 April 2018 'n omgewingsmagtiging (DEA-verwysing: 14/12/16/3/3/2/998) toegestaan. Watergebruikmagtiging is ook by wyse van Algemene Magtiging vir die projek toegestaan (Verw. No.: 25174935, uitgereik op 12 Oktober 2018).

'n Wysiging (Deel 1-wysiging) om die kapasiteit (nie die voetspoor nie) van die fasiliteit tot 300 MW te verhoog, weens tegnologiese vooruitgang in sonfotovoltaïese doeltreffendheid en elektriese uitset, is op 24 November 2020 toegestaan.

'n Tweede wysiging (Deel 2-wysiging) is op 26 Augustus 2021 toegestaan vir die insluiting van houer-litium-ioonbatteryberging en dubbelbrandstof-rugsteunopwekkers met gepaardgaande brandstofberging as deel van die Risikoversagting Onafhanklike Kragprodusente Verkrygingsprogram (ROKV).

'n Derde wysiging is tans aan die gang met betrekking tot die uitbreiding van die Hooftransmissie-substasie (MTS), insluiting van 'n 132 kV-skakelwerf, bykomende toegangspad en verhoogarea (wat gebruik word vir aflaai en toegangsbeheer). Hierdie derde wysiging (maar tweede Deel 2-wysiging) aan die bestaande omgewingsmagtiging sit tans met die bevoegde owerheid (Departement van Bosbou, Visserye en die Omgewing - DFFE) vir beslissing. Die bykomende aktiwiteite en gepaardgaande infrastruktuur vereis bykomende watergebruik (artikel 21 (a), (b), (c), (i) & (g)) magtigings, wat in die proses is om teen die toepaslike Algemene magtigings geregistreer te word.

'n Vierde wysiging (Deel 1-wysiging) is ook tans aan die gang, na aanleiding van die verkoop van aandele en projekregte aan SolarAfrica Energy (Edms) Bpk (SAE). Daar word ook aansoek gedoen vir verandering van besonderhede en verantwoordelike party van die watergebruikmagtigings.

PROJEK BESKRYWING

Elektrisiteit wat deur die projek opgewek word, sal op bestaande Eskom-infrastruktuur "afgelei" word vir private opname. Die groeiende vraag na die opwekking en aanbod van hernubare energie deur onafhanklike kragprodusente (IPP's), het gelei tot die uitbreiding van die projekomvang, wat nou bykomende magtigings sal vereis. Die groter omvang sluit in:

1. Bykomende toegangspadopgraderings wat na die MTS lei, word vereis weens die grootte en gewig van die MTS-transformators en gepaardgaande afleweringsvoertuie, asook om te verseker dat Eskom se minimum padspesifikasies nagekom word. Die vereiste padopgraderings sal daartoe lei dat bykomende gelyste en gespesifiseerde aktiwiteite wat nie tans by die bestaande omgewingsmagtiging (EA) ingesluit is nie, "geaktiveer" word, wat aansoek om addisionele omgewingsmagtiging by wyse van 'n basiese assessering noodsaak.

2. Elektrisiteit wat deur die sonkrag-PV-fasiliteit opgewek word, sal aan die nasionale netwerk gekoppel word, met behulp van Loop-In, Loop-Out (LILO) in die bestaande 400 kV Eskom-transmissiekraglyn naaste aan die MTS (bekend as Lyn 2), maar voorsiening moet gemaak word om LILO in Lyn 1, 'n parallelle Eskom-transmissielyn ongeveer 2,5 km van lyn 2, toe te laat. Hierdie bykomende transmissielyn vorm deel van die Deel 2-wysiging.

3. As gevolg van die grootte van die MTS, sal plaaslike toevoer van “ready-mix”-beton nie meer haalbaar wees nie, en op die perseel sal bondeling benodig word. Die Deel 2-wysiging sal dus ook betongroepering op die perseel insluit, wat nie by die oorspronklike omvang van die projek ingesluit is nie. Verder sal 'n bykomende kontrakteursaflegging vereis word, aangesien voorsiening gemaak moet word vir verskeie kontrakteurs tydens die konstruksiefase, asook veranderinge aan Operasionele en Instandhoudingsfasiliteite (O&M), wat meer as een Onafhanklike Kragprodusent (IPP) moet akkommodeer.

4. Laastens sal aansoek gedoen word om al die huidige watergebruike wat ingevolge Algemene Magtiging gemagtig is, in 'n Geïntegreerde Watergebruikslisensie te konsolideer. Bykomende watergebruike sal by die IWULA gevoeg word vir padbou-aktiwiteite binne die DWS-gereguleerde gebied van 'n waterloop, asook die voorsiening van bykomende water, by wyse van grondwater, om voldoende watervoorsiening vir die padopgraderings en betonbondelaktiwiteite op die perseel te verseker.

TOEPASLIKE WETGEWING

Watergebruik

'n Aansoek om magtiging vir watergebruik ingevolge die Nasionale Waterwet, 1998 (Wet No. 36 van 1998) sal by die Departement van Water en Sanitasie (DWS) ingedien word: Orange Proto Catchment Management Agency vir:

Water Uses as defined in Section 21 of the National Water Act (Act 36 of 1998)	
Section 21(a)	taking of water
Section 21(b)	storing of water
Section 21(c)	impeding or diverting the flow of water in a watercourse
Section 21(e)	engaging in a controlled activity
Section 21(g)	disposing of waste in a manner which may detrimentally impact on a water resource
Section 21(i)	altering the bed, banks, course or characteristics of a watercourse

**Die wetgewing word in Engels aangehaal soos wat dit oorspronklik gepubliseer is om te verhoed dat die bedoeling, intensie, en taalgebruik van die wetgewing met moontlike onakkuraathede beïnvloed kan word tydens die vertalings proses.*

Omgewingsmagtigings

'n Omgewingsmagtiging word vereis vir die ontwikkeling en/of opgradering van die toegangspad volgens die volgende gelyste aktiwiteite deur middel van 'n Basiese Assesseringsproses (BA):

Listing Notice 1 (GN No. 983, 4 December 2014) as amended	
Listed Activity 12	**The development of**— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or **(ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse;** (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.
Listed Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving— (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.

Listed Activity 24	**The development of a road –** (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road – (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter.
Listed Activity 48	**The expansion of –** **(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;** or (ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; where such expansion occurs- **(a) within a watercourse;** (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding - (aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such expansion occurs within an urban area; or (ee) where such expansion occurs within existing roads, road reserves or railway line reserves.
Listed Activity 56	**The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre**— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, **where the existing road is wider than 8 metres;** excluding where widening or lengthening occur inside urban areas.
Listing Notice 3 (GN No. 985, 4 December 2014) as amended	
Listed Activity 4	**The development of a road wider than 4 metres with a reserve less than 13,5 metres. g. Northern Cape** i. In an estuary; ii. **Outside urban areas**: (aa) A protected area identified

	in terms of NEMPAA, excluding disturbed areas; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority** or in bioregional plans; (ff) Core areas in biosphere reserves; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas; or (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or iii. Inside urban areas: (aa) Areas zoned for use as public open space; (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; or (cc) Seawards of the development setback line or within urban protected areas.
Listed Activity 14	The development of – (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or **(ii) infrastructure or structures with a physical footprint of 10 square metres or more;** where such development occurs - **(a) within a watercourse;** (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **g. Northern Cape** i. In an estuary; **ii. Outside urban areas:** (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; no (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas identified in terms of an international convention; as above

	(**ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;** (gg) Core areas in biosphere reserves; (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.
Listed Activity 18	**The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.** **g. Northern Cape** i. In an estuary; **ii. Outside urban areas:** (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;** (ff) Core areas in biosphere reserves (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or **(ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland;** or iii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose
Listed Activity 23	The expansion of— (bb)dams or weirs where the dam or weir is expanded by 10 square metres or more; or **(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs—** **(a) within a watercourse**;

	(b) in front of a development setback adopted in the prescribed manner; or I if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **g. Northern Cape** i. In an estuary; **ii. Outside urban areas**: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans**; (ff) Core areas in biosphere reserves; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or iii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.
Listed Activity 26	Phased activities for all activities— i. listed in this Notice and as it applies to a specific geographical area, which commenced on or after the effective date of this Notice; or ii. similarly listed in any of the previous NEMA notices, and as it applies to a specific geographical area, which commenced on or after the effective date of such previous NEMA Notices— where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold; — excluding the following activities listed in this Notice— 7; 8; 11; 13; 20; 21; and 24.

**Die wetgewing word in Engels aangehaal soos wat dit oorspronklik gepubliseer is om te verhoed dat die bedoeling, intensie, en taalgebruik van die wetgewing met moontlike onakkuraathede beïnvloed kan word tydens die vertalings proses.*

DOEL VAN DIE PROJEK

Die oorhoofse doelwit is om robuuste en verdedigbare BA, Deel 2-wysigings- en IWULA-prosesse te onderneem en te voltooi wat sal dien om die bevoegde owerheid (DFFE of NCDEA's) en verantwoordelike owerheid (DWS) se besluit oor die aanvaarbaarheid van die voorgestelde projek in te lig.

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LIGGING

Die voorgestelde ligging is op Gedeelte 6 van Plaas Leuwe Fontein 27C, Die Res van Plaas Riet Fontein 39C, Gedeelte 1, 6 en die res van Plaas Kwanselaars Hoek 40C, Gedeelte 4 van Plaas Taaibosch Fontein 41C, Res van Blaauwbosch Kuilen Buitespan No. 37; Res van Barends Kuilen No. 38, en Gedeelte 1 van Plaas No. 56 almal binne die Emthanjeni Plaaslike Munisipaliteit, Pixley Ka Seme Distriksmunisipaliteit, Noord-Kaap Provinsie, Suid-Afrika (Figuur 1).

Geaffekteerde padreserwes (vir openbare padgedeeltes van die voorgestelde toegangspad) sluit in die kruising van die N10 met die distrik 'Burgerville' (2448) afdraai, en 'n 5,2 km-gedeelte van die distrik 'Burgerville' (2448) pad.

BESKRYWING VAN TAKE

- ‘n Advertensie sal in die Volksblad en Noordkaap Bulletin Koerante geplaas word,
- Belanghebbendes, insluitend grondeienaars en grondbesetters van naburige eiendomme, ander belanghebbende & geaffekteerde partye, insluitend die betrokke owerhede; skriftelik in kennis gestel sal word van die voorgestelde ontwikkeling, en
- Kennisgewingborde wat die toepassings adverteer, sal in en om die geaffekteerde eiendomme geplaas word.

VERWAGTE KWESSIES

Omgewingskwessies wat in die verslae aangespreek kan word, kan die volgende insluit:

- Landbou-assessering,
- Luggehalte-assessering,
- Impakbeoordeling van kulturele erfenis,
- Geohidrologie assessering,
- Geotegniese assessering,
- Hidrologie assessering,
- Geraasimpakbeoordeling,
- Paleontologie Impak Assessering,
- Sosiale Impak Assessering,
- Assessering van die impak van aardse biodiversiteit (insluitend die beoordeling van diere- en plantspesies),
- Assessering van verkeersimpakte,
- Visuele Impak Assessering; En
- Afbakening van vleiland en waterloop.

U KOMMENTAAR ASSEBLIEF!

Jou kommentaar oor die voorgestelde projekte, die openbare deelname proses, en kwessies wat ondersoek moet word, sal die tegniese studies en die owerhede help in hul oorweging van die relevante omgewings- en sosiale aspekte.

U word uitgenooi om as 'n Belangstellende en Geaffekteerde Party (I&AP) te registreer en ons te help met:

- die identifisering van moontlike impakte van die voorgestelde ontwikkeling op die omgewing,

- voorstelle te maak vir versagting en/of alternatiewe, en

inagneming van die "Behoefte en wenslikheid".

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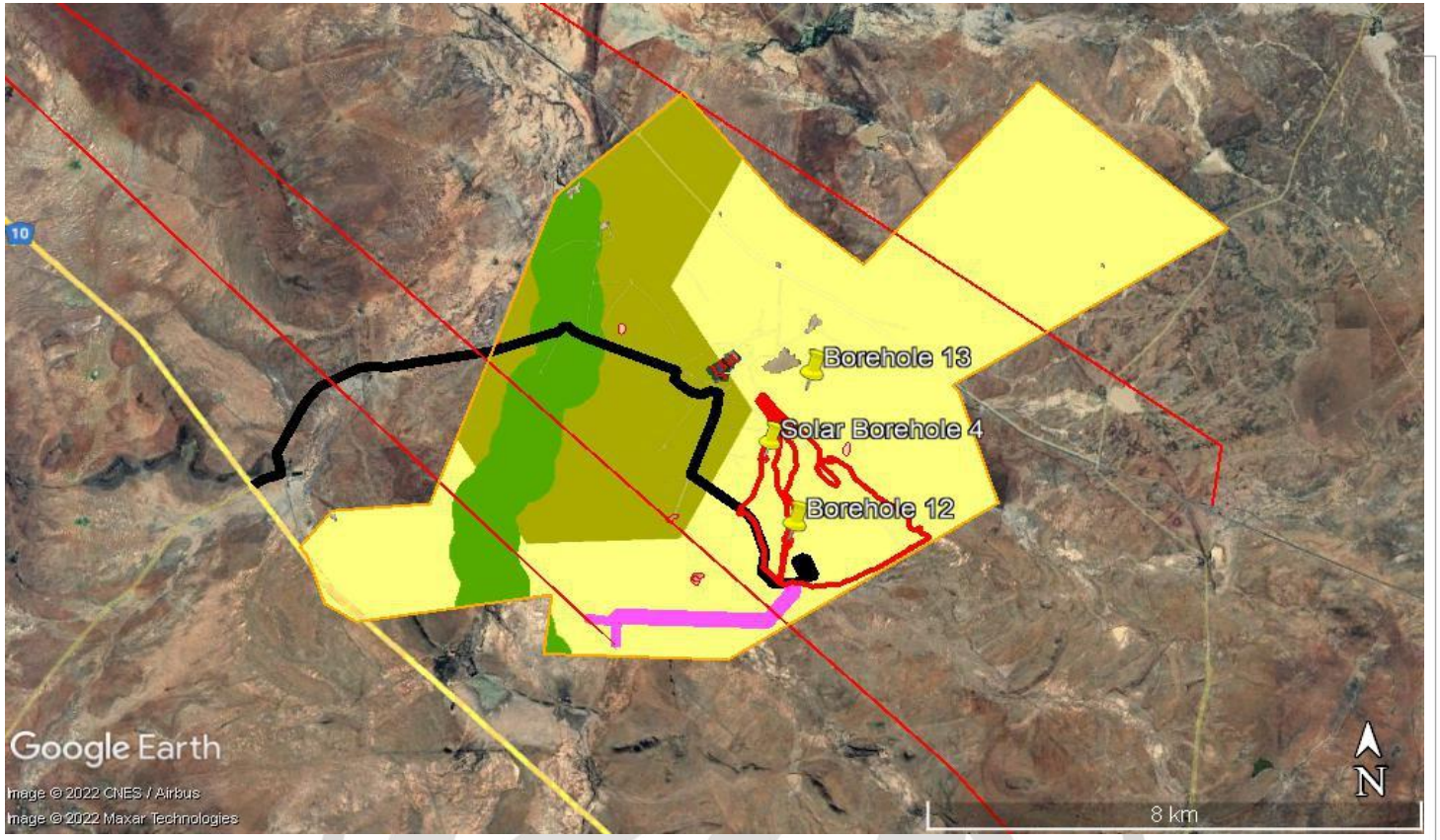
LIGGING



Figuur 1. Liggingskaart van die voorgestelde Toegangspad (swart lyn) en 400 kV transmissielyn (pienk lyn) relatief tot reeds goedgekeurde Sun Central Cluster 1 Solar PV Facility (dik rooi lyn).

Versagtings

Versagtingsmaatreëls sal ontwikkel word vir die verwagte kwessies. Belanghebbendes is egter welkom om oor hierdie kwessies kommentaar te lewer en bykomende waarnemings te gee.

NEMA (Wet op Nasionale Omgewingsbestuur) en die EIA (Omgewingsimpakstudie) -regulasies (2014) soos gewysig, vra vir 'n hiërargiese benadering tot impakbestuur.

Die Impak Versagtings Hiërargie

- Eerstens, alternatiewe moet ondersoek word ten einde negatiewe impakte in totaliteit te vermy.
- Tweedens, as daar gevind word dat 'n negatiewe impak nie vermy kan word nie, moet alternatiewe opsies oorweeg word om die onvermybare negatiewe impakte te versag en bestuur.
- Derdens, alternatiewe opsies moet oorweeg word om die impakte te remedieër
- Vierdens, onafwendbare impakte wat sal aanbly na versagtings en remediëring, sal vereis dat opsies wat die negatiewe impakte voor kompenseer, ondersoek word.
- Dit alles terwyl alternatiewe opsies ondersoek word om die positiewe impak van die ontwikkeling te optimaliseer.

Alternatiewe

Oorweging van "Alternatiewe" is een element van die BA-proses. Die rol daarvan is om 'n raamwerk te bied vir gesonde besluitneming gebaseer op die beginsel van volhoubare ontwikkeling.

Alternatiewe moet so vroeg as moontlik in die projeksiklus geïdentifiseer word.

Ecoleges verwelkom nie net belanghebbendes se insette/voorstelle nie, maar doen ook 'n beroep op die publiek om moontlike alternatiewe in te dien.

Dit is belangrik om daarop te let dat 'n alternatief gedefinieer word as 'n ander manier om aan die algemene doel en vereistes van die aktiwiteit te voldoen, wat alternatiewe kan insluit vir-

(a) die eiendom waarop of plek waar voorgestel word om die aktiwiteit te onderneem,
(b) die tipe aktiwiteit wat onderneem moet word,
(c) die ontwerp of uitleg van die aktiwiteit,
(d) die tegnologie wat in die aktiwiteit gebruik moet word,
(e) die operasionele aspekte van die aktiwiteit, en
(f) die opsie om nie die aktiwiteit te implementeer nie.

By die indiening van alternatiewe moet die aanbevole alternatief wees:
• Uitvoerbaar,
• Haalbaar,
• Betrokke
• Redelike; en
• Lewensvatbaar.

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Behoefte en Wenslikheid

Ingevolge Regulasie 13(1)(b) en 13(1)(e) saamgelees met Regulasie 18 van die gewysigde EIA-regulasies, 2014, moet EAP's en spesialiste kennis dra van enige riglyne wat relevant is vir die voorgestelde aktiwiteit en die behoefte aan en wenslikheid van die onderneming van die voorgestelde aktiwiteit in ag neem.

Aangesien 'behoefte en wenslikheid' bepaal word deur die breër maatskaplike / gemeenskapsbehoeftes en openbare belange in ag te neem, dit is NIE die behoeftes van die aansoeker / ontwikkelaar nie, moedig ons u aan om ook die riglyn oor behoefte en wenslikheid wat deur DEA (2017) gepubliseer is, te oorweeg om u te help om sleutelkwessies te identifiseer ten opsigte van die behoefte aan en wenslikheid om die voorgestelde aktiwiteit / ontwikkeling te onderneem. Die riglyn is vrylik op die web beskikbaar. Ons het egter ook 'n YouTube-video voorberei wat die beoogde konsep van behoefte en wenslikheid verduidelik (https://www.youtube.com/channel/UC0iHr-zE4TPzwhZjzoTPQMw).

Die doel van die BA-proses is om daardie (redelike en haalbare) alternatief te vind wat volhoubare ontwikkeling sal verseker. In ooreenstemming met die voormelde doel en doel van BA, hou die begrip "behoefte en wenslikheid" onder meer verband met die aard, omvang en ligging van ontwikkeling wat voorgestel word, asook die wyse gebruik van grond.

Streng gesproke verwys "behoefte" hoofsaaklik na tyd en "wenslikheid" verwys na plek, bv. is dit die regte tyd en is dit die regte plek om die tipe grondgebruik/aktiwiteit wat voorgestel word, te allokeer? "Behoefte en wenslikheid" is egter onderling verwant en die twee komponente gesamentlik kan op 'n geïntegreerde en holistiese wyse oorweeg word deur die **Vrae** wat in die riglyndokument verskaf word, te betrek. Die vrae word verdeel in twee breë kategorieë met betrekking tot ekologiese volhoubaarheid (bv. hoe die ontwikkeling 'n impak op ekosisteme en biologiese diversiteit sal hê) en regverdigbare ekonomiese en sosiale ontwikkeling.

Ons vermoed dat die ekologiese kategorie vrae wenslikheid aanspreek en of dit die regte plek is, terwyl die ekonomiese en sosiale kategorie vrae breër samelewingsbehoeftes aanspreek, en of dit die regte tyd is.

Behoefte en wenslikheid is soos 'n trekkoord wat die assesseringsproses saamtrek om oor die beste opsie te besluit. Wanneer die som van die impakte (geëvalueer tydens die impakbeoordeling) holisties oorweeg word deur die lens van Behoefte en Wenslikheid, dit wil sê deur dit binne die raamwerk van vrae wat deur die riglyn gestel word, aan te bied, word Behoefte en Wenslikheid die algehele impakopsomming om te bepaal of die voorgestelde aktiwiteit die beste opsie is of om oor die lot van die aansoek te besluit.

Wanneer ekologiese, sosiale en ekonomiese gevolge gesamentlik oorweeg word, is dit belangrik om te onthou dat hoewel daar 'n mate van afwykings tussen die oorwegings kan wees, alle ontwikkeling ingevolge Artikel 24 van die Grondwet ekologies volhoubaar moet wees, terwyl ekonomiese en maatskaplike ontwikkeling regverdigbaar moet wees. Gevolglik is daar spesifieke afwegingsreëls wat geld, naamlik omgewingsintegriteit mag nooit in gedrang kom nie, en die sosiale en ekonomiese ontwikkeling moet 'n sekere vorm aanneem en aan sekere spesifieke doelwitte voldoen sodat dit as regverdigbaar beskou kan word.

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REGISTRASIE

Om te verseker dat jy as 'n belanghebbende en/of geaffekteerde party geregistreer is, voltooi asseblief die ingeslote REGISTRASIE- EN KOMMENTAARBLAD en stuur dit aan na die adres, faks of e-pos wat hieronder verskaf word.

Posadres:
Posbus 516
Machadodorp
1170
Faks: 086 697 9316
Epos: info@ecoleges.co.za of shannon@ecoleges.co.za

NAVRAE

Moet asseblief nie huiwer om ons by ons kantoor te besoek of ons te bel indien u enige verdere navrae of bekommernisse het rakende die gelyste aktiwiteit(e) of ontwikkeling wat voorgestel word nie.

Fisiese adres (Kantoor):
Generaal Straat 3
Machadodorp
1170
Sel: 083 644-7179 (kantoor) of 064 885 2240 (Shaun MacGregor)

Wees asseblief verseker dat jou kommentaar deel sal vorm van die dokumente wat by die besluitnemingsowerheid ingedien moet word.

Voltooi en stuur asseblief die onderstaande Registrasie- en Kommentaarblad en/of POPIA-toestemmingsvorm so gou moontlik terug:

- **Skriftelike kommentaar of besware rakende die aansoek om 'n watergebruikslisensie moet binne 60 dae na hierdie kennisgewing, nie later as 14 Februarie 2023, ingedien word.**

Let wel: Om jou toestemming ter enige tyd terug te trek, e-pos ons asseblief direk, en ons sal jou inligting onmiddellik uit ons rekords verwyder. Dankie.

REGISTRASIE- EN KOMMENTAARBLAD

OPGRADERING & ONTWIKKELING VAN 'N TOEGANGSPAD (REF #: 2022_008P), DEEL 2 WYSIGING VAN DIE OMGEWINGSMAGTIGING VIR DIE ONTWIKKELING VAN 'N SONKRAG-PV-FASILITEIT (REF #: 2022_009P) EN GEÏNTERGREERDE WATERGEBRUIKLISENSIE-AANSOEK (REF #: 2022_010P) OP VERSKEIE PLASE BINNE DIE REGISTRASIEDISTRIK VAN HANOVER, EMTHANJENI PLAASLIKE MUNISIPALITEIT, PIXLEY KA SEME DISTRIKSMUNISIPALITEIT, NOORD-KAAP PROVINSIE.

Titel: _____Naam: _____

Van: _____

Naam van Maatskappy / Belangegroep: _____

_____

Pos- of Woonadres: _____

_____

Dorp / Stad: _____

Poskode: _____

Tel: (_____) _____

Sel: _____

Faks: (_____) _____

E-pos adres: _____

'n Geregistreerde belanghebbende en geaffekteerde party is geregtig om beswaar te maak en skriftelik kommentaar te lewer op alle skriftelike voorleggings, insluitend konsepverslae wat aan die bevoegde en/of verantwoordelike owerheid gemaak is, mits - (c) die belanghebbende en geaffekteerde party enige direkte besigheid, finansiële, persoonlike of ander belang wat daardie party mag hê by die goedkeuring of weiering van die aansoek. Verskaf asseblief sulke inligting in die spasie hieronder verskaf.

_____

_____

_____

_____

Dui asseblief met 'n **X** aan of u op hoogte gehou wil word van die WA & Omvang-en-Omgewingsimpakstudie proses.
Please indicate with an **X** whether you would like to be kept informed of the WUA & S&EIA process.

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JA, ek wil graag op hoogte gehou word	
NEE, ek stel nie belang nie	

As “JA”, dui asb aan met ‘n **X** hoe u op hoogte gehou wil word.

E-pos	
Faks	

KOMMENTAAR: (Indien u meer spasie benodig as wat voorsien word, heg asseblief additionele bladsye aan)

_____

_____

_____

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POPIA TOESTEMMINGSVORM

Kindly be advised that should you receive unsolicited correspondence directly from us, and you are (i) an occupier, owner or person in control of the site or any alternative site where the activity is to be undertaken, (ii) an owner, person in control or occupier of land adjacent to the site or any alternative site where the activity is to be undertaken, (iii) the municipal councillor of a ward, (iv) any organisation of ratepayers that represents the community, (v) a municipality, (vi) any organ of state having jurisdiction in respect of any aspect of the activity, or (vii) any other party as required by the competent authority, then we were required to give you notice in terms of EIA Regulation 41(2), and had to therefore derive your information, including name, contact details and address, from a public record. Alternatively, you may have been referred to us. If you are not an organ of state, did not submit written comments or attend meetings, did not request in writing for your name to be placed on the register, then we are not obligated in terms of EIA Regulation 42 to retain a record of your personal information in a register of interested and affected parties, and as such, must obtain proof of

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Reg: 2006/023163/23

consent provided by yourself. To this effect, kindly confirm your consent by ticking the boxes below.

☐ I, in my capacity as the data subject, give consent to ecoleges, in its capacity as the responsible party, to process my personal information for purposes of pursuing its legitimate interests or those of a third party to whom the information is supplied, but limited to (1) the submission of reports or plans for comment, (2) transferring the same information to a third party, including registered interested and affected parties, the competent authority and applicant or holder of the environmental authorisation, (3) submitting a copy of an appeal against a decision to grant or refuse environmental authorisation, and/or (4) submission of environmental audit reports (containing recommendations for amending the EMPr) for comment.

☐ I hereby acknowledge that only the minimum personal information that is required to be processed for the purpose of the EIA Regulations (2014) will be processed, including my name, contact details, address, and disclosure on any direct business, financial, personal, or other interest which that party may have in the approval or refusal of the application.

☐ I hereby confirm that the personal information, which I shall provide is mine, and that it is complete, accurate, not misleading and updated.

☐ I hereby acknowledge that my personal information is being collected explicitly for public participation processes associated with this project.

☐ Irrespective of the decision to grant or refuse an environmental authorisation, and irrespective of whether the scope of the authorisation includes operational or development aspects only, I hereby give consent to ecoleges to retain my records indefinitely for historical and/or research purposes.

☐ I understand, upon submitting my personal information to ecoleges, that it will be saved on their server, which meets the various conditional "Minimum Security Requirements" of their Cyber Insurance company, including *inter alia* firewalls to restrict access to digitally stored sensitive information, anti-virus software implemented on all desktops, laptops and sensitive systems, password controls implemented on sensitive systems, etc.

☐ I understand that ecoleges shall inform me when there are reasonable grounds to believe that my personal information has been accessed or acquired by any unauthorised person.

☐ I have read and understand my Section 5 Rights as a data subject including *inter alia*, the right to -

- request access to my personal information,
- request information about the identity of all third parties,
- request ecoleges to correct, update, destroy or delete my personal information, and
- lodge a complaint in writing to the Information Regulator if in my opinion the processing of information is not reasonable.

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Reg: 2006/023163/23

For more information about the Protection of Personal Information Act, 2013 (POPIA), which commenced on 01st July 2020, it is available at the following link: www.popia.co.za

Your participation in the Public Participation Process (PPP) is voluntary, but it is mandatory in terms of Regulation 42 and 43(1) of the amended EIA Regulations (2014) that we receive the relevant personal information for us to register you as an Interested and Affected Party, and for you to be entitled to comment, in writing, on all reports or plans that we submit to you, respectively.

Failure to supply the information or incomplete information may impact your eligibility as a registered Interested and Affect Party.

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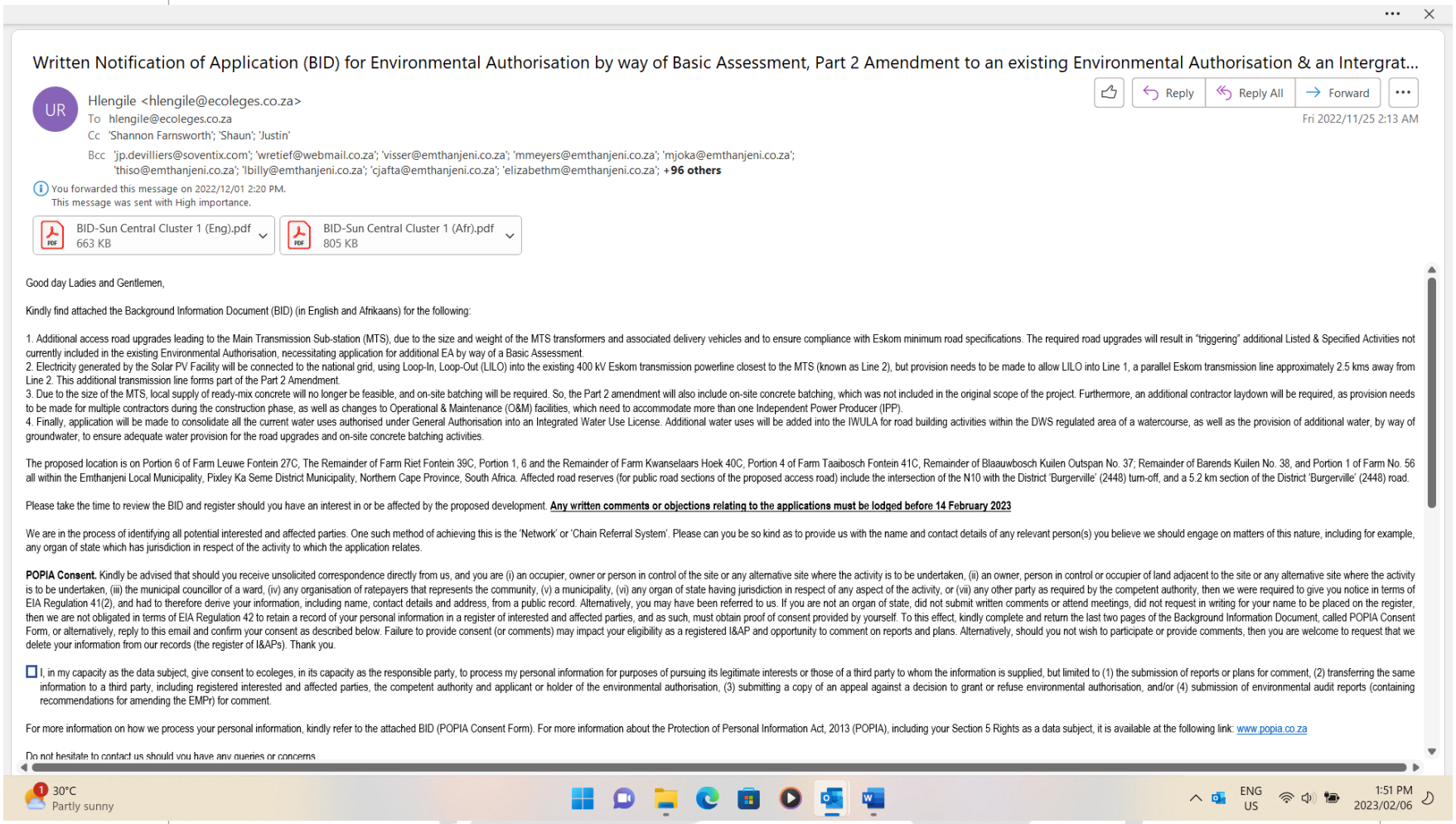
Reg: 2006/023163/23

Annexure C – BID Distribution



Written Notification of Application (BID) for Environmental Authorisation by way of Basic Assessment, Part 2 Amendment to an existing Environmental Authorisation & an Intergrat...

Reply | Reply All | Forward

UR

Hlengile <hlengile@ecoleges.co.za>
To hlengile@ecoleges.co.za
Cc 'Shannon Farnsworth'; 'Shaun'; 'Justin'
Bcc 'jp.devilliers@soventix.com'; 'wretief@webmail.co.za'; 'visser@emthanjeni.co.za'; 'mmeyers@emthanjeni.co.za'; 'mjoka@emthanjeni.co.za'; 'thiso@emthanjeni.co.za'; 'lbilly@emthanjeni.co.za'; 'cjafta@emthanjeni.co.za'; 'elizabethm@emthanjeni.co.za'; **+96 others**

Fri 2022/11/25 2:13 AM

You forwarded this message on 2022/12/01 2:20 PM.
This message was sent with High importance.

BID-Sun Central Cluster 1 (Eng).pdf 663 KB
BID-Sun Central Cluster 1 (Afr).pdf 805 KB

Good day Ladies and Gentlemen,

Kindly find attached the Background Information Document (BID) (in English and Afrikaans) for the following:

1. Additional access road upgrades leading to the Main Transmission Sub-station (MTS), due to the size and weight of the MTS transformers and associated delivery vehicles and to ensure compliance with Eskom minimum road specifications. The required road upgrades will result in "triggering" additional Listed & Specified Activities not currently included in the existing Environmental Authorisation, necessitating application for additional EA by way of a Basic Assessment.
2. Electricity generated by the Solar PV Facility will be connected to the national grid, using Loop-In, Loop-Out (LILO) into the existing 400 kV Eskom transmission powerline closest to the MTS (known as Line 2), but provision needs to be made to allow LILO into Line 1, a parallel Eskom transmission line approximately 2.5 kms away from Line 2. This additional transmission line forms part of the Part 2 Amendment.
3. Due to the size of the MTS, local supply of ready-mix concrete will no longer be feasible, and on-site batching will be required. So, the Part 2 amendment will also include on-site concrete batching, which was not included in the original scope of the project. Furthermore, an additional contractor laydown will be required, as provision needs to be made for multiple contractors during the construction phase, as well as changes to Operational & Maintenance (O&M) facilities, which need to accommodate more than one Independent Power Producer (IPP).
4. Finally, application will be made to consolidate all the current water uses authorised under General Authorisation into an Integrated Water Use License. Additional water uses will be added into the IWULA for road building activities within the DWS regulated area of a watercourse, as well as the provision of additional water, by way of groundwater, to ensure adequate water provision for the road upgrades and on-site concrete batching activities.

The proposed location is on Portion 6 of Farm Leuwe Fontein 27C, The Remainder of Farm Riet Fontein 39C, Portion 1, 6 and the Remainder of Farm Kwanselaars Hoek 40C, Portion 4 of Farm Taaibosch Fontein 41C, Remainder of Blaauwbosch Kuilen Outspan No. 37; Remainder of Barends Kuilen No. 38, and Portion 1 of Farm No. 56 all within the Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province, South Africa. Affected road reserves (for public road sections of the proposed access road) include the intersection of the N10 with the District 'Burgerville' (2448) turn-off, and a 5.2 km section of the District 'Burgerville' (2448) road.

Please take the time to review the BID and register should you have an interest in or be affected by the proposed development. **Any written comments or objections relating to the applications must be lodged before 14 February 2023**

We are in the process of identifying all potential interested and affected parties. One such method of achieving this is the 'Network' or 'Chain Referral System'. Please can you be so kind as to provide us with the name and contact details of any relevant person(s) you believe we should engage on matters of this nature, including for example, any organ of state which has jurisdiction in respect of the activity to which the application relates.

POPIA Consent. Kindly be advised that should you receive unsolicited correspondence directly from us, and you are (i) an occupier, owner or person in control of the site or any alternative site where the activity is to be undertaken, (ii) an owner, person in control or occupier of land adjacent to the site or any alternative site where the activity is to be undertaken, (iii) the municipal councillor of a ward, (iv) any organisation of ratepayers that represents the community, (v) a municipality, (vi) any organ of state having jurisdiction in respect of any aspect of the activity, or (vii) any other party as required by the competent authority, then we were required to give you notice in terms of EIA Regulation 41(2), and had to therefore derive your information, including name, contact details and address, from a public record. Alternatively, you may have been referred to us. If you are not an organ of state, did not submit written comments or attend meetings, did not request in writing for your name to be placed on the register, then we are not obligated in terms of EIA Regulation 42 to retain a record of your personal information in a register of interested and affected parties, and as such, must obtain proof of consent provided by yourself. To this effect, kindly complete and return the last two pages of the Background Information Document, called POPIA Consent Form, or alternatively, reply to this email and confirm your consent as described below. Failure to provide consent (or comments) may impact your eligibility as a registered I&AP and opportunity to comment on reports and plans. Alternatively, should you not wish to participate or provide comments, then you are welcome to request that we delete your information from our records (the register of I&APs). Thank you.

☐ I, in my capacity as the data subject, give consent to ecoleges, in its capacity as the responsible party, to process my personal information for purposes of pursuing its legitimate interests or those of a third party to whom the information is supplied, but limited to (1) the submission of reports or plans for comment, (2) transferring the same information to a third party, including registered interested and affected parties, the competent authority and applicant or holder of the environmental authorisation, (3) submitting a copy of an appeal against a decision to grant or refuse environmental authorisation, and/or (4) submission of environmental audit reports (containing recommendations for amending the EMPr) for comment.

For more information on how we process your personal information, kindly refer to the attached BID (POPIA Consent Form). For more information about the Protection of Personal Information Act, 2013 (POPIA), including your Section 5 Rights as a data subject, it is available at the following link: www.popia.co.za

Do not hesitate to contact us should you have any queries or concerns

30°C Partly sunny

ENG US 1:51 PM 2023/02/06

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Reg: 2006/023163/23

Annexure D – List of Interested and Affected Parties

I&AP Register including contact details

Name	Cell	Phone	Fax	Email
APPLICANT / CLIENT				
David MacDonald	072 729 9890	012 881 4800	N/A	david@solarafrica.com
Willem Retief (Landowner)	0829447167			wretief@webmail.co.za
EMTHANJENI LOCAL MUNICIPALITY				
Offices		053 632 9100	053 631 0105	
Municipal Manager				
Mr Isak Visser		053 632 9101	053 631 0105	visser@emthanjeni.co.za
Ms Marushel Meyers (PA)		053 632 9101		mmeyers@emthanjeni.co.za
Mr M Joka - Director Technical Services		053 632 9101		mjoka@emthanjeni.co.za
Ms Lelethu Thiso				thiso@emthanjeni.co.za
Town Planner				
Ms Lucy Billy	078 389 4989	053 632 9100		lbilly@emthanjeni.co.za
IDP Officer				
Conrad Jafta				cjafta@emthanjeni.co.za
Municipal Councillor of the Ward				
Lena Eliza Andrews (Ward 6)	078 787 0420			elizabethm@emthanjeni.co.za
Mr Patrick Mhlawuli (Ward 8)	083 8829 450			pmhlauli7@gmail.com
Concillor S Makhandula (Ward 3)				smakhandula@emthanjeni.co.za
Rate Payers Association				

Jaco Blom		072 780 1288		blomdeaar@gmail.com
Hentie vd Merwe				vdm@deaarsa.co.za

PIXLEY KA SEME DISTRICT MUNICIPALITY				
		053 631 0891	053 631 2529	
Municipal Manager				
Mr Rodney Pieterse		053 631 0891	053 631 2529	mm@pksdm.gov.za
Nomapaseka Present (PA)		053 631 0891		mm@pksdm.gov.za
Environmental Director				
Mr Sonwabile Nkondefhe		053 631 0891		pixley@telkomsa.net
Town Planner				
Mr Simon Baas		053 631 0891		sbaas@pksdm.gov.za
				baasks1@gmail.com
GOVERNMENT				
Department of Environmental Affairs				
Mr Lunga Dlova				ldlova@environment.gov.za
Ms Masina Litsoane				mlistoeane@environment.gov.za
Department of Environment Fisheries and Forestry - Biodiversity				
Mr Stanley Tshitwamulomoni		012 399 9587		stshitwamulomoni@environment.gov.za
Ms. Mmatlala Rabothata				MRabothata@environment.gov.za
Ms. Tsholofelo Sekonko				tsekonko@environment.gov.za
Ms. Aulicia Maifo				amaifo@environment.gov.za
Air Quality				
Mr Derrick Makhubele				DMakhubele@environment.gov.za

Department of Water & Sanitation				
Mr Shaun Cloete		054 338 5800		CloeteS@dws.gov.za
Ms Chantel Schwartz		054 338 5800		schwartzc@dws.gov.za
Ngidi Ziyanda				NgidiZ@dws.gov.za
Hlengani Alexia				HlenganiA@dws.gov.za
Mokhoantle Lerato				MokhoantleL@dws.gov.za
Feni Ntombizanele				FeniN2@dws.gov.za
Moalosi Kelebogile				MoalosiK2@dws.gov.za
Rasikhanya Tendamudzimu				RasikhanyaT@dws.gov.za
Franks Lindiwe				FranksL@dws.gov.za
Department of Environment & Nature Conservation				
Reception		053 807 7430/7300	053 831 3530	
Thulani Mthombeni	072 409 2277			tmthombeni013@gmail.com
Isaac Gwija	060 989 8441	053 631 0601/16		IGwija@ncpg.gov.za
	0641471991			mr.gwija@gmail.com
Doreen Werth	060 991 4675			dwerth@ncpg.gov.za
Dineo Moleko		053 807 7467		dmoleko@ncpg.gov.za
Department of Roads & Public Works				
		053 839 2100	053 839 2100	
Mr K Nogwili (HOD) & Ms N. Corns (Secretary)		053 839 2109	053 839 2117	ncorns@ncpg.gov.za
Mr J Roelofse (Director)		053 839 2249		roelofse.j@vodamail.co.za
Provincial Department of Transport, Safety & Liason				
Ms T. Modiakgotla (Private Secretary)		053 839 1702	053 839 1773	tmodiakgotla@ncpg.gov.za
Department of Agriculture, Fisheries & Forestry– Northern Cape				

Samkelisiwe Lubanga	083765 4691	(053) 807 2638	(053) 832 1206	Slubanga@environment.gov.za
Jacoline Mans	0828082737	054 338 5909	054 334 0030	Jmans@environment.gov.za
Department of Agriculture, Fisheries & Forestry– Northern Cape (National)				
Ms Mashudu Marubini (Delegate of the Minister)		012 319 7619		MashuduMa@daff.gov.za
Ms Thoko Buthelezi (AgriLand Liason office)		012 319 7634		ThokoB@daff.gov.za
Ms Hettie Buys (Act 70/70 Registry)				HettieB@daff.gov.za
Department of Agriculture, Land Reform & Rural Development (Provincial)				
Mr Hannes Roux	071 860 7550	(053) 631 0074		hrouxx@gmail.com
				hroux@ncpg.gov.za
Department of Rural Development & Land Reform				
Ms Mangalane Du Toit (Chief Director: Land Restitution Support)		(053) 807 5700		Mangalane.DuToit@dalrrd.gov.za
Ms Samantha Rabie (PA)				samantha.rabie@dalrrd.gov.za
Department of Energy				
Johannes Mokobane		0124067481		johannes.mokobane@energy.gov.za
Department of Mineral Resources				
Ms Lungi Mondela (Secretary)		(053) 807 1700	(053) 830 0827	lungi.mondela@dmr.gov.za
Mr Pieter Swart (Regional Manager)				pieter.swart@dmr.gov.za
Mr Vincent Muila (Env Officer)		053 807 1716		vincent.muila@dmr.gov.za
ORGANISATIONS				
EWT				
Cobus Theron		021 788 5661		cobust@ewt.org.za
Insauf de Vries				insaufd@ewt.org.za
WESSA				

Sandy Crake		(021) 701 1397		info@wessa.co.za
SAHRA				
Natasha Higgit (Heritage Officer, Archaeology, Palaeontology and Meteorites Unit)	***LOAD ONTO SAHRIS WEBSITE***			
South African Civil Aviation Authority (SACAA)				
Themba Thabete		021 934 4744		thabethet@caa.co.za
SENTECH				
Johannesburg Office		011 471 4400		info@sentech.co.za
Leticia Vollner		021 525 3609		
Square Kilometre Array (SKA)				
Dr. Adrian Tiplady		011 442-2434		atiplady@ska.ac.za
Bird Life SA				
Jhb Office		011 789 1122	011 789 5188	info@birdlife.org.za
Ernest Retief	082 325 6608			ernst.retief@birdlife.org.za
Sam Ralston	083 673 3948			energy@birdlife.org.za
SALT (South African Large Telescope)				
Dr Ramotholo Sefako	084 770 5100	021 640 9344		rrs@saao.ac.za
Northern Cape Provincial Heritage Agency - Ngwao-Boswa Jwa Kapa Bokone				
Andrew ratha Timothy	079 036 9695			rtimothy@nbkb.org.za
Northern Cape Chamber of Commerce and Industry				
Sharon Steyn		053 831 1081		sharon@nocci.co.za
South African Photovoltaic Industry Association (SAPVIA)				
Lineo Masopha	082 704 6674	011 553 7264		lineo@sapvia.co.za

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South African National Energy Development Institute (SANEDI)				
Funanani Netshitomboni		011 038 4435		funananin@sanedi.org.za
Independent Power Producer Office				
Desiree Otto				desiree.otto@ipp-projects.co.za
IPP Office		087 351 3000		info@ipp-projects.co.za
Centre for Environmental Rights				
Phumla Yeki		021 447 1647		pyeki@cer.org.za
				info@cer.org.za
SERVITUDE HOLDERS				
Transnet				
Joey Bowers		053 632 8303/8		joey.bowers@transnet.net
Eskom Distribution				
Bossie Uys (Supervisor De Aar)		053 632 6714		uysj@eskom.co.za
Eskom Transmission				
Henk Wydeman (Hydra, Lines)				WydemaH@eskom.co.za
Daan Liebenberg (Hydra, Plant)				LiebenDa@eskom.co.za
Keketso Mbete (Env Person)				MbeteKC@eskom.co.za
Eskom Megawatt Park - Transmission				
Mr John Geeringh (D1Y38)		011 516 7233	086 661 4064	john.geeringh@eskom.co.za
SANRAL				
Nicole Abrahams		021 957 4602		abrahamsn@nra.co.za
PUBLIC and/or NEIGHBOURING FARMS				
Owner of the land				

Willem Retief	082 944 7167			wretief@webmail.co.za
Remainder of FARM No. 149 (Farm Goodhope)				
Neville Vimpany	082 868 1991	041 366 1037		cathy.vimpany@yahoo.com
Ricky Vimpany				richard.vimpany@bravospace.co.za
Remainder of LEUWE FOUNTAIN No. 27 (Farm Leeuwfontein)				
Corneulis Oosthuizen	061 271 0268			louisa.oosthuizen25@gmail.com
	074 114 3950			cmo.karoo@gmail.com
Portion 1,2 & 4 LEUWE FOUNTAIN No. 27 (Farm Weltevrede)				
Pieter du Toit	083 278 2590			psdutoit4@gmail.com
Remainder of TAAIBOSCH FONTEIN No. 41 (Farm: Constancia)				
Andries Pienaar	082 762 2206			andriespienaar@hotmail.com
Portion 2 & 5 TAAIBOSCH FONTEIN No. 41 (Farm: Skilpadskuil)				
Manual Orfao	082 784 1972			morfao@worldonline.co.za
				swopshop@worldonline.co.za
Portion 3 TAAIBOSCH FONTEIN No. 41				
Dawie du Plessis	083 544 4139			l.duplessis@live.com

Remainder & Portion 7 &9 of KAFFERSPOORT No. 56 (Dieprivier)				
Andries Pienaar	082 762 2206			andriespienaar@hotmail.com
Remainder of BARENDS KUILEN No. 38 and Remainder & Portion 1 of BLAAUWBOSCH KUILEN OUTSPAN No. 37 (Farm: Blaawboschkuil)				
Christiaan Venter	082 378 3601			wortelfontein@vodamail.co.za
Requested to be registered				
Malherbe Du Toit				Du-Toit.Malherbe@abo-wind.com
Karen Low David Nunez Blundell	084 454 9944			karen.low@juwi.co.za david.nunez@siriuspower.co.za

Annexure E (1) – Site Notice Pictures

Photo 1: Close up of the Site Notices.

Photo 2: Site Notice at the N10 entrance turn off to the site.

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Photo 3: Site Notice along a fence next to the road to the property.

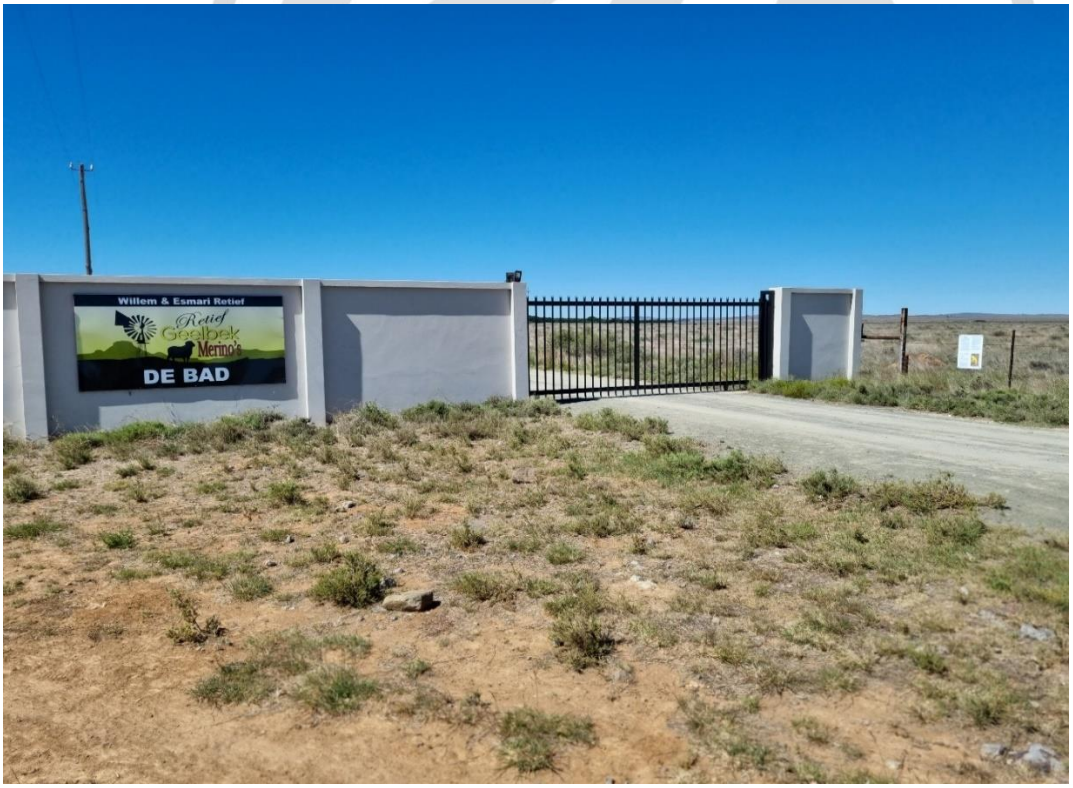

Photo 4: Site Notice by the entrance to De Bad Farm.

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Annexure E (2) – Site Notice Wording

Notice

is hereby given in accordance with Chapter 6 of the Environmental Impact Assessment Regulations, 2014 as amended and section 47D of the National Environmental Management Act (Act 107 of 1998) as amended, of an application for Environmental Authorisation as well as Water Use Authorisation in terms of the National Water Act (Act 36 of 1998) Date of Notice: 24 November 2022

Description of activity

Electricity generated by the project will be "wheeled" on existing Eskom infrastructure for private offtake. The growing demand for the generation and supply of renewable energy by Independent Power Producers (IPPs), has resulted in the expansion of the project scope, which will now require additional authorisations. The increased scope includes: 1. Additional access road upgrades to the MTS, the required road upgrades will result in "triggering" additional Listed & Specified Activities not currently included in the existing Environmental Authorisation (EA), necessitating application for additional EA by way of a Basic Assessment; 2. Electricity generated by the Solar PV Facility will be connected to the National grid, using a newly constructed Loop-In, Loop-Out (LILO) transmission line that will be integrated into the existing 400 kV transmission powerline closest to the MTS (known as Line 2), but provision needs to be made to allow LILO into Line 1, a parallel transmission line approximately 2.5 kms away from Line 2. This additional transmission line forms part of the Part 2 Amendment. 3. Due to the increased size of the MTS, local supply of ready-mix concrete will no longer be feasible, and on-site batching will be required. So, the Part 2 amendment will also include on-site concrete batching, which was not included in the original scope of the project. 4. Finally, an application will be made to consolidate all the current water uses authorised under General Authorisation and additional water, by way of groundwater, into an Integrated Water Use License. The additional road upgrades across a watercourse will also be included in the IWULA scope.

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All on several portions of farms in the Hanover District, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality; Northern Cape Province.

Environmental Authorisation (EA)

An application for the EA and amendment will be submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) and/or the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (NCDEA) in terms of the EIA Regulations, 2014 as amended to undertake the following listed activities(as amended):

Listing Notice 1 (GN No. 983, 4 December 2014):
Listed Activity 12, 19, 48 & 56

Listing Notice 3 (GN No. 985, 4 December 2014):
Listed Activity 4, 14, 18, 23 & 26

Water Use Authorisation

Section 21 water uses will be applied for in terms of the Water Use License Application and Appeals Regulations (GN No. R.267, 24 March 2017), as applicable through the Responsible Authority (Department of Water & Sanitation: Orange Proto Catchment Management Agency) for:
Section 21 (a) – taking of water; Section 21 (b) – storing of water;
Section 21 (c) – impeding or diverting the flow of water in a watercourse;
Section 21 (e) – engaging in a controlled activity;
Section 21 (i) - altering the bed, banks, course or characteristics of a watercourse; and Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water resource.

Applicant:

SOLAR AFRICA

Consultant:

Contact person:

Shaun MacGregor

Cell: +27 (0)64 885 2240
Fax: +27 (0)86 697 9316
E-Mail: shaun@ecoleges.co.za
Postal: P.O. Box 516, Machadodorp, 1170
Website: www.ecoleges.co.za

Registration:

For further information and/or to be registered as an interested and affected party (I&AP) or to lodge a written objection, please submit in writing your name, contact details including address, and interest in the matter to the contact person and in the manner(s) provided above, at your earliest convenience, we shall submit the draft reports for comment at a later stage.

Written objections relating to the application for Water Use Authorisation must be lodged within 60 days of this notice, no later than 14 February 2023.

POPIA Disclaimer:

Kindly be advised that should you submit written comments or attend meetings, request in writing for your name to be placed on the register, or if you are an organ of state which has jurisdiction in respect of the activity, then we are required in terms of EIA Regulation 42 to record your name, contact details and address in a register of interested and affected parties, as well as a disclosure of any direct business, financial, personal or other interest which you may have in the approval or refusal of the application,

in terms of EIA Regulation 43(1). Your personal information will be stored on a secure server explicitly for the public participation process (PPP) associated with this project but shall be retained indefinitely for historical and/or research purposes. Other recipients of your personal information include registered I&APs, the competent authority and applicant or holder of the environmental authorisation. Your participation in the PPP is voluntary. However, failure to supply the said information or incomplete information may impact your eligibility as a registered I&AP and opportunity to comment on reports and plans. For more information about the Protection of Personal Information Act, 2013 (POPIA), including your Section 5 Rights as a data subject, visit www.popia.co.za

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Annexure F (1) – Advertisements

Vakadviseur vir werk vereer

HELENA BARNARD

'n Vakadviseur verbonde aan die Noord-Kaapse departement van onderwys, Jeremy Claassen, het 'n nasionale eerbewys as die beste Woorde open Wêrelde (WOW)-onderwyser van die jaar ontvang.

Hy het dié gesogte eerbewys op 10 November tydens die Toyota Universiteit van Stellenbosch Woordfees in die Eikestad ontvang.

Claassen, werksaam in die Z.F. Mgcawu-distrik in Upington, het die eerbewys vir sy betrokkenheid by die WOW-spelkompetisies ontvang, waarby hy reeds tien jaar betrokke is.

Voor sy amp as vakadviseur was hy vir dekades in die onderwys en het hoofsaaklik Engels as skoolvak aangebied.

"Regte spelling help 'n kind om akademies beter te presteer, en om beter te verstaan. Dit speel 'n groot rol in die ontwikkeling van 'n leerling se potensiaal om naskoolse opleiding te ondergaan en 'n waardige, suksesvolle landsburger te word, en 'n selfversekerde taalgebruiker te wees."

Hy is van mening dat die samelewing op die verstaan, praat en skryf van taal berus.

Volgens hom het sosialemediaplatforms en selfone tot swakker taalgebruik en spelling bygedra, en het hy besluit om betrokke te raak.

Die Covid-19-pandemie het die aanbied van die kompetisies onderbreek, maar van 2023 af gaan dit weer voluit in die Noord-Kaap vir leerlinge van gr. 1 tot gr. 10 aangebied word – in Afrikaans, Engels en Xhosa.

Jeremy Claassen en sy vrou, Myra. FOTO: VERSKAF

Henry Lekwate by enkele van sy skilderye. FOTO'S: HELENA BARNARD

Skilder (84) verf steeds (sy) drome

HELENA BARNARD

Hy is as "Galeshewe se skilder" bekend, en het van kleins af met sy vinger op die grond geteken.

"My hand het gejeuk; ek wou net teken," vertel Henry Lekwate (84) in sy huis in Vergenoeg, Kimberley.

Van sy kunswerke oor die jare heen het 'n ereplek teen die mure gekry; van die ander is spesiaal vir die besoek uitgepak.

Met kleur, die vasvang van beweging, en detail wat fyn waarneming weerspieël, het Lekwate sy hartsgoed met olieverf op hoofsaaklik hardebord verewig.

Kimberley se Groot Gat en treine – dit was nog altyd sy gunsteling-onderwerpe om te skilder. Ook die skilderye van sy waarnemings van openbare geboue, kerke, busse en plekke wat hy en sy vrou, Sylvia, al besoek het, vertel elk 'n eie storie én gee geskiedenis weer.

"Ek het die skilderye baie lief," vertel Lekwate. "Ek voel gelukkig as ek die kwas in die hand het. My hand is nog gesond. My oë is reg. My gedagtes is nog reg."

Le… sk… Jo… terug… spoorw… e werk.

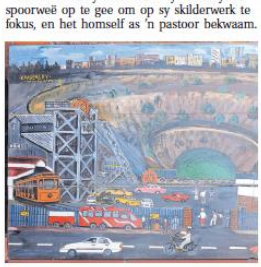
Hy kon nie anders as om terug te keer Kimberley toe nie.

"Die son en die koue van Kimberley het ons van kleins af gebrand. Ons het ons plek lief," sê hy.

Vir die sewe jaar wat hy by die spoorweë gewerk het, het hy om 03:00 opgestaan en kort daarna Beaconsfield toe begin stap om 07:00 by die werk te wees. Ná werk het hy weer teruggestap.

"My pa het nooit met busse of taxis gery nie. Hy het net geloop," vertel sy dogter Deborah.

In 1977 het hy besluit om sy werk by die spoorweë op te gee om op sy skilderwerk te fokus, en het homself as 'n pastoor bekwaam.



'n Deel van een van Henry Lekwate se skilderye van die Groot Gat. FOTO: HELENA BARNARD

Sylvia en Henry Lekwate by die bordjie wat hom as "Galeshewe se skilder" identifiseer.

Hoewel hy gelukkig gevoel het om meer te kon skilder, het die feit dat hy nie 'n voertuig gehad het nie, die verkope van sy werke bemoeilik.

Maar dit het hom nie gekeer om steeds sy liefde vir skilder uit te leef nie.

Hy het baie huise beskilder; en ook muurskilderye en geestelike skilderye gedoen – onder meer baniere en vlae vir kerke en verenigings.

Lekwate verf ook wat hy noem "spirituele lappe" waar hy 'n persoon se droom wat aan hom vertel is, weergee. Dit koppel hy dan altyd aan 'n Bybelteks.

Om homself as geestelike leier te bekwaam, het hy drie Bybelskole bygewoon: die eerste een was die destydse Kimberley Bible Training School, daarna een in Oos-Londen, en toe in KwaZulu-Natal.

As 'n pastoor het hy en Sylvia bykans oor die hele land met treine en busse rondgery.

Tydens dié reise het hy in sy boekie sketse gemaak van wat hy gesien het om later te skilder.

Wanneer hy besig is om te skilder, sien hy egter die prentjie in sy gedagtes.

Deborah vertel as haar pa teken, is hy binne in die plek wat hy teken, en hy werk met aandag.

Sy aanvanklike skets of die buitelyne sal hy met vuurhoutjiestokkies trek.

"Ons het swaargekry, maar ons het ook dankie vir die papbrandsels gesê," vertel Sylvia oor die lewensreis wat sy en Lekwate al vir 65 jaar saam loop.

"Armoede het my nie swak gemaak nie," sê Lekwate, en vertel van die bord met die woorde "Arm maar tevrede" wat hy vir die voorkant van die huis geteken het, en wat die gesin se motto is.

Hy en Sylvia, wat 'n kunstenaar in eie reg met 'n hekelpen is, het drie kinders – Isaiah, Valerie en Deborah. Hulle het sewe kleinkinders en vyf agterkleinkinders.

Lekwate se raad vir jonger geslagte is: "Wees gelukkig in die lewe en doen wat jy moet doen wat goed is. Moenie kwaad doen nie.

"Vra die Allerhoogste om te help. As ons nie die Here vra nie, sal ons niks kry nie.

"Die lewe is reg. Ek voel gelukkig. Ek moet die een daar bo dankie sê. Hy het ons gespaar," sê Lekwate, en neem sy verfkwas op.

PUBLIC PARTICIPATION NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION BY WAY OF BASIC ASSESSMENT, A PART 2 AMENDMENT TO AN EXISTING ENVIRONMENTAL AUTHORISATION AND AN INTEGRATED WATER USE LICENSE

Notice is hereby given in accordance with Chapter 6 of the Environmental Impact Assessment Regulations, 2014 as amended and section 47D of the National Environmental Management Act (Act 107 of 1998) as amended, of an application for Environmental Authorisation (EA) and Part 2 amendment to an existing Environmental Authorisation, as well as an Integrated Water Use License (IWULA) in terms of the National Water Act (Act 36 of 1998).

Description of the activity & water uses
The Sun Central Cluster 1 solar photovoltaic (PV) project requires additional environmental and water use authorisations to help ensure the successful implementation of the project. The additional activities and authorisations include:

1. Additional access road upgrades leading to the Main Transmission Sub-station (MTS), due to the size and weight of the MTS transformers and associated delivery vehicles and to ensure compliance with Eskom minimum road specifications. The required road upgrades will result in "triggering" additional Listed & Specified Activities not currently included in the existing Environmental Authorisation, necessitating application for additional EA by way of a Basic Assessment.
2. Electricity generated by the Solar PV Facility will be connected to the national grid, using Loop-In, Loop-Out (LILO) into the existing 400 kV Eskom transmission powerline closest to the MTS (known as Line 2), but provision needs to be made to allow LILO into Line 1, a parallel Eskom transmission line approximately 2.5 kms away from Line 2. This additional transmission line forms part of the Part 2 Amendment.
3. Due to the size of the MTS, local supply of ready-mix concrete will no longer be feasible, and on-site batching will be required. So, the Part 2 amendment will also include on-site concrete batching, which was not included in the original scope of the project. Furthermore, an additional contractor laydown will be required, as provision needs to be made for multiple contractors during the construction phase, as well as changes to Operational & Maintenance (O&M) facilities, which need to accommodate more than one Independent Power Producer (IPP).
4. Finally, application will be made to consolidate all the current water uses authorised under General Authorisation into an Integrated Water Use License. Additional water uses will be added into the IWULA for road building activities within the DWS regulated area of a watercourse, as well as the provision of additional water, by way of groundwater, to ensure adequate water provision for the road upgrades and on-site concrete batching activities.

Location
The proposed location is on Portion 6 of Farm Leuwe Fontein 27C, The Remainder of Farm Riet Fontein 39C, Portion 1, 6 and the Remainder of Farm Kwanselaars Hoek 40C, Portion 4 of Farm Taaibosch Fontein 41C, Remainder of Blaauwbosch Kuilen Outspan No. 37; Remainder of Barends Kuilen No. 38, and Portion 1 of Farm No. 56 all within the Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province, South Africa. Affected road reserves (for public road sections of the proposed access road) include the intersection of the N10 with the District 'Burgerville' (2448) turn-off, and a 5.2 km section of the District 'Burgerville' (2448) road.
Environmental Authorisation
An application for the EA (and the amendment) will be submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) and/or the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (NCDEA) in terms of the EIA Regulations, 2014 as amended to undertake the following listed & specified activities:

Listing Notice 1 (GN No. 983, 4 December 2014) as amended:
- Activity number 12, 19, 24, 48 & 56.

Listing Notice 3 (GN No. 985, 4 December 2014) as amended:
- Activity number 4, 14, 18, 23 & 26.

Water Use
Section 21 water uses will be applied for in terms of the Water Use License Application and Appeals Regulations (GN No. R.267, 24 March 2017), through the Responsible Authority (Department of Water & Sanitation: Orange Proto Catchment Management Agency) for:
- Section 21 (a) – taking of water,
- Section 21 (b) – storing of water,
- Section 21 (c) – impeding or diverting the flow of water in a watercourse,
- Section 21 (e) – engaging in a controlled activity,
- Section 21 (i) - altering the bed, banks, course or characteristics of a watercourse; and
- Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water resource.

For further information and/or to be registered as an interested and affected party (I&AP), please submit in writing your name, contact details including postal and email address, and interest in the matter to the contact person and in the manner(s) provided below, at your earliest convenience. Date of publication of this notice: **24 November 2022.**

Written objections relating to the application for the Water Use License must be lodged within 60 days of this notice, no later than **14 February 2023.**

Applicant: SolarAfrica Sun Central 1 (Pty) Ltd
Consultant: Ecoleges Environmental Consultants
Contact person: Ms Shannon Farnsworth Cell: 072 654 8202 Fax: 086 697 9316, e-mail: shannon@ecoleges.co.za, PO Box 516, Machadodorp, 1170, www.ecoleges.co.za

POPIA Disclaimer: Kindly be advised that should you submit written comments or attend meetings, your name will be placed on the register, unless requested otherwise. If you are an organ of state which has jurisdiction in respect of the activity, then we are required in terms of EIA Regulation 42 to record your name, contact details and address in a register of interested and affected parties, as well as a disclosure of any direct business, financial, personal or other interest which you may have in the approval or refusal of the application, in terms of EIA Regulation 43(1). Your personal information will be stored on a secure server explicitly for the public participation process (PPP) associated with this project but shall be retained indefinitely for historical and/or research purposes. Other recipients of your personal information include registered I&APs, the competent authority and applicant or holder of the environmental authorisation. Your participation in the PPP is voluntary. However, failure to supply the said information or incomplete information may impact your eligibility as a registered I&AP and opportunity to comment on reports and plans. For more information about the Protection of Personal Information Act, 2013 (POPIA), including your Section 5 Rights as a data subject, visit www.popia.co.za.

GALESHEWE SE SKILDER

Kunstenaar verf nog sy drome

'Spirituele lappe' aan teksverse gekoppel

Helena Barnard

Hy is as "Galeshewe se skilder" bekend en het van kleins af met sy vinger op die grond geteken.

"My hand het gejeuk; ek wou net teken," vertel Henry Lekwate (84) in sy huis in Vergenoeg, Kimberley.

Van sy kunswerke het oor die jare heen 'n ereplek teen die mure gekry, van die ander is spesiaal vir die besoek uitgegak.

Met kleur, die vasvang van beweging, asook detail wat fyn waarneming weerspieël, het Lekwate sy hartsgoed met oltevrf op hoofsaaklik hardeboord verewig.

Kimberley se Groot Gat en treine was nog altyd sy gunsteling-onderwerpe om te skilder. Ook die skilderye van sy waarnemings van openbare geboue, kerke, busse en plekke wat hy en sy vrou, Sylvia, al besoek het, vertel elk 'n ele storie én gee die gesktedenis weer.

"Ek het die skilderye bate lief," vertel Lekwate. "Ek voel gelukkig as ek die kwas in die hand het. My hand is nog gesond. My oë is reg. My gedagtes is nog reg."

Lekwate, wat tot die destydse st. 8 skoolgegaan het, het ná skool tydelik in Johannesburg gaan werk, waarna hy teruggekeer het na Kimberley om by die spoorweë te werk.

Hy kon nie anders as om terug te keer Kimberley toe nie.

"Die son en die koue van Kimberley het ons van kleins af gebrand. Ons het ons plek lief," sê hy.

In die sewe jaar dat hy by die spoorweë gewerk het, het hy om 03:00 opgestaan en kort daarna Beaconsfield toe begin stap om 07:00 by die werk te wees. Nà werk het hy weer teruggestap.

"My pa het nooit met busse of taxi's gery nie. Hy het net geloop," vertel sy dogter Deborah.

In 1977 het hy besluit om sy werk by die spoorweë prys te gee om hom op sy skilderwerk toe te spits. Hy het homself ook as 'n pastoor bekwaam.

Hoewel hy gelukkig gevoel het om meer te kon skilder, het die feit dat hy nie 'n voertuig gehad het nie, die verkope van sy werke bemoeilik.

Maar dit het hom nie gekeer om steeds sy liefde vir skilder uit te leef nie.

Hy het bate hutse beskilder; en ook muurskilderye en geestelike skilderye gedoen – onder meer baniere en vlae vir kerke en verenigings.

Lekwate verf ook wat hy noem "spirituele lappe", waarop hy in verf die drome weergee wat mense aan hom vertel. Dit koppel hy dan altyd aan 'n Bybelteks.

Om homself as geestelike leier te bekwaam, het hy drie Bybelskole bygewoon. Die eerste een was die destydse Kimberley Bible Training School, daarna een in Oos-Londen, en toe in KwaZulu-Natal.

In sy omswerwinge as 'n pastoor het hy on Sylvia bykans oor die hele land met tretne en busse rondgery.

Op dié reise het hy dan in sy boekie skotse gemaak van wat hy gesien het om dit later te skilder.

Wanneer hy besig is om te skilder, sien hy egter steeds die prentjie in sy gedagtes.

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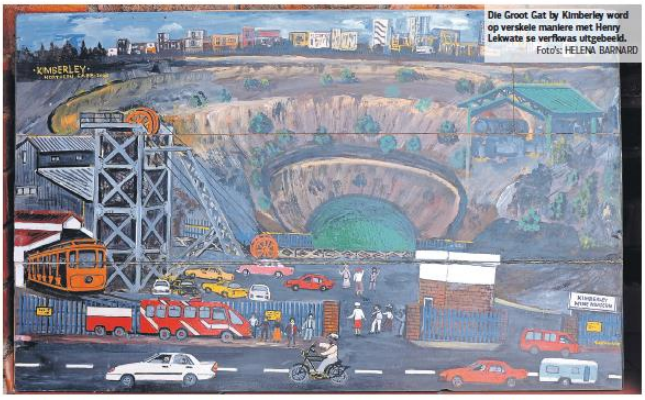
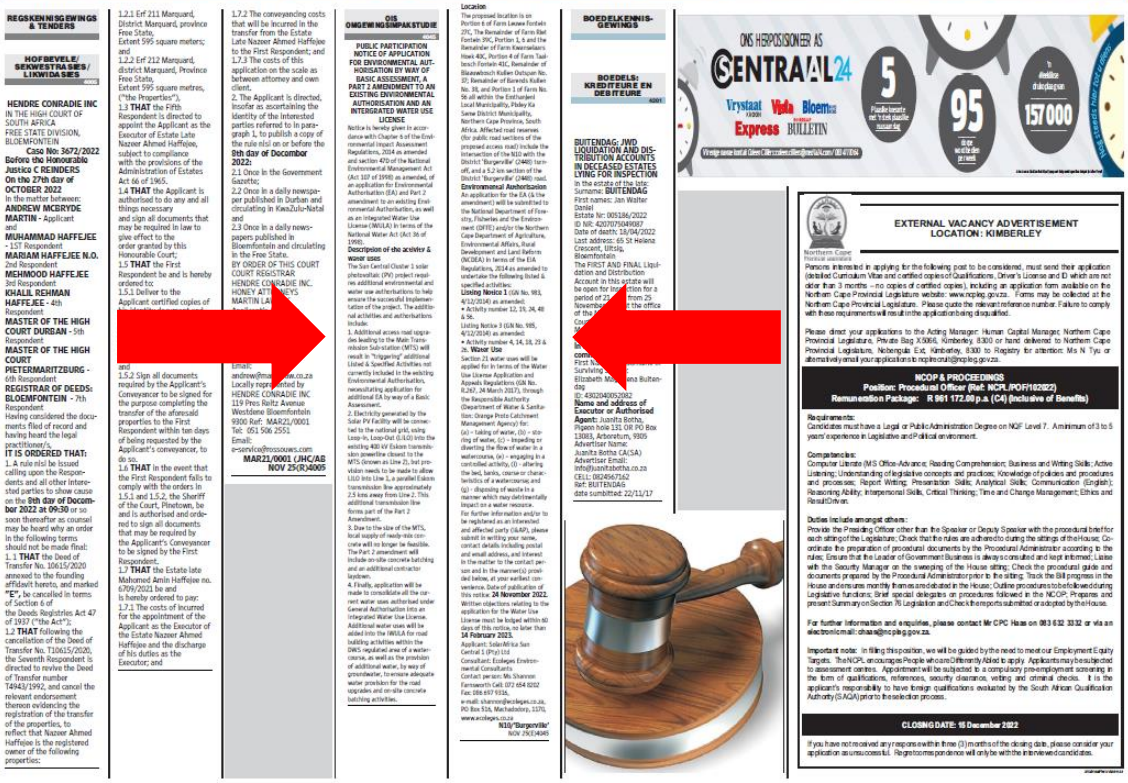


Die Groot Gat by Kimberley word op verskele maniere met Henry Lekwate se verfkwas uitgebeeld. Foto's: HELENA BARNARD

Henry Lekwate en sy vrou, Sylvia, voor hul huis in Vergenoeg, met die naambord wat Lekwate as "Galeshewe se skilder" aandui.


Henry Lekwate by van sy skilderye.

Geklassifiseerd



Annexure F (2) – Advertisements Wording

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Listing Notice 1 (GN No. 983, 4 December 2014) as amended:

• Activity number 12, 19, 24, 48 & 56.

MEMBERS: J.A. Bowers (M Tech, Pr.Sci.Nat., MGSSA) & S.D. MacGregor (MSc., Pr.Sci.Nat.)
Reg: 2006/023163/23

Listing Notice 3 (GN No. 985, 4 December 2014) as amended:
• Activity number 4, 14, 18, 23 & 26.

Water Use
Section 21 water uses will be applied for in terms of the Water Use License Application and Appeals Regulations (GN No. R.267, 24 March 2017), through the Responsible Authority (Department of Water & Sanitation: Orange Proto Catchment Management Agency) for:
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For further information and/or to be registered as an interested and affected party (I&AP), please submit in writing your name, contact details including postal and email address, and interest in the matter to the contact person and in the manner(s) provided below, at your earliest convenience. Date of publication of this notice: **24 November 2022.**

Written objections relating to the application for the Water Use License must be lodged within 60 days of this notice, no later than **14 February 2023.**

Applicant: SolarAfrica Sun Central 1 (Pty) Ltd
Consultant: Ecoleges Environmental Consultants
Contact person: Ms Shannon Farnsworth Cell: 072 654 8202 Fax: 086 697 9316, e-mail: shannon@ecoleges.co.za, PO Box 516, Machadodorp, 1170, www.ecoleges.co.za

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Annexure G – Comments & Response Sheet

Contact	Comment	Response
	No comments received.	

MEMBERS: J.A. Bowers (M Tech, Pr.Sci.Nat., MGSSA) & S.D. MacGregor (MSc., Pr.Sci.Nat.)
Reg: 2006/023163/23

APPENDIX B: ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

MEMBERS: J.A. Bowers (M Tech, Pr.Sci.Nat.) & S.D. MacGregor (MSc., Pr.Sci.Nat., Reg. EAP.)
Reg: 2006/023163/23

APPENDIX C: SPECIALIST STUDIES

MEMBERS: J.A. Bowers (M Tech, Pr.Sci.Nat.) & S.D. MacGregor (MSc., Pr.Sci.Nat., Reg. EAP.)
Reg: 2006/023163/23