DRAFT BASIC ASSESSMENT REPORT

for

KAREERAND BATTERY ENERGY STORAGE FACILITY

On

Portion 3 of the Farm Kareerand No. 444 and Access Road on Portion 3 of the Farm Kareerand No. 444, Portion 4 of the Farm Kareerand 444, Portion 16 of the Farm Kromdraai 420, Portion 17 of the Farm Kromdraai 420, Farm Umfula No. 575, Portion 20 of Farm Umfula No. 567 and Portion 56 of the Farm Kromdraai 420

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations

Prepared for Applicant: Kareerand BESS (Pty) Ltd.

Date: 19 February 2024

Author of Report: Dale Holder

Author Email: dale@cape-eaprac.co.za

Report Reference: MAT840/03

Department Reference: Pre Application Reference - 2024-02-0024

Case Officer: Ms Mmamohale Kabasa

Cape EAPrac

Cape Environmental Assessment Practitioners

Tel: +27 44 874 0365 PO Box 2070, George 6530

Fax: +27 44 874 0432 17 Progress Street, George

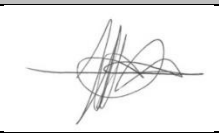
www.cape-eaprac.co.za

DOCUMENT TRACKING

DOCUMENT HISTORY

REVISION	DATE	AUTHOR
Draft Basic Assessment Report	19 February 2024	Dale Holder
Final Basic Assessment Report	Pending	Dale Holder
Draft Environmental Management Programme	19 February 2024	Dale Holder
Final Environmental Management Programme	Pending	Dale Holder

APPROVAL FOR RELEASE

NAME	TITLE	SIGNATURE
Dale Holder	Senior Environmental Practitioner	

DISTRIBUTION

DISTRIBUTION LIST
Department of Forestry, Fisheries and the Environment
Kareerand BESS (Pty) Ltd
Registered and Potential Interested and Affected Parties

SUBMISSION AND CORRESPONDENCE

SUBMISSION / CORRESPONDENCE	DATE
Pre Application Meeting Request Submitted	13 February 2024
Pre Application meeting held	none
Application form Submitted	19 February 2024
Application form Acknowledged	Pending
Draft Basic Assessment Report Submitted	19 February 2024
Draft Basic Assessment Report Acknowledged	Pending
Comment on Draft Basic Assessment Report	Pending
Final Basic Assessment Report Submitted	Pending

APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:
Cape EAPrac Environmental Assessment Practitioners PO Box 2070 George 6530 Tel: 044-874 0365 Fax: 044-874 0432 **Report written & compiled by:** Dale Holder (Ndip Nature Conservation), who has over 20 years' experience as an environmental practitioner. **Registrations:** IAIAsa, Registered Environmental Assessment Practitioner with EAPSA (2019/301).

PURPOSE OF THIS REPORT:
I&AP Review and Comment

APPLICANT:
Kareerand BESS (Pty) Ltd

CAPE EAPRAC REFERENCE NO:
MAT840/03

DEPARTMENT REFERENCE:
Pre Application Reference - 2024-02-0024

SUBMISSION DATE:
19 February 2024

DRAFT BASIC ASSESSMENT REPORT

in terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended) & Environmental Impact Regulations2014 (as amended)

Kareerand Battery Energy Storage Facility

Portion 3 of the Farm Kareerand No. 444 and Access Road on Portion 3 of the Farm Kareerand No. 444, Portion 4 of the Farm Kareerand 444, Portion 16 of the Farm Kromdraai 420, Portion 17 of the Farm Kromdraai 420, Farm Umfula No. 575, Portion 20 of Farm Umfula No. 567 and Portion 56 of the Farm Kromdraai 420

Submitted for:

Stakeholder Review & Comment

Report Issued by:

Cape Environmental Assessment Practitioners

Tel: 044 874 0365 PO Box 2070

Fax: 044 874 0432 17 Progress Street, George 6530

Web: www.cape-eaprac.co.za

REPORT DETAILS

Title:	Draft Basic Assessment Report for the Kareerand Battery Energy Storage Facility
Purpose of this report:	This Draft Basic Assessment Report is made available to all registered and potential Interested and Affected Parties (I&APs) for review and comment and all comments received will be incorporated into the Final Basic Assessment Report that will be submitted to the competent authority for decision making. This BAR forms part of a series of reports and information sources that are being provided during the Basic Assessment Process for the proposed Kareerand Battery Energy Storage Facility near Klerksdorp in the North West Province. Registered I&APs will be given an opportunity to comment on the following reports as part of this environmental process: - Draft Basic Assessment Report, - All Specialist Studies, and - Draft Environmental Management Programme. In accordance with the regulations, the objectives of an environmental process are to, through a consultative process: (a)identify the relevant policies and legislation relevant to the activity; (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location; (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process; (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment; (e) identify the key issues to be addressed in the assessment phase; (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and (g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored. The Draft Basic Assessment Report is available to all registered and potential interested and affected parties for a 30-day review and comment period extending from **20 February 2024 – 20 March 2024**. All comments received during this comment period will be incorporated into the Final BAR that will be submitted to the DFFE for Decision making.
Prepared for:	Kareerand BESS (Pty) Ltd
Published by:	Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac)
Authors:	Mr Dale Holder
Cape EAPrac Ref:	MAT840/03
DEA Case officer & Ref. No:	Mmamohale Kabasa (Pre Application Reference) 2024-02-0024
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PROPOSED PROJECT

Kareerand BESS (Pty) Ltd ('the Applicant') is proposing the construction of the Kareerand Battery Energy Storage (BESS) Facility, consisting of a BESS and solar photovoltaic (PV) infrastructure located on Portion 3 of the Farm Kareerand No. 444, approximately 22 km east of Klerksdorp within the North West Province.

The Applicant is also proposing to upgrade the existing access road on Portion 3 of the Farm Kareerand No. 444, Portion 4 of the Farm Kareerand 444, Portion 16 of the Farm Kromdraai 420, Portion 17 of the Farm Kromdraai 420, Farm Umfula No. 575, Portion 20 of Farm Umfula No. 567 and Portion 56 of the Farm Kromdraai 420; and to construct new 132kV grid connection infrastructure on Portion 3 of the Farm Kareerand No. 444, Portion 15 of the Farm Kromdraai 443, Remainder of Portion 5 of Farm no. 422, Portion 6 of the Farm Buffelsfontein 443, Portion 3 of the Farm Kareerand 444, Portion 2 of the Farm Buffelsfontein 443, Portion 103 of the Farm Hartebeestfontein 422, Portion 38 of the Farm Hartebeestfontein 422, Portion 79 of the Farm Hartebeestfontein 422, Portion 8 of the Farm Hartebeestfontein 422, Portion 2 of the Farm Mapaiskraal No. 441, Portion 41 of the Farm Hartebeestfontein 422 and Portion 4 of the Farm Mapaiskraal 441.

The Kareerand BESS facility will have a total development footprint of up to approximately 25 ha and will have a maximum export capacity of up to 77 MW. The development area is situated within the City of Matlosana[1] Local Municipality and the JB Marks Local Municipality. The site is accessible via existing tarred and gravel roads to the north-east of the site. These existing gravel roads will be ugraded to a maximum width of 8m.

- The proposed Kareerand BESS facility will include the following infrastructure:
- PV modules and mounting structures (up to 10 ha).
- Inverters and transformers.
- Solid State Battery Energy Storage System (BESS) (up to 10 ha).
- Site and internal access roads (up to 8m wide).
- Operation and Maintenance buildings including a gate house and security building, control centre, offices, warehouses and workshops for storage and maintenance (up to 1 ha).
- Laydown areas (3 ha temporary and 1 ha permanent).
- A 132 kV facility substation (up to 1 ha).
- 33 kV cabling between the project components and the facility substation.

The project will also include Grid connection infrastructure consisting of:

- A 132 kV Eskom Switching Station (up to 1 ha).
- 132 kV powerline (up to 11.5 km long) connecting the Eskom switching station to the Hermes Main Transmission Substation (a grid connection corridor of 100m wide will be assessed to allow for environmental sensitivities and/or micro-siting).

The Grid connection infrastructure, although assessed cumulatively with the BESS, will be subject to a separate environmental application process administered by the provincial authority.

[1] Portions of the proposed Grid connection that will be administered by the provincial authority fall within the City of Matlosana Local Municipality.

LOCATION OF PREFFERED ALTERNATIVE[2]

The following section provides the details of the preferred alternative as determined in this Environmental Assessment Process.

Kareerand BESS	Latitude	Longitude
North-West Corner	26°54'37.27"S	26°52' 48.34"E
North-East Corner	26°54'36.81"S	26°53' 03.88"E
South-West Corner	26°54' 49.03"S	26°52' 48.59"E
South-East Corner	26°54' 48.81"S	26°53' 04.55"E

Kareerand PV Array	Latitude	Longitude
North-West Corner	26°54'36.81"S	26°53' 03.88"E
North-East Corner	26°54' 36.44"S	26°53' 12.56"E
South-West Corner	26°54' 48.81"S	26°53' 04.55"E
South-East Corner	26°54' 48.64"S	26°53' 13.01"E

Access Road	Latitude	Longitude
Start	26°53' 08.60"S	26°55' 22.80"E
Middle	26° 54' 06.71"S	26°54' 29.98"E
End	26° 54' 37.17"S	26° 53' 12.58"E

Facility Substation	Latitude	Longitude
Centrepoint	26°54' 39.02"S	26° 52' 53.60"E

-for the proposed Kareerand Battery Energy Storage (BESS) Facility, consisting of a BESS and solar photovoltaic (PV) infrastructure located on Portion 3 of the Farm Kareerand No. 444 and situated approximately 22 km east of Klerksdorp within the North West Province.

[2] The footprint of Kareerand Battery Energy Storage Facility is not rectangular. The co-ordinates reflected in this table indicate the corner points that are furthest east and west.

CONTENTS OF A BASIC ASSESSMENT REPORT.

Appendix 1 of Regulation 326 of the 2014 EIA Regulations (as amended) contains the required contents of a Basic Assessment Report. The checklist below serves as a summary of how these requirements were incorporated into this Basic Assessment Report.

Requirement	Details
(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include -	
(a) Details of - The EAP who prepared the report; and The expertise of the EAP, including, a curriculum vitae.	The report was compiled by Dale Holder of Cape EAPrac. The author has 20 years' experience as an EAP and holds a ND Nature Conservation qualification. The CV of the EAP and Company Profile is included as Annexure J4 of this report.
(b) The location of the activity, including – The 21-digit Surveyor General code of each cadastral land parcel; Where available, the physical address and farm name; Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	**Kareerand BESS** North-West Corner 26°54'37.27"S 26°52' 48.34"E North-East Corner 26°54'36.81"S 26°53' 03.88"E South-West Corner 26°54' 49.03"S 26°52' 48.59"E South-East Corner 26°54' 48.81"S 26°53' 04.55"E **Kareerand PV Array** North-West Corner 26°54'36.81"S 26°53' 03.88"E North-East Corner 26°54' 36.44"S 26°53' 12.56"E South-West Corner 26°54' 48.81"S 26°53' 04.55"E South-East Corner 26°54' 48.64"S 26°53' 13.01"E **Access Road** Start 26°53' 08.60"S 26°55' 22.80"E Middle 26° 54' 06.71"S 26°54' 29.98"E End 26° 54' 37.17"S 26° 53' 12.58"E **Facility Substation** Centrepoint 26°54' 39.02"S 26° 52' 53.60"E
(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Refer to Appendix A and B of this report.
(d) a description of the scope of the proposed activity, including - All listed and specified activities triggered and being applied for; and A description of the activities to be undertaken including associated structures and infrastructure.	The relevant listed activities are captured in Section 3.1.2 The description of the activity is provided in Section 2 of this report with graphic representation provided in Appendix B.
(e) A description of the policy and legislative context within which the development is proposed, including – An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and . How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks and instruments.	Please refer to Section 3 of this document.

Requirement	Details
(f) A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.	Please refer to Section 2.2 of this document.
(g) A motivation for the preferred site, activity and technology alternative.	The preferred alternative has been identified as the best practicable option and is discussed in detail in section 2.4 of this report.
(h) A full description of the process followed to reach the proposed preferred alternative within the site, including - • Details of all alternatives considered; • Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; • 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; • The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; • The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts - (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated. • The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; • Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; • The possible mitigation measures that could be applied and level of residual risk; • The outcome of the site selection matrix; • If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and • A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 2.4 addresses feasible and reasonable alternatives which were identified for facility. Site, layout and technological alternatives were considered. Details of Public Participation are included in section 8 of the report. A summary of all issues raised by I&APs as well as the responses thereto are included in Appendix F. The environmental attributes of the study site are included in section 5 of the report. The identification and assessment of Impacts are included in section 6 of the report. The summary of proposed mitigation measures is included in section 7 of the report. The outcome of the site selection matrix is attached in Annexure E7 and is summarised in section 2.3 of the report. The concluding statement is contained in section 6.14 of the report.
(i) A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including - A description of all environmental issues and risks that were identified during the basic assessment process; and An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.	Please see Summary and Section 6 of the report and Appendix E for the specialist reports.
(j) An assessment of each identified potentially significant impact and risk, including - Cumulative impacts;	Please see Section F of the report and Appendix E for the specialist reports.

Requirement	Details
The nature, significance and consequences of the impact and risk; The extent and duration of the impact and risk; The probability of the impact and risk occurring; The degree to which the impact and risk can be reversed; The degree to which the impact and risk may cause irreplaceable loss of resources; and The degree to which the impact and risk can be mitigated.	
(k) Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report.	Please see Section 6 of the report and Appendix E for the specialist reports.
(l) An environmental impact statement which contains – • A summary of the key findings of the environmental impact assessment; • A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and • A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Section 6.23 and 6.14 of this report. See Appendix D Section 6.13 of this report.
(m) Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr.	See section 7 report.
(n) Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	See section 7 of this report.
(o) A description of assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.	See 3.4 of this report.
(p) A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	See section 9 of this report.
(q) Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	The proposed activity does include operational aspects.
(r) An undertaking under oath or affirmation by the EAP in relation to: The correctness of the information provided in the reports; The inclusion of comments and inputs rom stakeholders and I&APs; The inclusion of inputs and recommendations from the specialist reports where relevant; and Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	The declaration of the EAP is attached in Appendix G.

Requirement	Details
(s) Where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts.	This environmental assessment does not include application for decommissioning and closure of activities
(t) Any specific information that may be required by the competent authority.	Currently not applicable but will be included if such a request is made.
(u) Any other matters required in terms of section 24(4)(a) and (b) of the Act.	This section will be updated on receipt of the mandatory comment from the competent authority.

COMPETANT AUTHORITY COMMENT ON DRAFT BASIC ASSESSMENT REPORT

This section will be updated once the DFFE provide comment on the Draft Basic Assessment Report.

ORDER OF REPORT

Report Summary

Draft Basic Assessment Report – Main Report

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Appendix B	:	Biodiversity Overlays
Appendix C	:	Site Photographs
Appendix D	:	Battery Energy Facility Layout Plans
Appendix E	:	Supplementary Reports (Specialist Reports and Technical Reports)
Annexure E1	:	Terrestrial Biodiversity Assessment (Biodiversity Africa, 2024)
Annexure E2	:	Aquatic Biodiversity compliance Statement (The Biodiversity Company, 2024)
Annexure E3	:	Avifaunal Impact Assessment (Pachnoda Consulting, 2024)
Annexure E4	:	Agricultural Compliance Statement (The Biodiversity Company, 2024)
Annexure E5	:	Heritage and Archaeological Impact Assessment Report (Beyond Heritage, 2024)
Annexure E6	:	Palaeontology Desktop Assessment (Bamford, 2024)
Annexure E7	:	Visual Impact Assessment (Donaway Environmental, 2024)
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Appendix F	:	Public Participation Process
Annexure F1	:	I&AP Register
Annexure F2	:	Comments and Response Report (to be included with final BAR)
Annexure F3	:	Adverts & Site Notices (to be included in the Final BAR)
Annexure F4	:	Draft BAR Notifications (to be included with final BAR)
Annexure F5	:	Draft BAR Comments and Responses (to be included with Final BAR)
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EXECUTIVE SUMMARY

I. INTRODUCTION

Cape EAPrac has been appointed by Kareerand BESS (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate the Basic Assessment process[3] required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) for the proposed development of the Kareerand Battery Energy Storage Facility and associated infrastructure (including a Solar PV component of up to 10ha) on Portion 3 of the Farm Kareerand No. 444 situated approximately 22km north of Klerksdorp in the North West Province of South Africa.

The Applicant is also proposing to upgrade the existing access road on Portion 3 of the Farm Kareerand No. 444, Portion 4 of the Farm Kareerand 444, Portion 16 of the Farm Kromdraai 420, Portion 17 of the Farm Kromdraai 420, Farm Umfula No. 575, Portion 20 of Farm Umfula No. 567 and Portion 56 of the Farm Kromdraai 420.

The facility will include a Battery Energy Storage Facility and associated PV Development with a maximum Export Capacity of 77Mw. The grid connection to connect this project to the National Grid although assessed as part of this environmental process is subject to a separate environmental process that will be administered by the provincial authority[4].

The purpose of this **Draft Basic Assessment Report** (BAR) is to describe the environment to be affected, the proposed project, to present the site constraints identified by the various specialist during their site assessments and identify & assess the impacts of this development on the receiving environment. This information is herewith presented to all registered and potential Interested and Affected Parties (I&AP's), organs of state, state departments and the competent authority for review and comment.

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), Draft BAR is available for a 30 - Day period extending from **20 February 2024 – 20 March 2024.**

All comments received on the Draft BAR will be incorporated into the Final BAR that will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making. After the department has taken a decision on the application, this decision will be communicated to all registered I&AP's along with details of the appeal process.

II. RECOMMENDATION OF THIS EIA

It is the recommendation of Cape EAPrac that the development proposal, Layout Alternative 1 and the proposed upgrade of the Access Road be considered for approval by the competent Authority, subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

Please refer to sections 6,7 and 9 of this Draft BAR for the justification of this recommendation.

III. NEED AND DESIRABILITY

Need and desirability for this project has been considered in detail in this environmental process. The overall need and desirability in terms of developing battery storage and renewable energy generation in South Africa, the North West Province and globally is considered in section 1, while the project specific need and desirability is considered in section 2.8 of this report.

[3] The environmental process follows a basic assessment process, as it is located within the Klerksdorp Renewable Energy Development Zone.

[4] This Basic Assessment Report therefore includes the IPP side of the onsite substation, the Eskom side of the onsite substation as well as the connection to the Eskom Hermes MTS was assessed by specialists as part of this environmental process, but will be subject to a separate environmental application process.

IV. ENVIRONMENTAL LEGISLATIVE REQUIREMENTS

The current assessment is being undertaken in terms of the **National Environmental Management Act** (NEMA, Act 107 of 1998). This Act makes provision for the identification and assessment of activities that are potentially detrimental to the environment, and which require authorisation from the competent authority (in this case, the National Department Forestry, Fisheries and the Environment, DFFE) based on the findings of an Environmental Assessment.

The proposed development entails a number of listed activities, which require a Scoping and Environmental Impact Reporting Process. The project is however situated within the Klerksdorp Renewable Energy Development Zone and as such will be subject to a Basic Assessment Process , which must be conducted by an independent Environmental Assessment Practitioner (EAP). Cape EAPrac has been appointed to undertake this process.

Table 1: NEMA 2014 (As amended) listed activities applicable to the Kareerand Battery Energy Storage Facility.

Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.**
28(ii)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The construction of a BESS is considered as Industrial use.
56(ii)	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (ii) where no reserve exists, where the existing road is wider than 8 metres;	The existing gravel road to the Kareerand BESS BESS will be widened by more than 6m in certain sections.
Activity No(s):	**Provide the relevant Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.**
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,	The proposed Kareerand BESS includes a component of PV generation. The total export capacity of Kareerand BESS (PV and BESS Component) will be up to 77MW
15	The clearance of an area of 20 hectares or more of indigenous vegetation,	The Proposed Kareerand BESS along with the associated PV component will have a footprint in excess of 20 hectares.
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed**

		activity relates. Ensure to include thresholds/area/footprint applicable.
4(h)(i)(iv)	The development of a road wider than 4 metres with a reserve less than 13,5 metres. h. North West i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;	The main access road to the site will be wider than 4m and occurs within a private nature reserve and a CBA2.
12(h)(ii)(iv)(vi)	The clearance of an area of 300 square metres or more of indigenous vegetation. h. North West ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.	The proposed project will entail the removal of more than 300 Square metres within a CBA2 and private nature reserve. The proposed BESS is within 100m of a unchanneled valley bottom wetland delineated by the aquatic specialist.
18(h)(i)(v)(ix)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. h. North West i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; ix. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland	The proposed Kareerand BESS will include the widening of existing gravel roads by more than 4m. Such widening will occur on a site designated as a private nature reserve, CBA2 and within 100m of a Valley Bottomed Wetland delineated by the aquatic specialist.

NOTE: Basic Assessment (BA) as well as Scoping and Environmental Impact Reporting (S&EIR) Activities are being triggered by the proposed development, but since the project is contained in a legislated REDZ, the EIA Process will follow a Basic Assessment process.

Before any of the above-mentioned listed activities can be undertaken, authorisation must be obtained from the relevant authority, in this case the DFFE. Should the Department approve the proposed activity, the Environmental Authorisation does not exclude the need for obtaining relevant approvals from other Authorities who has a legal mandate in respect of the activity.

V. DEVELOPMENT PROPOSAL

Kareerand BESS (Pty) Ltd ('the Applicant') is proposing the construction of the Kareerand Battery Energy Storage (BESS) Facility, consisting of a BESS and solar photovoltaic (PV) infrastructure located on Portion 3 of the Farm Kareerand No. 444, approximately 22 km east of Klerksdorp within the North West Province.

The Applicant is also proposing to upgrade the existing access road on Portion 3 of the Farm Kareerand No. 444, Portion 4 of the Farm Kareerand 444, Portion 16 of the Farm Kromdraai 420, Portion 17 of the Farm Kromdraai 420, Farm Umfula No. 575, Portion 20 of Farm Umfula No. 567 and Portion 56 of the Farm Kromdraai 420; and to construct new 132kV grid connection infrastructure on Portion 3 of the Farm Kareerand No. 444, Portion 15 of the Farm Kromdraai 443, Remainder of Portion 5 of Farm no. 422, Portion 6 of the Farm Buffelsfontein 443, Portion 3 of the Farm Kareerand 444, Portion 2 of the Farm Buffelsfontein 443, Portion 103 of the Farm Hartebeestfontein 422, Portion 38 of the Farm Hartebeestfontein 422, Portion 79 of the Farm Hartebeestfontein 422, Portion 8 of the Farm Hartebeestfontein 422, Portion 2 of the Farm Mapaiskraal No. 441, Portion 41 of the Farm Hartebeestfontein 422 and Portion 4 of the Farm Mapaiskraal 441.

The Kareerand BESS facility will have a total development footprint of up to approximately 25 ha and will have a maximum export capacity of up to 77 MW. The development area is situated within the City of Matlosana Local Municipality[5] and the JB Marks Local Municipality. The site is accessible via existing tarred and gravel roads to the north-east of the site. These existing gravel roads will be ugraded to a maximum width of 8m.

The proposed Kareerand BESS facility will include the following infrastructure:

- PV modules and mounting structures (up to 10 ha).
- Inverters and transformers.
- Solid State Battery Energy Storage System (BESS) (up to 10 ha).
- Site and internal access roads (up to 8m wide).
- Operation and Maintenance buildings including a gate house and security building, control centre, offices, warehouses and workshops for storage and maintenance (up to 1 ha).
- Laydown areas (3 ha temporary and 1 ha permanent).
- A 132 kV facility substation (up to 1 ha).
- 33 kV cabling between the project components and the facility substation.

The project will also include Grid connection infrastructure consisting of:

- A 132 kV Eskom Switching Station (up to 1 ha).
- 132 kV powerline (up to 11.5 km long) connecting the Eskom switching station to the Hermes Main Transmission Substation (a grid connection corridor of 100m wide will be assessed to allow for environmental sensitivities and/or micro-siting).

The Grid connection infrastructure, although assessed cumulatively with the BESS, will be subject to a separate environmental application process administered by the provincial authority.

VI. PROFFESIONAL INPUT

The following professionals[6] have provided input into this environmental process:

1.	Terrestrial Biodiversity	-	Biodiversity Africa
2.	Avifaunal	-	Pachnoda Consulting
3.	Heritage	-	Beyond Heritage
4.	Archaeology	-	Beyond Heritage
5.	Palaeontology	-	Prof Marion Bamford
6.	Agricultural Potential	-	The Biodiversity Company
7.	Visual	-	Donaway Environmental

[5] Portions of the Grid Connection Infrastructure that will be administered by the Provincial Authority fall within the City of Matlosana Local Municipality.

[6] Note that not all of these professionals are considered specialists as contemplated in chapter 3 of Regulation 326. Studies such as Engineering, constitute "technical" studies, rather than specialist studies and as such, the requirements in appendix 6 of R326 do not apply to all these professionals

8. Aquatic Biodiversity - The Biodiversity Company
9. Social - Donaway Environmental
10. BESS Technical - Kareerand BESS (Pty) Ltd

VII. PLANNING CONTEXT

The land use planning process involves the following:

- Application for amendment of the Klerksdorp Land Use Management Scheme, 2005, in terms of the City of Matlosana Draft Spatial Planning and Land Use Management By-law, 2016, read with the Spatial Planning and Land Use Management Act, Act 16 of 2013 by the rezoning of a portion of Portion 3 of the Farm Kareerand No. 444. North West from "Agricultural" to "Special" to accommodate a renewable energy structure (Kareerand Battery Energy Storage Facility) on the property, submitted to the City of Matlosana Municipality.

VIII. ASSESSMENT OF IMPACTS

The following impacts were assessed for the proposed Kareerend BESS facility.

CONSTRUCTION PHASE AVIFAUNAL IMPACTS		
Nature: The loss of natural habitat and displacement of birds through physical transformation, modifications, removals and land clearance.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
OPERATIONAL PHASE AVIFAUNAL IMPACTS		
Nature: The creation of novel or new avian habitat for commensal bird species or superior competitive species.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Avian collision impacts related to the PV arrays (collision with the PV panels).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Avian collision impacts related to overhead power lines.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Avian electrocution related to the new distribution lines.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low-Medium Negative**
CONSTRUCTION PHASE HERITAGE IMPACTS		
Nature: Construction activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
CONSTRUCTION PHASE VISUAL IMPACTS		

Nature: Visual impact of construction activities on sensitive visual receptors and a rural landscape (BESS & PV).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Visual impact of construction activities on sensitive visual receptors and a rural landscape (Powerline Corridor).		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
OPERATIONAL PHASE VISUAL IMPACTS		
Nature: Visual impact of industrial operational infrastructure on sensitive visual receptors, landscape and scenic resources. Change in the sense of place of the local area (BESS & PV).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Visual impact of industrial operational infrastructure on sensitive visual receptors, landscape and scenic resources. Change in the sense of place of the local area (Powerline Corridor).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Visual impacts of lighting at night on sensitive visual receptors and the effect of sky glow on a rural landscape.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
CONSTRUCTION PHASE SOCIAL IMPACTS		
Nature: Direct and indirect employment opportunities and skills development		
	Without Mitigation	**With Mitigation**
Significance	**Low Positive**	**Low Positive**
Nature: Economic Multiplier Effect		
	Without Mitigation	**With Mitigation**
Significance	**Low Positive**	**Medium Positive**
Nature: Potential loss of productive farmland.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Influx of jobseekers and change in population.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Safety and security impacts.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**

As seen in the summary table above, the majority of impacts range from high positive to medium negative. All medium-high, high, very high and critical negative impacts have been avoided by the avoidance of sensitive features and habitats or have been mitigated to acceptable levels.

None of the participating specialists identified any impacts that remain high or very-high after mitigation. The preferred layout (Layout Alternative 1) avoids the main sensitive features.

The affected area is therefore considered suitable for development and there are no impacts associated with Kareerand Battery Energy Storage Facility that cannot be mitigated to an acceptable level. With the enhancement measures suggested by the Social Specialist, high positive impacts on Creation of employment and business opportunities, Economic Multiplier effects, Generation income for affected landowner and Cumulative impact on local economies can be expected.

As such there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. The preferred alternative in this assessment (Layout Alternative 1), and the upgrade of the existing access road can be supported subject to the implementation of the mitigation measures outlined in section 7 of the report.

A map showing the proposed activity in relation to the key sensitive features is in attached in Appendix D. All sensitive features along with their appropriate buffers are shown in this plan. As required by the EMPr, all areas outside of the proposed development footprint are to be demarcated as no go areas.

Please refer to the table in the section above listing the key impacts and their significance post mitigation for the preferred alternative. This section must be read in conjunction with the suggested mitigation measures listed in section 7 of this Report.

IX. CONCLUSIONS & RECOMMENDATIONS

This environmental process is currently being undertaken to present proposals to the public and potential I&APs and to identify and assess environmental impacts, issues and concerns raised as a result of the proposed development.

Cape EAPrac is of the opinion that the information contained in this Basic Assessment Report and the documentation attached hereto is sufficient to allow the I&APs to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for.

This environmental process has not identified any fatal flaws with the proposal and as such it is our reasoned view that the project should be considered for authorisation, subject to the outcome of the public participation process and on condition that all the mitigation measures outlined in section 7 of the report are adopted and implemented. All specialists concur that the development as proposed (Layout Alternative 1) can be considered for approval subject to the implementation of all mitigation measures. All impacts range from medium positive to medium negative and all high, very high and critical negative impacts have been avoided by the risk adverse approach or mitigated to acceptable levels.

All stakeholders are requested to review the Draft BAR and the associated appendices, and provide comment, or raise issues of concern, directly to *Cape EAPrac* within the specified 30-day comment period. All comments received during this comment period will be considered, responded and included in the Final BAR that will be submitted to DFFE for decision making.

It is the recommendation of Cape EAPrac that the development proposal, Layout Alternative 1 and the upgrade of the existing gravel road be considered for approval by the competent Authority, subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

DRAFT BASIC ASSESSENT REPORT

1 INTRODUCTION

Cape EAPrac has been appointed by Kareerand BESS (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate the Basic Assessment process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) for the proposed development of the Kareerand Battery Energy Storage Facility and associated infrastructure (including a Solar PV component of up to 10ha) on Portion 3 of the Farm Kareerand No. 444 situated approximately 22km north of Klerksdorp in the North West Province of South Africa.

The Applicant is also proposing to upgrade the existing access road on Portion 3 of the Farm Kareerand No. 444, Portion 4 of the Farm Kareerand 444, Portion 16 of the Farm Kromdraai 420, Portion 17 of the Farm Kromdraai 420, Farm Umfula No. 575, Portion 20 of Farm Umfula No. 567 and Portion 56 of the Farm Kromdraai 420.

The facility will include a Battery Energy Storage Facility and associated PV Development with a maximum Export Capacity of 77Mw. The grid connection to connect this project to the National Grid although assessed as part of this environmental process is subject to a separate environmental process that will be administered by the provincial authority .

The purpose of this Draft Basic Assessment Report (BAR) is to describe the environment to be affected, the proposed project, to present the site constraints identified by the various specialist during their site assessments and identify & assess the impacts of this development on the receiving environment. This information is herewith presented to all registered and potential Interested and Affected Parties (I&AP's), organs of state, state departments and the competent authority for review and comment.

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), Draft BAR is available for a 30 - Day period extending from 20 February 2024 – 20 March 2024.

All comments received on the Draft BAR will be incorporated into the Final BAR that will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making. After the department has taken a decision on the application, this decision will be communicated to all registered I&AP's along with details of the appeal process.

1.1 RECOMMENDATION OF THIS EIA

It is the recommendation of Cape EAPrac that the development proposal, Layout Alternative 1 and upgrade of the existing gravel road be considered for approval by the competent Authority, subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

1.2 OVERVIEW OF BATTERY ENERGY STORAGE GLOBALLY AND IN SOUTH AFRICA [7]

Utility-scale battery energy storage systems (BESS) have emerged as crucial components of modern energy infrastructure worldwide, facilitating the integration of renewable energy sources, enhancing grid stability, and providing valuable grid services.

The utility-scale BESS market has experienced rapid growth in recent years, driven by declining battery costs, supportive government policies, and the increasing penetration of renewable energy sources like

[7] This section has been prepared with input from the social specialist. Please also refer to the Social Impact Assessment Attached in Annexure E8.

solar and wind. One of the key applications is that BESS can quickly respond to fluctuations in supply and demand, helping to balance the grid and maintain stability.

Lithium-ion batteries are the predominant technology for utility-scale BESS due to their high energy density, efficiency, and declining costs. The United States is leading the global market on BESS deployment, the U.S. has deployed numerous utility-scale BESS projects, particularly in states with ambitious renewable energy targets like California and Texas.

Many countries have established renewable energy targets or mandates to increase the share of renewable energy in their energy mix. Policies promoting the deployment of battery energy storage often complement these targets by facilitating the integration of intermittent renewable energy sources such as solar and wind into the grid. Furthermore, some jurisdictions have implemented specific mandates or incentives to promote the deployment of energy storage systems, including batteries. These policies may include procurement targets, financial incentives, or regulatory mandates requiring utilities to consider energy storage as part of their resource planning process.

In South Africa, battery energy storage systems (BESS) are gaining traction as the country seeks to address energy security concerns, integrate renewable energy sources, and modernize its electricity grid. The following is of relevance in this context:

- **Integration of Renewable Energy:** South Africa has abundant renewable energy resources, particularly solar and wind. BESS play a crucial role in integrating these intermittent energy sources into the grid by storing excess energy when generation exceeds demand and releasing it when demand is high or generation is low. This helps to stabilize the grid and maximize the utilization of renewable energy.
- **Grid Stability and Reliability:** South Africa's electricity grid faces challenges related to aging infrastructure, supply constraints, and intermittency issues. BESS provide grid stabilization services such as frequency regulation, voltage support, and ramp-rate control, enhancing grid stability and reliability.
- **Load Shedding Mitigation**: Load shedding, or planned rolling blackouts, has been a recurring challenge in South Africa due to supply constraints and grid instability. BESS can provide backup power during peak demand periods or emergencies, helping to mitigate the impact of load shedding on businesses and households.
- **Energy Market Participation:** South Africa is exploring reforms in its electricity market structure to facilitate the participation of independent power producers (IPPs) and encourage competition. BESS, especially when paired with renewable energy projects, can participate in energy markets by providing grid services, selling excess energy, and earning revenue through various market mechanisms.
- **Policy and Regulatory Framework:** The South African government has shown commitment to renewable energy and energy storage through various policy instruments, including the Integrated Resource Plan (IRP), which outlines the country's energy mix targets and procurement plans. Additionally, regulatory frameworks governing grid connection, licensing, and tariff structures are evolving to accommodate the deployment of BESS.

The Department of Mineral Resources and Energy is procuring new generation capacity from battery energy storage (as part of the Battery Energy Storage Independent Power Producers Procurement Programme (BESIPPPP) in accordance with Ministerial determinations gazetted under the Integrated Resource Plan 2019. 1231 MW will be procured through two bid windows, respectively procuring 615MW and 616 MW.

The Kareerand Battery Energy Storage Facility intends to participate in round 2[8] of the BESIPPPP.

1.3 ASSUMPTIONS & LIMITATIONS

This section provides a brief overview of *specific assumptions and limitations* having an impact on this environmental application process:

- It is assumed that the information on which this report is based (specialist studies and project information, as well as existing information) is **correct, factual and truthful.**
- The proposed development is **in line** with the statutory planning vision for the area, most notably the local Spatial Development Plan as well as the Klerksdorp REDZ, and thus it is assumed that issues such as the cumulative impact of development in terms of character of the area and its resources, have been taken into account during the strategic planning for the area.
- It is assumed that all the relevant **mitigation and management measures** and agreements specified in this report will be implemented in order to ensure minimal negative impacts and maximum environmental benefits.
- It is assumed that due consideration will be given to the **discrepancies in the digital mapping** (PV panel array layouts against possible constraints), caused by differing software programs, and that it is understood that the ultimate/final positioning of solar array will only be confirmed on-site with the relevant specialist/s.
- The Department of Water and Sanitation **will consider the submission of a water use application** necessary for allowing the use of water from any water resource on site. The assumption at this stage is made that water provision for construction and operations is to be obtained from the local municipality.
- It is assumed that Stakeholders and Interested and Affected Parties notified of the availability of this will submit all relevant **comments within the designated 30-days** review and comment period, so that these can included in the Final BAR to be timeously submitted to the competent authority, the Department of Forestry, Fisheries and the Environment, for consideration and decision making.

The assumptions and limitations of the various specialist studies are included in their respective reports attached in Appendix E.

2. PROPOSED ACTIVITY

Kareerand BESS (Pty) Ltd ('the Applicant') is proposing the construction of the Kareerand Battery Energy Storage (BESS) Facility, consisting of a BESS and solar photovoltaic (PV) infrastructure located on Portion 3 of the Farm Kareerand No. 444, approximately 22 km east of Klerksdorp within the North West Province.

The Applicant is also proposing to upgrade the existing access road on Portion 3 of the Farm Kareerand No. 444, Portion 4 of the Farm Kareerand 444, Portion 16 of the Farm Kromdraai 420, Portion 17 of the Farm Kromdraai 420, Farm Umfula No. 575, Portion 20 of Farm Umfula No. 567 and Portion 56 of the Farm Kromdraai 420; and to construct new 132kV grid connection infrastructure on Portion 3 of the Farm Kareerand No. 444, Portion 15 of the Farm Kromdraai 443, Remainder of Portion 5 of Farm no. 422, Portion 6 of the Farm Buffelsfontein 443, Portion 3 of the Farm Kareerand 444, Portion 2 of the Farm Buffelsfontein 443, Portion 103 of the Farm Hartebeestfontein 422, Portion 38 of the Farm Hartebeestfontein 422, Portion 79 of the Farm Hartebeestfontein 422, Portion 8 of the Farm Hartebeestfontein 422, Portion 2 of the Farm Mapaiskraal No. 441, Portion 41 of the Farm Hartebeestfontein 422 and Portion 4 of the Farm Mapaiskraal 441.

[8] Or in future rounds or similar procurement programmes should they not be successful in initial rounds.

The Kareerand BESS facility will have a total development footprint of up to approximately 25 ha and will have a maximum export capacity of up to 77 MW. The development area is situated within the City of Matlosana Local Municipality and the JB Marks Local Municipality. The site is accessible via existing tarred and gravel roads to the north-east of the site. These existing gravel roads will be ugraded to a maximum width of 8m.

The proposed Kareerand BESS facility will include the following infrastructure:

- PV modules and mounting structures (up to 10 ha).
- Inverters and transformers.
- Solid State Battery Energy Storage System (BESS) (up to 10 ha).
- Site and internal access roads (up to 8m wide).
- Operation and Maintenance buildings including a gate house and security building, control centre, offices, warehouses and workshops for storage and maintenance (up to 1 ha).
- Laydown areas (3 ha temporary and 1 ha permanent).
- A 132 kV facility substation (up to 1 ha).
- 33 kV cabling between the project components and the facility substation.

The project will also include Grid connection infrastructure consisting of:

- A 132 kV Eskom Switching Station (up to 1 ha).
- 132 kV powerline (up to 11.5 km long) connecting the Eskom switching station to the Hermes Main Transmission Substation (a grid connection corridor of 100m wide will be assessed to allow for environmental sensitivities and/or micro-siting).

The Grid connection infrastructure, although assessed cumulatively with the BESS, will be subject to a separate environmental application process administered by the provincial authority.

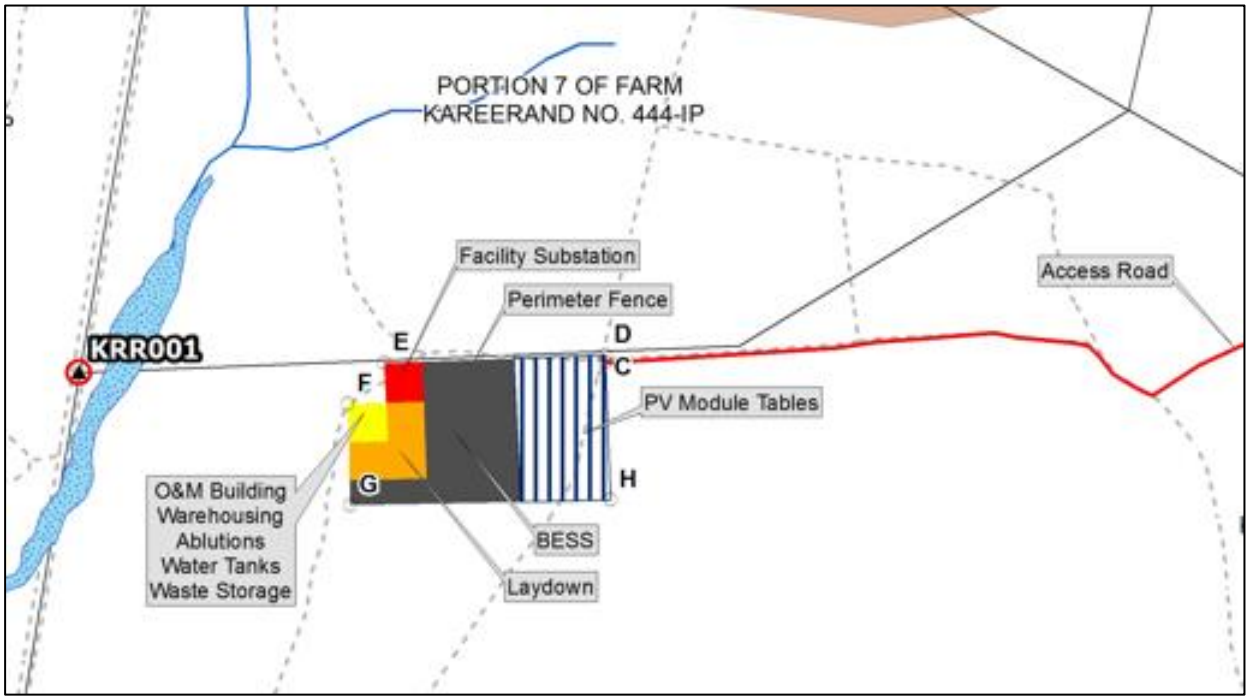

Figure 1: Proposed layout of Kareerand Battery Energy Storage Facility, showing key project components (Please also refer to the full-scale plans attached in Appendix D).

Kareerand Battery Energy Storage Facility will have a export capacity of up to 77 MW with an estimated maximum footprint of ± 25 ha.

The following key components and infrastructure will make up the proposed Midas Battery Energy Storage Facility.

2.1.1 Battery Storage Energy System.

Please refer to the Battery Energy Storage Technical Report compiled by Midas Kareerand BESS (Pty) Ltd attached in Annexure E8 for further details on the proposed Battery Energy Storage System (BESS).

The proposal for the Kareerand Battery Energy Storage Facility includes the installation of a BESS with an export capacity of up to 77MW and a maximum footprint of up to 10ha.

Figure 2: Location of battery energy storage system (Dark Green Polygon) in relation to the remaining components of the Kareerand Battery Energy Storage Facility.

As technological advances within battery energy storage systems (BESS) are frequent, two BESS technology alternatives are considered: Solid state battery electrolytes and Redox-flow technology.

Solid state battery electrolytes, such as lithium-ion (Li-ion), zinc hybrid cathode, sodium ion, flow (e.g. zinc iron or zinc bromine), sodium sulphur (NaS), zinc air and lead acid batteries, can be used for grid applications. Compared to other battery options, Li-ion batteries are highly efficient, have a high energy density and are lightweight. As a result of the declining costs, Li-ion technology now accounts for more than 90% of battery storage additions globally (IRENA, 2019).

Flow batteries use solid electrodes and liquid electrolytes. The most used flow battery is the Vanadium Redox Flow Battery (VRFB), which is a type of rechargeable flow battery that employs vanadium ions in different oxidative states to store chemical potential energy.

Considering the nature of the project, only a solid-state technology type would be envisaged for implementation. The technology includes batteries housed within containers which are fully enclosed and self-contained. Therefore, the assessment proposes all solid-state technologies for authorisation to allow the precise technology to be selected when the project is implemented, on the understanding that further investigation into the specific technologies available at the time of being awarded preferred bidder status will allow for one of two to be selected and ultimately developed.

Traditional utility-scale Li-ion battery storage facilities include the following main components:

- Battery cells → modules → packs → racking system (DC).
- Storage container (HVAC system, thermal management, monitors and controls, fire suppression, switchgear, and energy management system).
- Power conversion system (bidirectional inverter to convert AC to DC for battery charging and DC to AC for discharging).
- Transformer (to step up 480-V inverter output to 12–66 kV).

The figures below illustrates the components that generally make up the primary battery system.

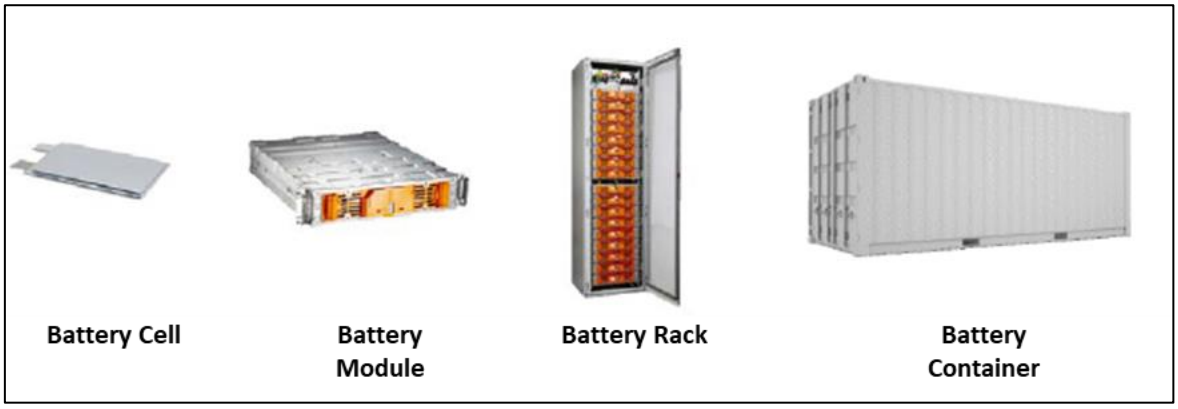

Figure 3: Typical Battery System Components (Midas BESS(Pty) Ltd, 2024)

Figure 4: Pivot Power's proposed 50MW lithium-ion battery in Kemsley, Kent (Midas BESS(Pty) Ltd, 2024)

The battery storage system will be constructed on a 10ha footprint. Please refer to the Site Location Plans in Appendix A and Site Layout Plans in Appendix C.

For the purposes of this assessment, the applicant proposes solid state batteries with an export capacity of up to 77MW on a Footprint of up to 10ha. The associated infrastructure including the PV arrays will have an additional footprint of up to 15ha.

1.1.1 Auxiliary buildings

The auxiliary buildings will comprise the following as a minimum:

- 33 kV switch room;
- Control building/ centre;
- Offices;
- Warehouses;
- Staff lockers & ablution; and
- Gate-house and security.

The total area occupied by auxiliary buildings will be approximately 1 ha, excluding the facility substation.

1.1.2 Access routes and internal roads

Access to the proposed Kareerand Battery Energy Storage Facility will be provided via both new and existing roads. The first section of access road will be via an existing gravel road from an existing gravel road off the R501. This existing gravel road will be upgraded to a maximum width of 8m.

Figure 5: Existing Gravel Roads and Tracks to be upgraded.

A new road with a maximum width of 8m will then be constructed from the existing grave road to the proposed Kareerand Battery Energy Storage Facility.

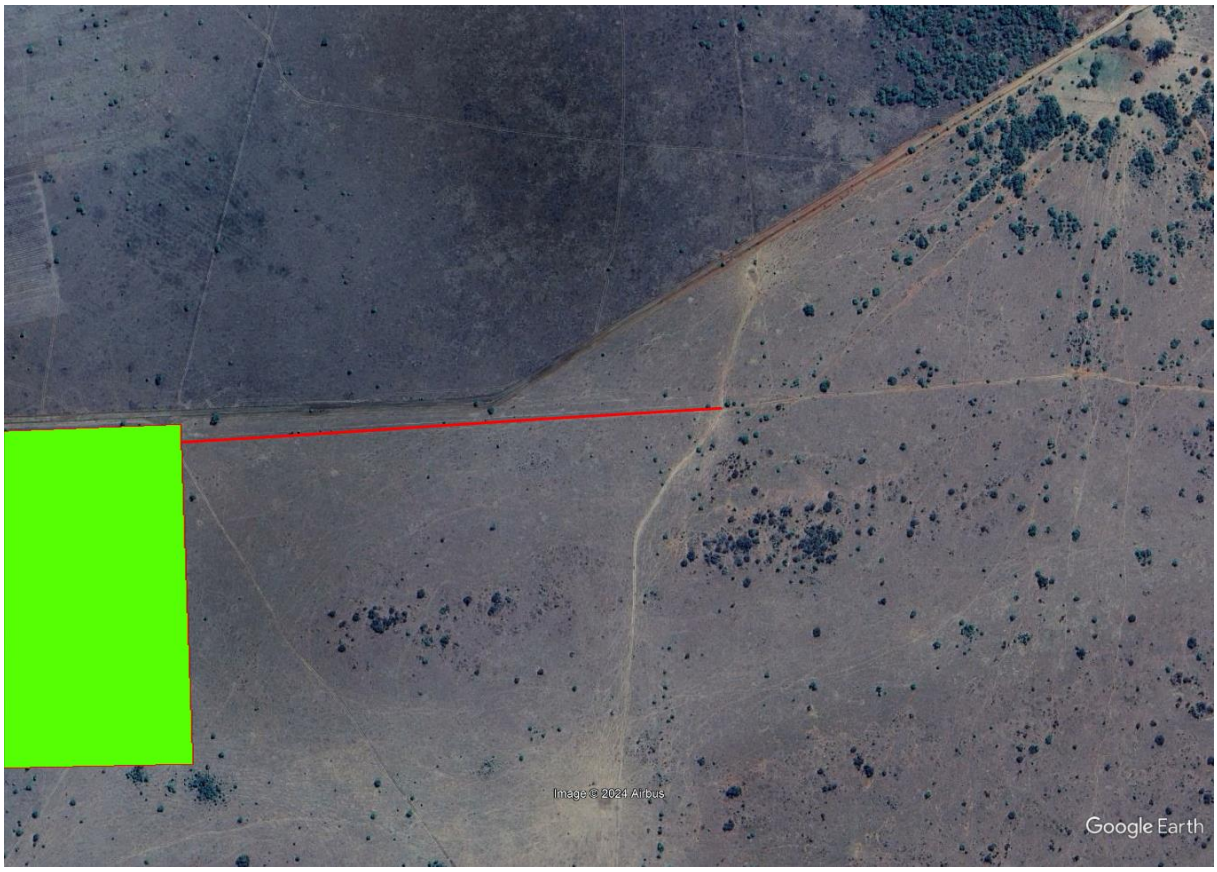

Figure 6: New Access Roads required for the Kareerand Battery Energy Storage Facility

The project will also require internal roads with a width of up to ± 8 m. These will be constructed within the footprint of the Midas Battery Energy Storage Facility.

1.1.3 Grid connection and cabling

The proposed Kareerand Battery Energy Storage Facility includes a 132 kV facility substation of up to 1 ha as well as 33 kV cabling between the project components and the facility substation. These components will be installed within the footprint of the BESS and Facility substation.

1. A 132 kV Eskom Switching Station (up to 1 ha).
2. 132 kV powerline (up to 11.5 km long) connecting the Eskom switching station to the Hermes Main Transmission Substation (a grid connection corridor of 100m wide will be assessed to allow for environmental sensitivities and/or micro-siting).

The Grid connection infrastructure listed in points 1 and 2 above will assessed cumulatively with the proposed Midas Battery Energy Storage Facility but will be subject to a separate environmental application process administered by the provincial authority.

Figure 7: Showing Grid connection infrastructure including powerline (orange polygon) and Eskom Switching Station (blue Polygon) that will be subjected to a separate environmental application to be administered by the provincial authority.

2.2 SOLAR ARRAY

Solar PV modules are connected in series to form a string. A number of strings are then wired in parallel to form an array of modules. PV modules are mounted on structures that are either fixed, north-facing at a defined angle, or mounted to a single or double axis tracker to optimise electricity yield.

2.2.1 Mounting Structures

Various options exist for mounting structure foundations, which include cast / pre-cast concrete, driven / rammed piles, or ground / earth screws mounting systems. The typical mounting structures are shown in the figure below.

Figure 8: Mounting Structures. A) Cast Concrete Foundation. B) Driven/ Rammed Steel Pile. C) Ground / Earth Screw Kareerand BESS (PV (Pty) Ltd)

The impact on agricultural resources and production of these options are considered to be the same, however concrete is least preferred due the effort required at a decommissioning phase in order to remove the concrete from the soil, and therefore its impact on the environment. will therefore aim to make the most use of either driven / rammed piles, or ground / earth screws mounting systems, and only in certain instances resort to concrete foundations should geotechnical studies necessitate this.

The images below show typical examples of the preferred mounting technology during and after installations (Photos: Cape EAPrac).

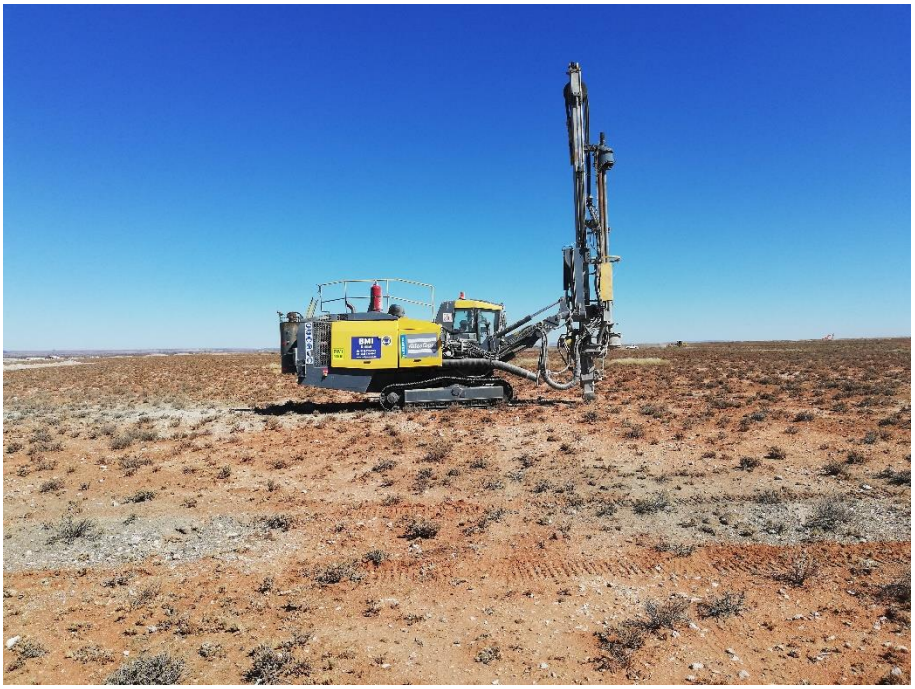

Figure 9: Pre-drilling of holes prior to the ramming of steel piles.

Note that the vegetation is not completely removed prior to the drilling and installation of the piles.

Figure 10: pre-drilled holes are backfilled with a wet sand mixture and steel piles placed in position ready for ramming.

The predrilled holes are backfilled on a continuous basis to ensure that no fauna is trapped in the holes

Figure 11: Ramming of steel piles into the pre-drilled / backfilled holes.

Note that the ramming machines follow the same entry and exit routes as the drilling rigs in order to reduce the impacts of trampling and compaction.

Figure 12: Completed ramming and assembly showing vegetation remaining intact beneath the modules.

Figure 13: Showing vegetation re-establishing along the driplines of the arrays within weeks after installation.

1.2 EXTERNAL SERVICES.

The following external services will be required for the construction and operation of the Kareerand Battery Energy Storage Facility.

1.2.1 Solid waste

Solid waste during the construction phase will mainly be in the form of construction material, excavated substrate and domestic solid waste. All waste will be disposed of in scavenger proof bins and temporarily placed in a central location for removal by the contractor. Any other waste will be removed once construction is complete and disposed of at a registered waste facility. Excess excavation material will either be spoiled offsite at a registered facility or used for landscaping within the overall facility.

1.2.2 Sewerage

During the construction phase, chemical ablution facilities will be utilised. These ablution facilities will be maintained, serviced and emptied by an appointed contractor, who will dispose of the effluent at a licensed facility off site. Once construction is complete, the chemical ablution facilities will be removed from the study area. A conservancy tank which will be regularly emptied by a registered service provider will be installed at the Operations and Maintenance building.

1.2.3 Water

Water required during the construction and operation phases will be sourced from (in order of priority):

1. The Local Municipality - Specific arrangements will be agreed with the Local Municipality in a Service Level Agreement (SLA). Most likely the water will be either trucked in, or otherwise made available for collection at their Water Treatment Plant via a metered standpipe.
2. Investigation into a third-party water supplier which may include a private services company.
3. The investigation of drilling a borehole on site, which includes complete geohydrological testing, groundwater census and a Water Use License Application (WULA) in terms of section 21a of the National Water Act, 1998.

1.2.4 Hazardous substances[9]

During the construction phase, use of the following hazardous substances is anticipated:

4. Cement powder associated with the batching plant;
5. Petrol/diesel for trucks/ cranes/ other plant;
6. Limited amounts of lubricants and transformer oils;
7. Defunct or damaged battery units.

Temporary storage and disposal of hazardous waste will be done in compliance with relevant legislation (i.e., stored in covered containers with appropriate bunding). Refuelling areas to be in designated positions, with suitable mitigation to reduce the risk of hydrocarbon spills. In Terms of the EMPr, Spill kits will be available on site to clean up any minor spillages.

[9] Hazardous Substances in this instance excludes any substances that may be within the containerised BESS units. Management of such substances must be done in terms of a technology specific risk assessment.

Figure 14: Hydrocarbon Spill Kits must be in place within the site camp and within the BESS and Substation construction area.

2.3 PROJECT NEED AND DESIRABILITY

In keeping with the requirements of an integrated Environmental Impact process, the DEA&DP *Guidelines on Need and Desirability (2010 & 2011)*[10] were referenced to provide the following estimation of the activity in relation to the broader societal needs. The concept of need and desirability can be explained in terms of its two components, where *need* refers to *time,* and *desirability* refers to *place*. Questions pertaining to these components are answered in the Sections below. The section above (overview to alternative energy in South Africa and the North West Province) considers the overall need for alternative, so-called 'green energy' in light of the known environmental burdens associated with the impact of coal power generation through which most of our country's electricity is currently being generated. Associated aspects such as air pollution, water use and carbon tax are discussed in order to further explain the need and desirability for 'green energy' projects in general. This section however considers the need and desirability of this specific project at this point in time.

2.3.1 Feasibility consideration[11]

The commercial feasibility for the proposed up to 77MW$_{AC}$ the Kareerand Battery Energy Storage Facility to be built on private land near Klerksdorp, has been informed by its contextual location, and economic, social and environmental impacts and influence (with due consideration to the project falling within a

[10] The Western Cape Guidelines were considered in this instance, as the North West Province and the National Department does not have alternative guidelines.

[11] Please refer to the Site Selection Motivation Report attached in Annexure E10, for further details on the project feasibility.

REDZ). The project has gathered sufficient information and conducted studies of the site and the region to make qualified and reliable assumptions on the project's various impacts.

2.3.2 Solar Resource & Energy Production

The economic viability of a solar PV facility is directly dependent on the annual solar irradiation at the site. The proposed site receives some of the highest Global Horizontal Irradiation (GHI) outside of the Northern Cape, South Africa. From a regional site selection perspective, this region is considered to be preferred for solar energy development by virtue of its annual solar irradiation values. The GHI for the area derived from the World Bank Group's Global Solar Atlas is approximately 2 094 kWh/m2/annum.

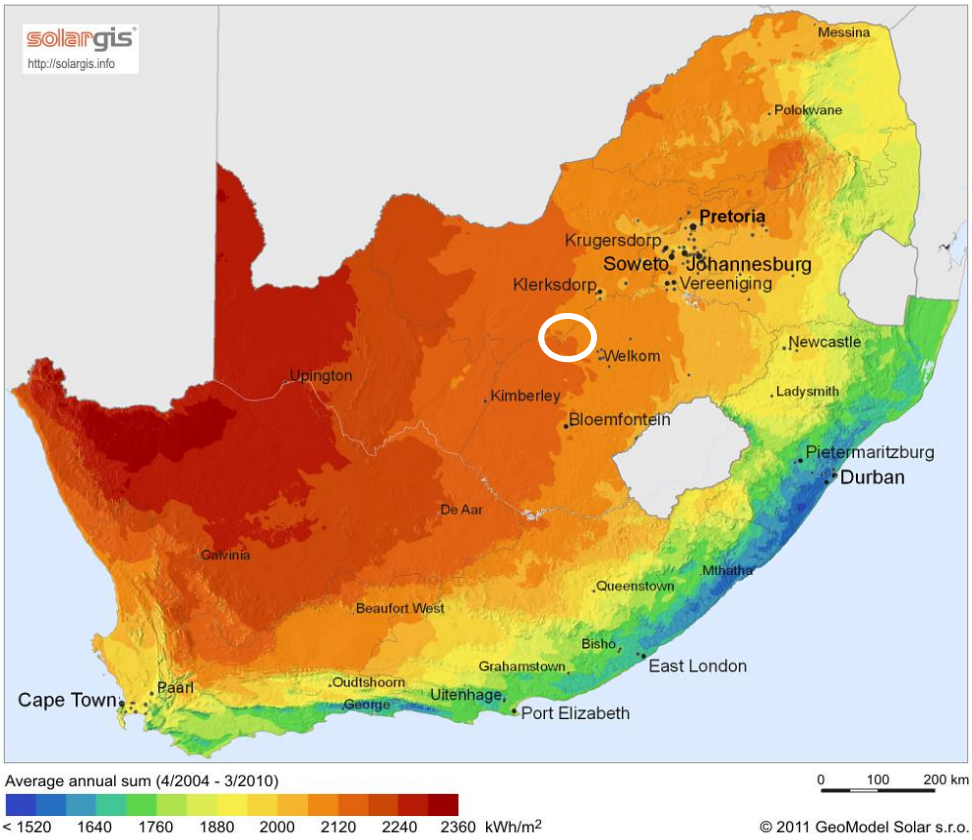

Figure 15: Global Horizontal Irradiation of the PV component associated with the Kareerand Battery Energy Storage Facility.

2.3.2.1 Strategic Transmission Corridors

Eskom's '2040 Transmission Network Study' has drawn on various scenarios to determine the grid's development requirements, as well as to identify critical power corridors for future strategic development.

The national power corridors consisting of five transmission power corridors of 100 km in width have been gazetted by the Department of Environmental Affairs (DEA) following the outcome of the strategic environmental assessment (SEA) which aimed to identify environmentally acceptable routes over which long-term environmental impact assessment (EIA) approvals can be secured.

The Kareerand Battery Energy Storage Facility falls within the Central corridor.

2.3.2.2 North West Supply Area Generation Connection Capacity

The Kareerand Battery Energy Storage Facility falls within the North West Supply Area, and more specifically, the Klerksdorp local area.

With the exception of Mookodi and Pluto, the North West supply area has transformation capacity at all the substations, and furthermore, has available transfer capacity at all the substations.

2.3.3 Grid Connection

Ease of access into the Eskom electricity grid is vital to the viability of a BESS. Projects which are in close proximity to a connection point and/or demand centre are favourable, and reduce the losses associated with power transmission. The proximity of the site to the existing Eskom Hermes substation allows for a feasible connection point.

2.3.4 Site Suitability

Among the outstanding characteristics of the Kareerand Battery Energy Storage Facility site is it is relatively flat, sufficient low and medium sensitivity environments (the proposed layout plan was able to avoid all areas with a high sensitivity and very high sensitivity) and accessible location, facilitating the delivery of bulky BESS units and PV panel infrastructure, and the construction and assembly process. The proximity of the site to the main road decreases the impact on secondary roads from the traffic going to and from Kareerand Battery Energy Storage Facility during construction and operations.

The preferred alternative has been developed in such a way as to avoid all high sensitivity areas (the footprint is contained entirely within medium and low sensitivity areas).

2.3.5 Social and Economic impact

Please refer to the Social Impact Assessment Report in Annexure E8 for a detailed description of the social environment. The social impact assessment concluded that the potential social impacts associated with the proposed Kareerand Battery Energy Storage Facility range from high positive, to low negative.

The findings of the Social Impact also indicate that the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level (The same social benefits are expected for the recently released Battery Energy Storage Independent Power Producers Procurement Programme BESIPPPP) These benefits are linked to foreign Direct Investment, local employment and procurement and investment in local community initiatives.

2.3.6 Employment & Skills Transfer

The benefits of renewable energy and energy storage facilities to local regions are not confined to the initial investment in the project. They also provide a reliable and on-going income for landowners and municipality, creating direct employment opportunities for locals, as well as flow-on employment for local businesses through provision of products and services to the project and its employees.

The Kareerand Battery Energy Storage Facility will have a positive impact on local employment. During the estimated 18-month construction phase, the project will employ approximately 150 individuals of various qualifications. The majority will be provided by the local labour market.

During operations, The Kareerand Battery Energy Storage Facility is expected to have up to 30 employment opportunities ranging from security staff to administration and artisans. Due to the fact that there is limited local skilled labour in the field of renewable energy, the employment structure will likely consist of local and outside capacity. To guarantee successful operations over the lifetime of the investment, Kareerand Battery Energy Storage Facility will likely use the skills of outside labour to cross-train local specialists. This cross training and skills development will take place especially in the area of technical maintenance and administration.

2.3.7 Need (time)

In accordance with the guidelines on need and desirability, a project should be able to answer a series of questions to demonstrate need. These are highlighted in the table below:

Table 2: Project Need Analysis

Need	Discussion	
Is the land use considered within the timeframe intended by the existing approved Spatial Development Framework (SDF)? (I.e., is the proposed development in line with the projects and programmes identified as priorities within the credible IDP?	Yes	As per the North West Provincial Spatial Development Framework (PSDF) (2017) electricity within the province is primarily provided by Eskom to re-distributors – mainly municipalities (10%), commercial (5%), agriculture (5%), mining (30%), industrial (30%) and Residential (20%). Electricity for supply to the North West Province is mostly generated by Eskom's Matimba coal-fired Power Station in Limpopo which will in future be augmented by Eskom's Medupi coal-fired Power Station. According to the North West PSDF the proposed project site is located within the Mahikeng Distribution Area, which is characterised by minor developments, including Commercial, Industrial, and Major Electrification; and has a projected growth of 125MW (Eskom, 2015). Eskom's Transmission Development Plan 2015 – 2024 represents the transmission network infrastructure investment requirements over the 10 year period between 2015 and 2024. Projects proposed for the North West Province for the next 10 years include the introduction of 400kV power lines and transformation to support or relieve the existing networks. Five transmission power corridors have been identified as critical to providing a flexible and robust network that could respond to meet the needs of future IPPs and IRP requirements Section 5.2.1 of the SDF, Natural Systems Synthesis, notes that the Annual Horizontal Solar Radiation is fairly high – 2000 – 2100 KWh/m2, increasing towards the north. Similarly, wind speeds of 6 – 8m/s are also fairly high. The section notes that both these sources could be potential energy generators. Considering the above, it can be concluded that the area is suitable for BESS and associated PV development in terms of the SDF.
Should the development occur here at this point in time?	Yes	The proposed Kareerand Battery Energy Storage Facility energy facility is to be located outside the Klerksdorp urban edge, but within a legislated REDZ, and would promote diversification to the local economy as well as serve as a catalyst for further expansion in the stream of sustainable renewable energy development within this REDZ. As outlined in the section above, the all the substations in the Northwest Supply area (excluding Mookodi and Pluto) have existing excess capacity in order to accommodate the development right away (thus reducing the opportunity costs).
Does the community / area need the activity and the associated land use concerned?	Yes	The City of Matlosana Local Municipality identified the opportunity for a renewable energy project through their SDF and IDP processes, which include public participation. The proposed Kareerand Battery Energy Storage Facility development will allow for a diversification of employment, skills and contribute to the potential development of small business associated with its construction, operation and maintenance activities. The proposed Kareerand Battery Energy Storage Facility development will contribute electricity generation and storage to the constrained North West and National electrical network, contributing to a provincial and national need. The Kareerand Battery Energy Storage Facility has been designed in such a way so as to avoid or minimise potential negative impacts of the local environment while enhancing potential positive impacts, locally and regionally.

Need	Discussion	
Are the necessary services with adequate capacity currently available?	partially	Kareerand Battery Energy Storage Facility requires the installation of an overhead power line to connect to the existing Eskom Hermes Substation (subject to a separate environmental assessment process), as well as the upgrade of an existing access road and a very short section of new access road. The cost of supplying the new infrastructure will be covered by the Applicant, and the impacts thereof have been assessed in this environmental process. The water required for the construction and operation of the Kareerand Battery Energy Storage Facility will be sourced from the JB Marks Local Municipality (preferred option) or a third party water services provider and will be supplemented by stored rainwater. The applicant may at a later stage consider the utilisation of groundwater to supplement this supply, this will however be subject to approval in terms of the National Water Act. Construction waste (general waste) will be disposed of at the existing landfill sites. Defunct and damaged modules identified during construction will be returned to the supplier for recycling and/or disposal.
Is this development provided for in the infrastructure planning of the municipality?	Yes	Yes. Attracting private investment and the employment opportunities associated with energy development are identified as priority strategies to create sustainable urban and rural settlements.
Is this project part of a national programme to address an issue of national concern or importance?	Yes	In order to meet the increasing power demand within South Africa, Eskom has set a target of 30% of all new power generation to be derived from independent power producers (IPPs). The Applicant is one such IPP which intends to export up to 77MW of electricity from the proposed Kareerand Battery Energy Storage Facility, for input into the national grid (via the existing Eskom Kareerand Substation. The proposed Kareerand Battery Energy Storage Facility is also situated within a legislated REDZ.

2.3.8 Desirability (place)

In accordance with the guidelines on need and desirability, a project should be able to answer a series of questions to demonstrate desirability. These are highlighted in the table below:

Table 3: Project Desirability Analysis

Desirability	Discussion	
Is the development the best practicable environmental option for this land / site?	Yes	The target property is outside the Klerksdorp Urban Edge, within a legislated REDZ. The property has a relatively poor agricultural potential due to various limiting factors. These factors have rendered the property vacant with minimal extensive agiculture limited land use option alternatives. Considering these factors, it is very unlikely to be considered for an alternative land use such as urban development. The property is listed as a private nature reserve within the South African Protected Areas Database, it is however evident that it is not utilised for any conservation purposes (please refer to the discussions relating to the National Environmental Management: Protected Areas Act in section 3 of this report)

Desirability	Discussion	
		The property is furthermore not within an area earmarked for the expansion of protected areas, nor does the footprint contain any unique biodiversity features. The area is thus unlikely to be considered for conservation use.
Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?	No	The JB Marks Local Municipality Integrated Development Strategy focuses on the following issues: • The regeneration of the manufacturing sector • The growth of tourism and the linkages to the sector • The growth of agriculture • The development and growth of the information technology sector • The re-skilling of the labour force • The regeneration of industrial areas and CBD's and upgrade of residential areas • Facilitate the utilization of co-operatives in the municipality's procurement system • Facilitate the growth and contribution of SMME's. The proposed Battery Storage and PV facility will contribute to job creation, economic growth and development in the region, which will be KPA 2 of the JB Marks IDP.
Would the approval of this application compromise the integrity of the existing approved environmental management priorities for the area?	unlikely	The site is situated within a mapped endangered vegetation type and by association a CBA2 area. The results from the field survey by the biodiversity specialist however indicate that the site where the BESS is located is heavily degraded as a result of ongoing heavy grazing by livestock. Furthermore, the corridor along which the EGI is located is comprised of a combination of heavily degraded vegetation and transformed vegetation
Do location factors favour this land use at this place?	Yes	The region has been identified as being one of the most viable areas for solar energy generation outside of the Northern Cape due to the following factors: • Excellent solar radiation (compared to other regions); • Close to existing main transport routes and access points; • Close to connection points to the local and national electrical grid; and • Outside of very high and high sensitivity areas. The proposed site is furthermore situated within a legislated REDZ and as such has been subjected to a detailed Strategic Environmental Assessment in which highly sensitive landscapes were already excluded from these areas. The ecological sensitive areas on and surrounding the solar site have informed the optimal location and layout for the proposed solar project, with minimal impact to the receiving environment, subject to implementation of mitigation measures.
How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas?	Yes	The alternatives considered for the BESS development have been iteratively designed and informed by various investigations and assessments that considered both the natural and cultural landscapes. The natural and culturally sensitive areas have been identified and where possible, avoided to prevent negative impacts on such areas.
How will the development impact on people's health and wellbeing?	Yes	The site is located outside of the Klerksdorp Urban Edge and as a result is unlikely to impact negatively on the community's health and wellbeing.

Desirability	Discussion	
Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?	Unlikely	The next best land use alternative to the solar facility is limited agriculture (the status-quo). However, the proposed development site does not have any significant agricultural value and has not been utilised for any intensive agricultural purposes during recent times. The carrying capacity of the site is too low to generate noteworthy financial benefit from agricultural activities. The development of the proposed solar facility would constitute the loss of approximately 25ha of the overall property. The economic benefits and opportunities that the proposed solar development holds for the landowner and the local economy of the municipal area cannot be recovered from the current or potential agricultural activities. The opportunity costs in terms of the water-use requirements of Kareerand Battery Energy Storage Facility are within acceptable bounds if one considers the minimal demand on the resources.
Will the proposed land use result in unacceptable cumulative impacts?	Unlikely.	The site is located within the legislated REDZ have been identified as an area with high potential for renewable energy generation: The potential for further, future solar developments in the area cannot be discounted (as many have already been approved or are in progress). However, these will have synergistic benefits for the economy and growth of the area, while the contribution to cumulative habitat loss in the area associated with this and potential future solar development would be relatively small in relation to the land resources available, with low impacts restricted to the local area.

2.4 SITE SELECTION PROCESS

The site selection process followed a two-stage approach; firstly, to select the properties for the proposed development (in the case of the Kareerand Battery Energy Storage Facility, this was Portion 3 of the Farm Kareerand No. 444 and secondly, to select the footprint of the proposed development within the farm portion.

2.4.1 Property Selection

In choosing a site for the development of BESS and PV project, the developer goes through a process of evaluating a number of possible alternative sites in terms of the criteria that would make a viable site worth bidding in the REIPPPP and or BESIPPPP.

BESIPPPP Bid Window 2 calls for 615 MW battery energy storage capacity and ancillary services. As with the first round, this bid window calls for proposals for eight BESS facilities close to the location of the eight substation sites identified by Eskom. The eight substation sites are Mercury, Carmel, **Hermes**, Ngwedi, Midas, Marang and Bighorn substations.

The property was therefore selected due to its proximity to the Hermes MTS.

These are very competitive programmes and a site that is marginally less suitable from a solar resource or development cost perspective has less chance of securing a successful bid. Much effort is placed into evaluating and selecting the best available sites.

The main criteria used in the evaluation of the alternative development sites are amongst others.

- Proximity to towns with a Need for Socio-Economic Upliftment
- Solar Irradiation
- Access To Grid

- Renewable Energy Development Zone
- Consideration of Food Production and Security
- Proximity to Access Road for Transportation of Material and Components
- Landowner Support

These are discussed separately below.

2.4.1.1 Proximity to towns with a Need for Socio-Economic Upliftment

The proposed PV facility is situated approximately 22km from Klerksdorp in the North West Province within the jurisdiction of the JB Marks Local Municipality within the Dr Kenneth Kaunda District Municipality.

Mining is the dominant economic activity of the district. Additional sectors in terms of employment are social services, trade and farming.

The declining mining industry has resulted in the number of people living in poverty in the JB Marks Local Municipality almost doubling between 1996 and 2011. Although Klerksdorp has always been the main economic hub of the greater municipal area, it has not specifically been involved in the mining activities but has maintained the function of a regional service centre in terms of agricultural supplies, retail facilities, schools and medical services which stretches further than the boundaries of the Dr Kenneth Kaunda District Municipality into the North West Province and even Botswana. It is precisely this notion which has helped sustain the area in a period of considerable mining decline over the last 20 years.

The overarching direction of the JB Marks Local Municipality IDP articulates a vision for economic growth and development, provision of basic services (service delivery improvement) and infrastructure development. Due to the close proximity to Klerksdorp town, local labour and service providers would be easy to source. In this regard the development has the potential to support private sector investment and create employment and skills development opportunities within the Klerksdorp area and surrounds.

2.4.1.2 Solar Irradiation

The economic viability of a solar PV facility is directly dependent on the annual solar irradiation at the site.

2.4.1.3 Access to Grid

The proposed BESS and PV Development is able to easily connect to the Existing Hermes MTS, where capacity is available to export the 77MW proposed by this project. This is the most important factor for a BESS project. This site was primarily selected due to its proximity to the Hermes MTS.

2.4.1.4 Renewable Energy Development Zone

The Strategic Environmental Assessment (SEA) for wind and solar PV energy in South Africa (CSIR, 2013) identified eight (8) Renewable Development Zones (REDZs). The REDZs identified areas where large scale renewable energy facilities can be developed in a manner that limits significant negative impacts on the environment while yielding the highest possible socio-economic benefits to the country.

The Kareerand Battery Energy Storage Facility is located within the Klerksdorp REDZ (REDZ10), which was formally gazetted in 2018. The area has therefore been identified as suitable for the establishment of renewable energy facilities, specifically large scale solar farms and associated infrastructure.

2.4.1.5 Consideration of Food Production and Security

The designation of the REDZ has taken into account the country's need to balance renewable energy development against the need to ensure the conservation of land required for agricultural production and national food security.

According to the agricultural specialist, the land selected for the Kareerand Battery Energy Storage Facility is of limited land capability and is not suitable or used for crop production. There is not a scarcity

of such agricultural land in South Africa and its conservation for agricultural production is therefore not a priority.

2.4.1.6 Proximity to Access Road for Transportation of Material and Components

The site for this development is located off a local district road, which provides multiple farms in the area with access to the greater road network. The road is a two-lane surfaced road and links to the District Road in Klerksdorp.

As material and components would need to be transported to the project site during the construction phase of the project, the accessibility of the site was a key factor in determining the viability of the project, particularly taking transportation costs (direct and indirect) into consideration and the impact of this on project economics and therefore the ability to submit a competitive bid under the Department of Energy's (DoE) REIPPPP and/or BESIPPPP.

2.4.1.7 Landowner Support

The selection of a site where the landowner is supportive of the development of renewable energy is essential for ensuring the success of the project. The support from the landowner for the development to be undertaken on the affected property has been solidified by the provision of the consent for the project to proceed on the property through the signing of a land lease agreement with the developer.

2.4.2 Footprint selection

The selection of the proposed footprint followed a risk adverse, bottom-up approach in order to ensure that the impacts of the proposed developments can be avoided as far as possible. This avoidance approach reduces the degree of mitigation required in order ensure that potential environmental impacts are within acceptable levels.

It is customary to develop the final / detailed construction layout of the Solar Facility only once an Independent Power Producer (IPP) is awarded a successful bid under the, after which major contracts are negotiated and final equipment suppliers identified.

2.4.2.1 Affected Properties

The affected property was determined via the process outlined above. The Proposed BESS and PV are situated on the following property.

- Portion 3 of the Farm Kareerand No. 444

Existing Gravel Access Road and Tracks will be upgraded on the following Portions.

- Portion 3 of the Farm Kareerand No. 444,
- Portion 4 of the Farm Kareerand 444,
- Portion 16 of the Farm Kromdraai 420,
- Portion 17 of the Farm Kromdraai 420,
- Farm Umfula No. 575, Portion 20 of
- Farm Umfula No. 567 and
- Portion 56 of the Farm Kromdraai 420

The Grid Connection Infrastructure (subject to a separate Environmental Application Process will take place on the following portions.

- Portion 3 of the Farm Kareerand No. 444,
- Portion 15 of the Farm Kromdraai 443,
- Remainder of Portion 5 of Farm no. 422,
- Portion 6 of the Farm Buffelsfontein 443,
- Portion 3 of the Farm Kareerand 444,
- Portion 2 of the Farm Buffelsfontein 443,

- Portion 103 of the Farm Hartebeestfontein 422,
- Portion 38 of the Farm Hartebeestfontein 422,
- Portion 79 of the Farm Hartebeestfontein 422,
- Portion 8 of the Farm Hartebeestfontein 422,
- Portion 2 of the Farm Mapaiskraal No. 441,
- Portion 41 of the Farm Hartebeestfontein 422 and
- Portion 4 of the Farm Mapaiskraal 441.

This was based on the favourable location characteristics which included: a strong solar resource; location within a REDz; a viable grid connection; close proximity to towns with a need for socio-economic upliftment; land availability; land owner support; flat topography; no conflict to on-site and surrounding land use practices; easy accessibility; favourable wind and dust considerations; and distance from airports.

2.4.2.2 Environmental Screening

Following the identification of the target property, a detailed environmental and technical screening exercise was undertaken. This included site sensitivity assessments and sensitivity mapping by various specialists.

2.4.2.3 Preferred Footprint Selection.

The preferred footprint for the Kareerand Battery Energy Storage Facility was selected taking into account the specialists sensitivities.

This extensive upfront consultation with the various specialists mitigated many of the impacts associated with the planning and design phase.

2.4.3 Layout Alternatives

As mentioned earlier in this report the preferred layout was developed taking into account the sensitivities identified by the participating specialists.

Therefore, the preferred layout alternative (Layout Alternative 1) within the selected Farm Portion was the only layout alternative assessed for the Kareerand Battery Energy Storage Facility. Layout Alternative 1 avoids all high and very high sensitivity features as well as the buffers identified by the participating specialists.

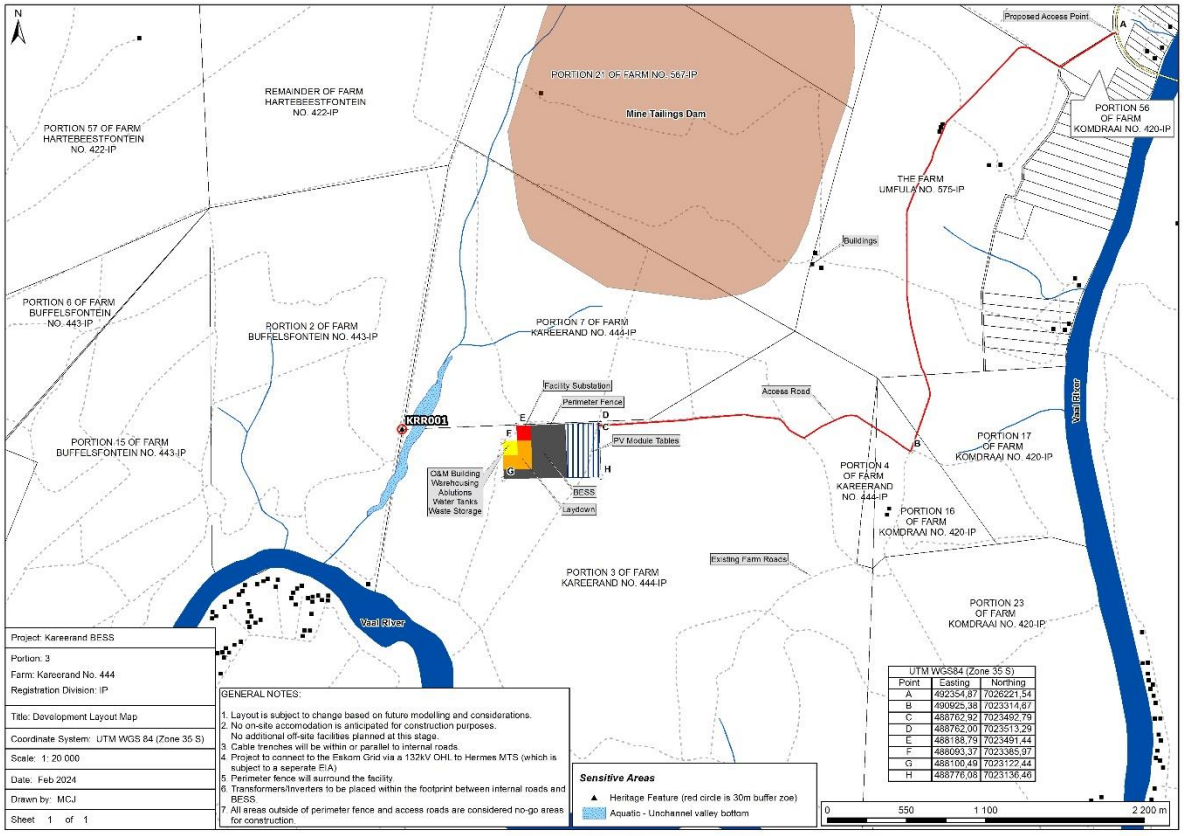

Figure 16: Preferred layout (Layout Alternative 1) for the Kareerand Battery Energy Storage Facility.

This preferred layout proposed in this report (Layout Alternative 1) is considered to be the best practicable environmental option.

2.4.4 Grid Connection Alternatives

The Kareerand Battery Energy Storage Facility will connect directly into the nearby Hermes MTS. This Grid Connection Infrastructure, although assessed by specialists is subject to a separate Environmental Process that will be administered by the provincial authority and any alternatives will be considered in that application.

2.4.5 The no-go alternative

The no-go Alternative (or status quo) proposes that Kareerand Battery Energy Storage Facility does not go ahead and that the area within a Renewable Energy Development Zone will remain undeveloped as it is currently.

The land on which the Kareerand Battery Energy Storage Facility is proposed is currently vacant. It is currently used for limited livestock grazing activities, however due to a combination of factors, it has no potential for irrigated crop cultivation (this has been confirmed by the Agricultural Specialist).

The solar-power generation potential of the area, particularly in proximity to the existing Hermes MTS and within the REDZ is significant and will persist should the no-go alternative occur.

While the no-go alternative may seem neutral or even beneficial in certain contexts, it can have several negative impacts, including:

i. **Limited Grid Flexibility:** Without a BESS, grid operators have fewer options for managing fluctuations in supply and demand, leading to reduced flexibility in grid operations. This can

make it more challenging to maintain grid stability and reliability, particularly during periods of high demand or intermittent renewable energy generation.

ii. **Increased Grid Congestion:** In regions with limited transmission capacity or congested grid networks, BESS can help alleviate congestion by storing and redistributing electricity as needed. Without BESS, grid congestion may worsen, leading to inefficiencies, higher costs, and potential reliability issues.

iii. **Higher Energy Costs**: BESS can help reduce energy costs by storing electricity during off-peak hours when prices are low and discharging it during peak demand periods when prices are high. Without BESS, consumers may face higher electricity costs due to increased reliance on expensive peak power generation and capacity charges.

iv. **Lost Revenue and Economic Opportunities:** The no go alternative represents a loss of potential revenue and economic opportunities. It may also hinder job creation, investment attraction, and local economic development associated with the deployment of energy storage technologies.

The no-go alternative is thus not considered a favourable option in light of the benefits associated with the proposed Kareerand Battery Energy Storage Facility; however, it will be used as a baseline from which to determine the level and significance of potential impacts associated with the proposed Kareerand Battery Energy Storage Facility.

2.5 PROJECT PROGRAMME AND TIMELINES

As mentioned previously the Kareerand Battery Energy Storage Facility is intended to be bid into the BESIPPPP in Bid Window 2. The programme has definite and stringent timelines that the project needs to meet. The implementation schedule below is based on the best available information we have at this time and is subject to change.

Table 4: Preliminary implementation schedule.

	Description	Timeline
1	Expected BESIPPPP submission date (2nd round)	30 April 2024
2	Preferred bidders selected	July/August 2024
3	Finalisation of agreements	Last Quarter 2024
4	Procurement of infrastructure	First Quarter 2025
5	Construction	2025
6	Commissioning	2026

The table above clearly depicts the dependence of the project on the BESIPPPP's timelines. Any delay or acceleration within the BESIPPPP will have a corresponding effect on the timelines of the projects.

NOTE: The Kareerand Battery Energy Storage Facility intends submitting their bid during the 2nd bidding window or thereafter if unsuccessful in immediate bidding rounds. .

Due to the timeframe uncertainties associated with future bid windows in the DMR's BESIPPP Programme, the validity period of any Authorisation should be as follows:

- Commencement of activities within 10 years of the date of the EA.
- Completion of all non operational activities within 5 year's of commencement.

3. LEGISLATIVE AND POLICY FRAMEWORK

The legislation that is relevant to this study is briefly outlined below. These environmental requirements are not intended to be definitive or exhaustive but serve to highlight key environmental legislation and responsibilities only.

3.1 NATIONAL LEGISLATION

This section deals with nationally promulgated or nationally applicable legislation associated with the proposed the Kareerand Battery Energy Storage Facility [12].

3.1.1 The Constitution of the Republic of South Africa

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

The Constitution and Bill of Rights provides that:

Everyone has the right:

- to an environment that is not harmful to their health or well-being; and
- to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures:
    - prevent pollution and ecological degradation
    - promote conservation; and
    - secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.

NEMA (discussed below) is the enabling legislation to ensure this primary right is achieved.

3.1.2 National Environmental Management Act (NEMA)

The current assessment is being undertaken in terms of the **National Environmental Management Act** (NEMA, Act 107 of 1998)[13]. This Act makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the national Department of Environmental Affairs, DEA) based on the findings of an Environmental Assessment.

The proposed development entails a number of listed activities, which would normally require a Scoping & Environmental Impact Reporting process, but due to the project falling within a legislated REDZ, only requires a Basic Assessment Process. Such a process must be conducted by an independent EAP. Cape EAPrac has been appointed to undertake this process. The figure below depicts a summary of the Basic Assessment process.

[12] This section has been prepared with input from the Social Specialist (see Annexure E9)

[13] The Minister of Water and Environmental Affairs promulgated new regulations in terms of Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998), viz, the Environmental Impact Assessment (EIA) Regulations 2014 (as amended in April 2017). These regulations came into effect on 08 December 2014 (amended on 07 April 2017) and replace the EIA regulations promulgated in 2006 and 2010.

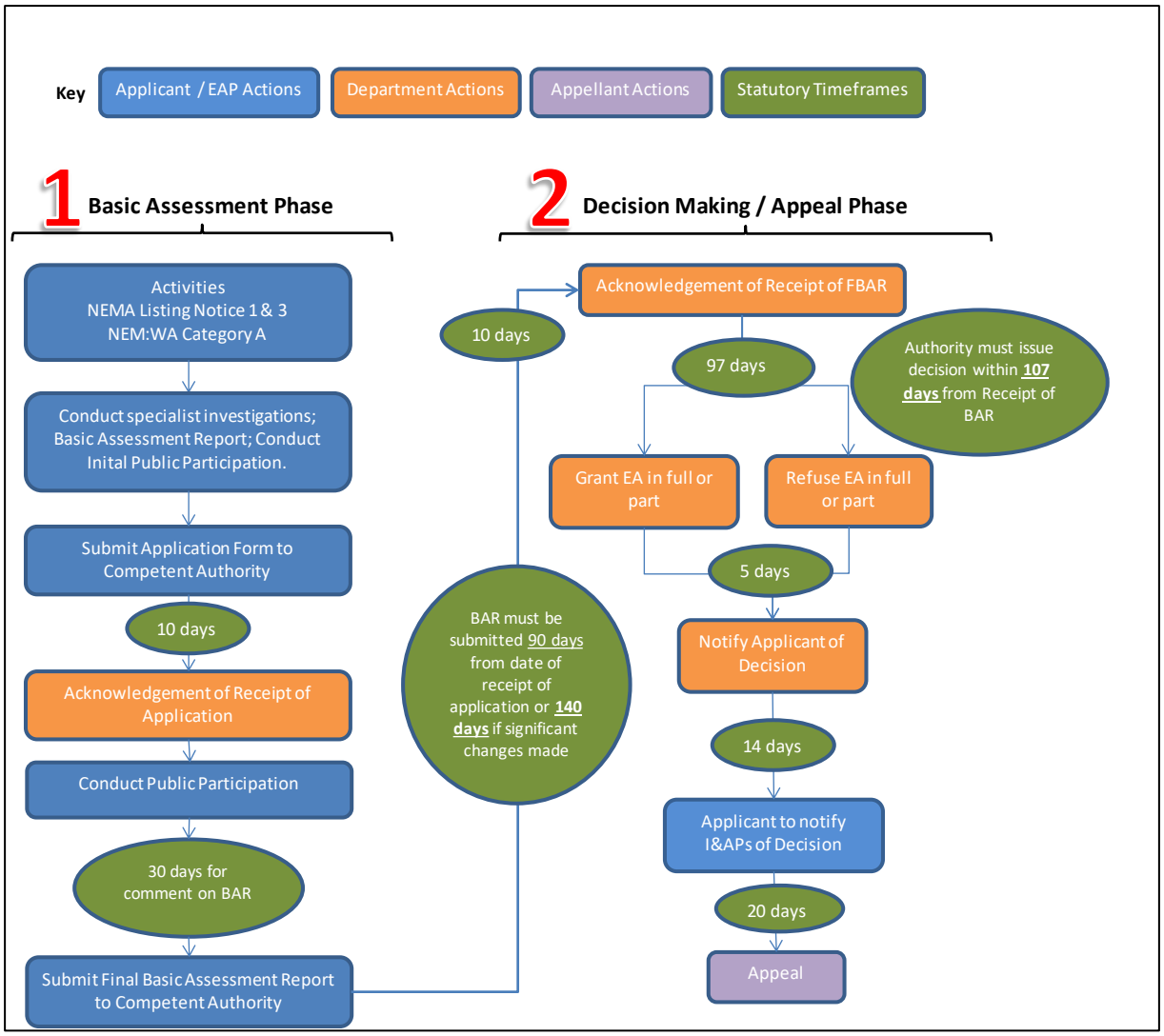

Figure 17: Summary of Basic Assessment Process in terms of the 2014 Regulations (as amended).

The listed activities associated with the proposed development, as stipulation under 2014 Regulations **327, 325 and 324** are as follows:

Table 5: NEMA 2014 (As amended in April 2017) listed activities applicable to the Kareerand Battery Energy Storage Facility.

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.
28(ii)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The construction of a BESS is considered as Industrial use.

56(ii)	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (ii) where no reserve exists, where the existing road is wider than 8 metres;	The existing gravel road to the Kareerand BESS BESS will be widened by more than 6m in certain sections.
Activity No(s):	**Provide the relevant Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.**
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,	The proposed Kareerand BESS includes a component of PV generation. The total export capacity of Kareerand BESS (PV and BESS Component) will be up to 77MW
15	The clearance of an area of 20 hectares or more of indigenous vegetation,	The Proposed Kareerand BESS along with the associated PV component will have a footprint in excess of 20 hectares.
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.**
4(h)(i)(iv)	The development of a road wider than 4 metres with a reserve less than 13,5 metres. h. North West i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;	The main access road to the site will be wider than 4m and occurs within a private nature reserve and a CBA2.
12(h)(ii)(iv)(vi)	The clearance of an area of 300 square metres or more of indigenous vegetation. h. North West ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.	The proposed project will entail the removal of more than 300 Square metres within a CBA2 and private nature reserve. The proposed BESS is within 100m of a unchanneled valley bottom wetland delineated by the aquatic specialist.

18(h)(i)(v)(ix)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. h. North West i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; ix. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland	The proposed Kareerand BESS will include the widening of existing gravel roads by more than 4m. Such widening will occur on a site designated as a private nature reserve, CBA2 and within 100m of a Valley Bottomed Wetland delineated by the aquatic specialist.

NOTE: Basic Assessment as well as S&EIR Activities are being triggered by the proposed development, but since the project is contained in a legislated REDZ, the Environmental Application Process will follow a Basic Assessment process.

Before any of the above-mentioned listed activities can be undertaken, authorisation must be obtained from the relevant authority, in this case the DFFE. Should the Department approve the proposed activity, the Environmental Authorisation does not exclude the need for obtaining relevant approvals from other Authorities who have a legal mandate in respect of the activity.

3.1.3 National Environmental Management: Protected Areas Act (Act 57 of 2003)

The National Environmental Management: Protected Areas (NEMPAA) Act 57 of 2003 intends:

- To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes;
- For the establishment of a national register of all national, provincial and local protected areas;
- For the management of those areas in accordance with national norms and standards; and
- For intergovernmental co-operation and public consultation in matters concerning protected areas;

NEMPA replaces the relevant provisions of the Environmental Conservation Act (Act 73 of 1989).

The objectives of the Act are he objectives of this Act are:

- to provide, within the framework of national legislation, including the National Environmental Management Act, for the declaration and management of protected areas;
- to provide for co-operative governance in the declaration and management of protected areas;
- to effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity;
- to provide for a diverse and representative network of protected areas on state land, private land, communal land and marine waters;
- to promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;
- to promote participation of local communities in the management of protected areas, where appropriate; and
- to provide for the continued existence of South African National Parks.

Various regulations and notices as outlined in the table below have been published in terms of the NEMPAA and have been considered in this Basic Assessment Process.

Table 6: Regulations and notices published in terms of the National Environmental Management Protected Areas Act, that has been considered in the preparation of this Basic Assessment Report

DESCRIPTION	NOTICE DETAILS
Regulations for the Proper Administration of Special Nature Reserves, National Parks and World Heritage Sites	GNR 1061 in Government Gazette 28181, dated 28 October 2005. Commencement date: 28 October 2005
Regulations for the Proper Administration of Nature Reserves	GNR 99 in Government Gazette 35021, dated 8 February 2012. Commencement date: 8 February 2012.
Norms and Standards for the Management Of Protected Areas in South Africa	GN 382 in Government Gazette 39878 dated 31 March 2016. Commencement date: 31 March 2016.
Norms and Standards for the Inclusion of Private Nature Reserves in the Register of Protected Areas of South Africa	GN 1157 in Government Gazette 41224 dated 3 November 2017. Commencement date: 3 November 2017.
Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa	GN 1356 in Government Gazette 41306 dated 8 December 2017. Commencement date: 8 December 2017.

According to the South African Protected Areas Database (SAPAD), the proposed property falls within a protected area known as Bushybend private Nature Reserve.

Further to the agricultural use of the property, it must also be noted that the property is also formally Zoned for Agricultural purposes. In terms of the norms and standards for inclusion of private nature reserves in the register of protected areas, it is important to note that none of the criteria for inclusion as a private Nature Reserve are met, namely:

- Agreements with landowners – There are no agreements with the landowners, nor are there any restrictive conditions on the title deed for the property.
- Management authority assigned - There is no management authority assigned.
- Management plan in place – There is no management plan in place for this protected area.

Notwithstanding the above, the current environmental process provides application and assessment of the proposed activities on the private nature reserve. The DEFF protected areas directorate have also been engaged to provide further input in this regard. The management authority has also provided approval for the Development in terms of the NEMPAA – Please refer to Appendix G3.

3.1.4 National Environmental Management: Biodiversity (Act 10 of 2004)

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The Draft National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No 32689, 6 November 2009) has been gazetted for public comment.

The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the NSBA 2004. In terms of the EIA regulations, a basic assessment report is required for the transformation or removal of indigenous vegetation in a critically endangered or endangered ecosystem regardless of the extent of transformation that will occur. The Kareerand Battery Energy Storage within a vegetation types with a status of Vulnerable at a National Level and Endangered at a provincial level, namely Rand Highveld Grassland.

Although this vegetation type was present within the project area, the specialist confirmed that it was heavily degraded as a result of ongoing grazing by livestock such as cattle. The specialist furthermore concluded that the construction of the BESS will result in the loss of approximately 25ha (0.006%) of heavily degraded Rand Highveld Grassland. The loss of such a small area of heavily degraded grassland is unlikely to affect the conservation status of this vegetation type as the ecological function of the area that will be impacted is already compromised

NEMBA also deals with endangered, threatened and otherwise controlled species. The Act provides for listing of species as threatened or protected, under one of the following categories:

- **Critically Endangered**: any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered**: any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.
- **Vulnerable**: any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.
- **Protected species**: any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Certain activities, known as Restricted Activities, are regulated by a set of permit regulations published under the Act. These activities may not proceed without environmental authorization.

Figure 18: Vegetation Type and Ecosystem Status for the Kareerand Battery Energy Storage Facility (Biodiversity Africa, 2024).

The Attributes of this vegetation types is shown below:

3.1.4.1 Rand Highveld Grassland

Rand Highveld Grassland is listed as Vulnerable at a National level (RLE, 2021) and as Endangered at a Provincial Level (North West Department of Rural, Environment and Agricultural Development (DREAD), 2015). This vegetation type occurs across Gauteng, North-West, Free State and Mpumulanga

Provinces on highly variable landscapes that include sloping and undulating plains interspersed with slightly elevated ridges. It is typically species rich with wiry grassland occurring on the plains and

Rand Highveld Grassland is listed as poorly protected with 43% (443,174 ha) of the original extent remaining (RLE, 2021)..

3.1.5 Conservation of Agricultural Resources Act – CARA (Act 43 of 1983):

The Conservation of Agricultural Resources Act (CARA) provides for the regulation of control over the utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species. CARA defines different categories of alien plants:

- Category 1 - prohibited and must be controlled;
- Category 2 – must be grown within a demarcated area under permit; and
- Category 3 - ornamental plants that may no longer be planted, but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the flood lines of water courses and wetlands.

The abundance of alien plant species on the Kareerand Battery Energy Storage Facility site is very low. The ecological specialist has however confirmed that alien invasive succulent tree Opuntia ficus-indica occurs in some places.

The Department of Agriculture, Land Reform and Rural Development is guided by Act 43 of 1983.

In order to comply with their mandate in terms of this legislation, the applicant is required to take note of the following:

Article 7.(3)b of Regulation 9238: Conservation of Agriculture Resources, 1983 (Act 43 of 1983) deals with the Utilisation and protection of vleis, marshes, water sponges and water courses

- 7.(1) “no land user shall utilize the vegetation in a vlei, marsh or water sponge or within the flood area of a water course or within 10 meters horizontally outside such flood area in a manner that causes or may cause the deterioration of or damage to the natural agriculture resources.”
- (3)(b) “cultivate any land on his farm unit within the flood area of a water course or within 10 meters horizontally outside the flood area of a water course”.

Kindly refer to the Aquatic Biodiversity Impact Assessment in Appendix E2 for a discussion of potential impacts on the freshwater resources on site. The preferred footprint for Kareerand Battery Energy Storage Facility has been developed in such a way as to avoid all surface water resources and their associated buffers.

3.1.6 The Subdivision of Agricultural Land, Act 70 Of 1970

The Subdivision of Agricultural Land Act 70 of 1970 (SALA”) came into operation on 2 January 1971. The Department of Agriculture administers the Subdivision of Agricultural Land Act No. 70 of 1970. Subdivision of agricultural land, therefore, requires consent from the Department of Agriculture.

The Department of Agriculture is considered a commenting authority on this environmental process, but will be a decision-making authority on the SALA application which will take place after the project receives an EA.

3.1.7 National Water Act, No 36 of 1998

Section 21c & i of the National Water Act (NWA) requires the Applicant to apply for authorisation from the Department of Water and Sanitation for an activity in, or in proximity to any watercourse. Such an application would be required for any access road or PV infrastructure that crosses any watercourse.

Section 21(a) of the National Water Act is related to the abstraction of water from a water resource (including abstraction of groundwater); a Water Use Licence (WUL) would be required for such abstraction.

Water required for the construction and operation of the Kareerand Battery Energy Storage Facility is to be sourced from the JB Marks Local Municipality who will be engaged to provide comment on availability. Should the applicant in the future, wish to utilise groundwater for the purposes of construction or operation of the facility, such use will require a licence in terms of Section 21(a) of the NWA.

The Aquatic Biodiversity Specialist (See Annexure E2) confirmed no wet response areas or features meeting the definition of a watercourse as contained in the National Water Act, 1998 (Act No. 36 of 1998) were identified within the study area, nor within the investigation area, thus the aquatic sensitivity of the study area was confirmed as 'low'.

3.1.8 National Forests Act (No. 84 of 1998):

The National Forests Act (NFA) provides for the protection of forests as well as specific tree species, quoting directly from the Act: "*no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated".*

The terrestrial ecology specialist did not record any species protected in terms of the National Forest Act within the development footprint. Should any of these protected species be identified during the detailed ecological walkthrough that will take place prior to construction, a permit for the removal of these will need to be obtained from the National Department of Forestry, Fisheries and the Environment (Forestry Directorate).

3.1.9 National Heritage Resources Act, 25 of 1998

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). The South African Heritage Resources Authority (SAHRA) is the enforcing authority in the North West Province and is registered as a Stakeholder for this environmental process.

In terms of Section 38 of the National Heritage Resources Act, Heritage North West will comment on the detailed Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process.

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activities are relevant:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- any development or other activity which will change the character of a *site* exceeding 5 000 m² in extent; and
- the re-zoning of a site exceeding 10 000 m^2 in extent.

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority (in this case, Heritage North West).

- In terms of Section 36 (3), no person may destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is

situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority (in this case, Heritage North West).

- In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority (In this Case, Heritage North West).

Mr Jaco Van der Walt of Beyond Heritage prepared a heritage impact assessment (Annexure E5).

This Heritage Impact Assessment along with this Draft Basic Assessment Report will be submitted to SAHRA via their SAHRIS system for comment in terms of section 38 of the National Heritage Resources Act.

3.1.10 National Energy Act (No. 34 of 2008)

The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation; while taking environmental management requirements into account. In addition, the Act also provides for energy planning, and increased generation and consumption of Renewable Energies.

The objectives of the Act, are to amongst other things, to:

- Ensure uninterrupted supply of energy to the Republic.
- Promote diversity of supply of energy and its sources.
- Facilitate energy access for improvement of the quality of life of the people of the Republic.
- Contribute to the sustainable development of South Africa's economy.

The National Energy Act therefore recognises the significant role which electricity plays growing the economy while improving citizens' quality of life. The Act provides the legal framework which supports the development of Renewable Energy facilities for the greater environmental and social good and provides the backdrop against which South Africa's strategic planning regarding future electricity provision and supply takes place.

3.2 PROVINCIAL LEGISLATION

This section deals with provincially promulgated or provincially applicable legislation associated with the proposed Kareerand Battery Energy Storage Facility [14].

3.2.1 Astronomy Geographic Advantage Act, 2007 (Act No 21 Of 2007)

The purpose of the Act is to preserve the geographic advantage areas that attract investment in astronomy. The entire Northern Cape Province, excluding the Tsantsabane Municipality, has been declared an astronomy advantage area. The Northern Cape optical and radio telescope sites were declared core astronomy advantage areas. The Act allowed for the declaration of the Southern Africa Large Telescope (SALT), Meerkat and Square Kilometre Array (SKA) as astronomy and related scientific endeavours that has to be protected.

Chapter 2 of the act allows for the declaration of astronomy advantage areas whilst Chapter 3 pertains to the management and control of astronomy advantage areas. Management and control of astronomy advantage areas include, amongst others, the following:

- Restrictions on use of radio frequency spectrum in astronomy advantage areas;

[14] This section includes input from the Social specialist (Annexure E9)

- Declared activities in core or central astronomy advantage area;
- Identified activities in coordinated astronomy advantage area; and
- Authorisation to undertake identified activities.

The Kareerand Battery Energy Storage Facility facility is not within the Geographic Advantage Area, as it is situated outside of the Northern Cape. It was furthermore found to be situated more than 580km from the closest SKA station (SKA004).

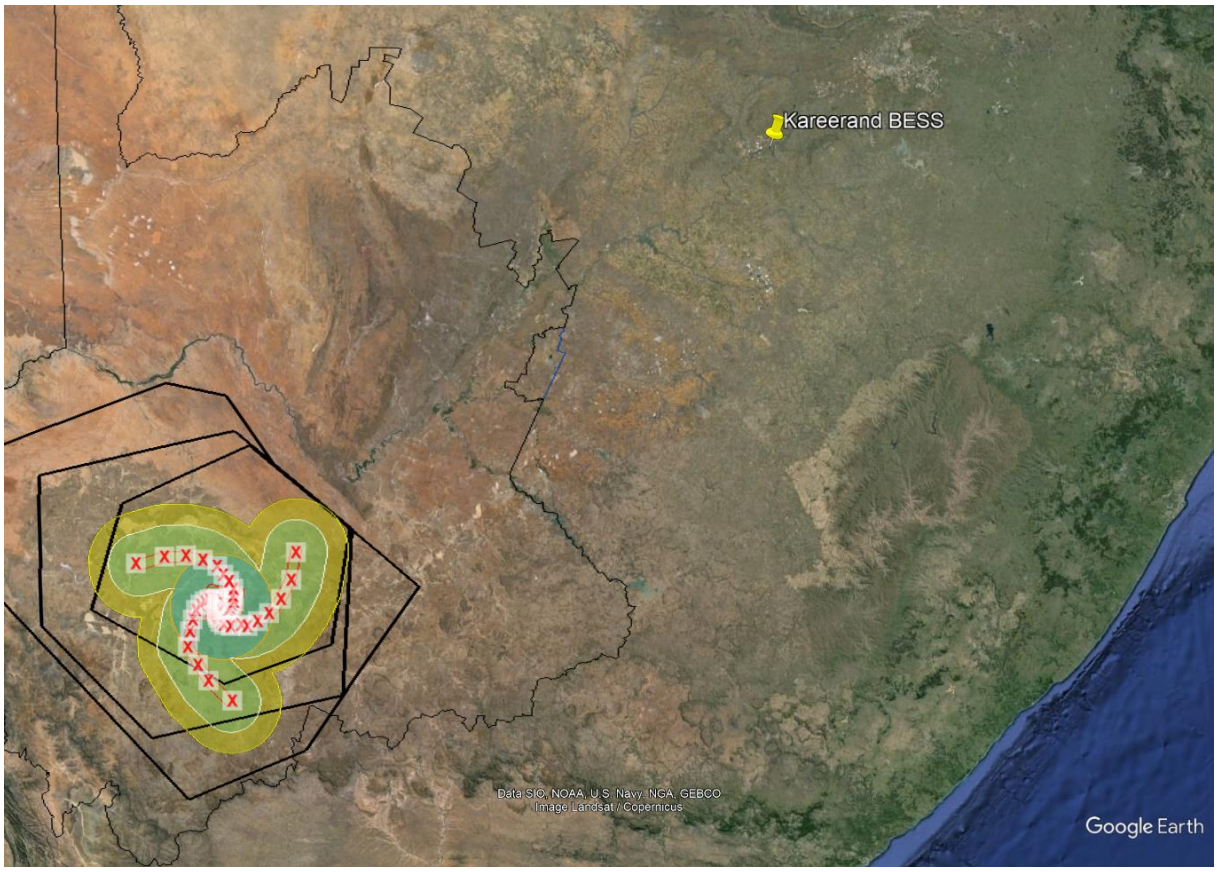

Figure 19: Proposed Kareerand Battery Energy Storage Facility in relation to the SKA Declared Areas

The South African SKA Project Office and the South African Radio Astronomy Observatory (SARAO) have been registered as a key stakeholder on this environmental process and have been requested to provide input in terms of the Astronomy Geographic Advantage Act and potential impact to SKA.

3.2.2 North West Provincial Development Plan (PDP) 2030 (2013)

The North West Provincial Development Plan (PDP), 2030, is largely based on, and intended to apply the objectives of, the National Development Plan (NDP) 2030. The overall targets of the PDP have been identified as follows:

By 2030:

- Eliminate income poverty: reduce the percentage of the population living in poverty from 46% to 0% in 2030.
- Reduce inequality: the Gini coefficient should fall from 0.61 to 0.53.
- The targets for poverty reduction and the GINI coefficient compliments the national targets set out for the elimination of poverty and reduction of inequality.
- The unemployment rate should fall from 24% in 2010 to 14% by 2020 and to 6% by 2030. This requires an additional 815 000 jobs. Total employment should rise from 748 000 to 1 563 000.

- The NDP projects that total employment should rise from 13 million to 24 million in South-Africa. 7% of additional jobs that has to be created will be located in the North West Province. By 2030 the North West will be responsible for 6.5% of employment in South-Africa.
- The provincial Gross Value Added (GVA) should increase by 2.9 times in real terms. Such growth will require an average annual Gross Value Added (GVA) growth of 5.4%.

The development of Kareerand Battery Energy Storage Facility has the potential to contribute towards a number of the targets set by the PDP, including:

- Job creation and increased income, which would have a positive impact on the current unemployment rate, standard of living, levels of inequality, and poverty levels within the Province.
- Contribute towards the capita income, and improve on labour force participation rates.
- Production of clean energy.

3.2.3 North West Provincial Growth and Development Strategy (PGDS) 2004 - 2014

The North West Provincial Growth and Development Strategy (PGDS) provides a framework for integrated and sustainable growth and economic development for the province and its people. Challenges facing the Province can be summarised as follows: the Province is mostly rural in nature; has a low population density, and relative inadequate infrastructure, especially in the remote rural areas; has inherited an enormous backlog in basic service delivery and maintenance that will take time to eradicate; the population is predominantly poor with high levels of illiteracy and dependency that seriously affect their productivity and ability to compete for jobs; is characterised by great inequalities between the rich and poor as well as disparities between urban and rural; is faced with HIV / AIDS as a social and economic challenge; available resources are unevenly distributed, and there is limited potential for improved delivery of services and growth. From the above, job creation and poverty eradication together with the low level of expertise and skills; stand out as the greatest challenges to be resolved within the Province.

Goals and objectives of the PGDS are to fight poverty and unemployment, improve the low level of expertise and skills which are classified as both immediate and long term goals and require primary goals for sustained growth and economic development. The proposed solar farm will contribute to employment creation and skills development which is in line with the goals and objectives of the North West PGDS.

The North West PGDS aims at building a sustainable economy to eradicate poverty and improve social development. The proposed solar farm will contribute to growth and development of the local area by expanding the economic base and creating employment opportunities.

Renewable Energy Strategy for the North West Province (2012). In 2012 the North West Province's then Department of Economic Development, Environment, Conservation and Tourism (DEDECT) developed the Renewable Energy Strategy for the North West Province. The strategy was developed in response to the need of the North West Province to participate meaningfully within South Africa's RE sector. The RE strategy aims to improve the North West Province's environment, reduce its contribution to climate change, and alleviate energy poverty, whilst promoting economic development and job creation whilst developing its green economy.

According to the strategy the North West Province consumes approximately 12% of South Africa's available electricity, and is rated as the country's fourth largest electricity consuming province. This is mainly due to the high demand of the electrical energy-intensive mining and related industrial sector, with approximately 63% of the electricity supplied to the province being consumed in its mining sector.

While the strategy recognises that South Africa has an abundance of RE resources available, it is cognisant of the fact that the applicability of these RE resources depend on a number of factors and as a result are not equally viable for the North West Province. The RE sources that were identified to hold the most potential and a competitive strength for the North West Province are Solar Energy (photovoltaic

as well as solar water heaters), Municipal Solid Waste, hydrogen and fuel cell technologies, bio-mass, and energy efficiency.

The advantages and benefits for the North West Province associated with the implementation and use of RE technologies include:

- Provision of energy for rural communities, schools and clinics that are far from the national electricity grid.
- Creation of an environment where access to electricity provides rural communities with the opportunity to create an economic base via agricultural and home-based industries and Small, Medium and Micro Enterprises (SMMEs) in order to grow their income-generating potential.
- The supply of water within rural communities.
- It would result in less time taken for the collection of wood and water, thus improving the quality of life within communities and specifically for women.
- Improved health through the reduced use of fuelwood as energy source for cooking and heating that causes respiratory and other hazards.
- Solar water heating for households in urban and rural settings, reducing the need for either electricity (in urban settings) and fuelwood (in rural settings) to heat water, thus lowering our National peak demand and conservation of woodlands in a sustainable manner.
- Large-scale utilisation of renewable energy will also reduce the emissions of carbon dioxide, thus contributing to an improved environment.
- The fact that RE go hand-in-hand with energy efficiency, it will result in additional financial benefit and the need for smaller RE systems.
- The development of a strong localised RE industry within the NWP holds substantial potential for Black Economic Empowerment (BEE) and job creation within the Province.
- The establishment of a strong RE base in the North West Province, especially in the manufacturing of fuel cells could stimulate the market for Platinum Group Metals (PGM), which would in turn help the local mining sector.

This is due to RE sources having considerable potential for increasing security of supply by diversifying the energy supply portfolio and increasingly contributes towards a long-term sustainable energy future. In terms of environmental impacts, RE results in the emission of less GHGs than fossil fuels, as well as fewer airborne particulates, and other pollutants. Furthermore, RE generation technologies save on water consumption in comparison with coal-fired power plants.

3.2.4 North West Provincial Spatial Development Framework (2017)

As per the North West Provincial Spatial Development Framework (PSDF) (2017) electricity within the province is primarily provided by Eskom to re-distributors – mainly municipalities (10%), commercial (5%), agriculture (5%), mining (30%), industrial (30%) and Residential (20%). Electricity for supply to the North West Province is mostly generated by Eskom's Matimba coal-fired Power Station in Limpopo which will in future be augmented by Eskom's Medupi coal-fired Power Station.

According to the North West PSDF the proposed project site is located within the Mahikeng Distribution Area, which is characterised by minor developments, including Commercial, Industrial, and Major Electrification; and has a projected growth of 125MW (Eskom, 2015).

Eskom's Transmission Development Plan 2015 – 2024 represents the transmission network infrastructure investment requirements over the 10 year period between 2015 and 2024. Projects proposed for the North West Province for the next 10 years include the introduction of 400kV power lines and transformation to support or relieve the existing networks. Five transmission power corridors have been identified as critical to providing a flexible and robust network that could respond to meet the needs of future IPPs and IRP requirements.

3.2.5 Renewable Energy Strategy for the North West Province (2012)

The Renewable Energy Strategy (RES) notes that the North West Province is the fourth largest electricity consuming province in South Africa (12%). The bulk of electricity is currently obtained from conventional coal-fired plants in Mpumalanga. Approximately 63% of the electricity supplied to the NWP is consumed in its mining sector. Many rural communities within the NWP are affected by energy poverty – a legacy of historic neglect and underdevelopment – and make use of wood fuel, with impacts on the environment and health. At the same time, the emerging renewables sector holds potential for employment creation, green manufacturing, and commercial energy generation (linked to the IPP). The key objectives of the RES are therefore to:

- Reduce the North West Province's contribution to climate change;
- alleviate energy poverty; and
- Promote economic development and job creation in the province by developing a green economy.

Various renewable energy source options were investigated in the RES. Solar (photovoltaic as well as solar water heaters), Municipal Solid Waste, hydrogen and fuel cell technologies, biomass, and energy efficiency were identified as sub-sectors/ sources which hold the greatest competitive potential in the NWP.

With regard to solar, the RES notes that the NWP has a very good potential with daily average solar radiation rates of greater than 8 000 MJ/m2. Only the Northern Cape Province (NCP) receives more radiation than the NWP.

During the status quo assessment no barriers to the generation and use of solar PV systems within the NWP were identified, except for the only slightly lower levels of solar irradiation levels compared to the NCP and parts of Limpopo. The RES notes that this could potentially be offset by sufficient economies of scale. The NWP has sufficient land area available, and the electricity grid infrastructure is good in the areas of high economic activity and in the proximity of the numerous mines and related large industries concentrated in certain areas of the NWP. The infrastructure in the NWP is also generally good in the same areas. This implies that, although the NWP is not a preferred destination for Solar PV projects, it can be made one if some of the general barriers are removed for project developers by the Province.

Based on the above, for following key actions are proposed for the NWP with regard to Solar PV:

- Identify a suitable entity linked to the NWPG to drive the opportunities associated with solar PV projects under the RE IPP.
- The NWP should initiate a project as part of the implementation plan to identify suitable areas within the NWP which complies with the following requirements:
    - Suitable and proven measured levels of solar irradiation.
    - Long-term lease or option agreements possible.
    - Good grid infrastructure in close proximity.
    - Suitable connection point into the electricity grid.
    - Low impact on agriculture and environment.
    - Suitable access to and around site for effective execution.
    - In close proximity to communities that could benefit from local economic development and job creation.
- The NWPG should also explore the possibility of packaging the most suitable and viable land areas for solar PV project developers to attract them to the NWP.
- The NWP should focus on developing the local content of components for the PV industry.

3.3 REGIONAL AND MUNICIPAL LEGISLATION

This section deals with regionally and municipally promulgated or regionally or municipally applicable legislation associated with the proposed Kareerand Battery Energy Storage Facility [15][16].

3.3.1 Dr Kenneth Kaunda District Municipality Integrated Development Plan (IDP), 2017 – 2022

The objectives of the Spatial Development Framework (SDF) of Dr Kenneth Kaunda DM are:

- Diversification of the economic base
- Accelerating growth in agriculture, tourism, industries, and export sectors (metals, clothing, textiles, agro-processing, mineral beneficiation and manufacturing
- Innovation and competitiveness in manufacturing sector is manufacturing sector is critical component in the strategy to significantly increase the potential of the manufacturing sector to contribute towards the overall development of the district
- Ensure sustainability by identifying possible conflict zones between proposed development and environmental sensitive areas
- Bringing marginalized communities into economic mainstream
- SMME development and skills development
- Strengthening and concentration of developments along N12
- Identification of available land and infrastructure to accommodate development along the corridor

The vision of Dr Kenneth Kaunda District Municipality (DKKDM) is to be a catalyst for Economic Development in the region of the North West Province, benefitting all communities in the designated area of jurisdiction. The goal is to assist municipalities with the implementation of key local economic development projects, by championing investment in or supporting business development for selected high impact projects to stimulate economic growth, job creation and economic diversification in the district region.

The proposed BESS and solar energy facility falls in line with the SDF within the IDP. The development will contribute to assisting the District Municipality in achieving economic growth and building a sustainable economy through the field of renewable energy.

3.3.2 JB Marks Integrated Development Plan (IDP), 2017 – 2022

JB Marks Integrated Development Strategy focuses on the following issues:

- The regeneration of the manufacturing sector
- The growth of tourism and the linkages to the sector
- The growth of agriculture
- The development and growth of the information technology sector
- The re-skilling of the labour force
- The regeneration of industrial areas and CBD's and upgrade of residential areas
- Facilitate the utilization of co-operatives in the municipality's procurement system
- Facilitate the growth and contribution of SMME's.

The City of Motlosana's IDP has moved from forming to storming then to norming; now they are proceeding to performing. The overarching direction of CMLM IDP articulates a vision for economic

[15] This section includes input from the Social specialist (Annexure E9)

[16] This section includes legislation applicable to both the District (Category C) and Local (Category B) municipalities.

growth and development, provision of basic services (service delivery improvement) and infrastructure development. The proposed solar energy facility will contribute to job creation, economic growth and development in the region, which will be KPA 2 of the JB Marks IDP.

3.4 GUIDELINES, POLICIES AND AUTHORITATIVE REPORTS

This section includes relevant Guidelines, Policies and Authoritative reports applicable to the proposed Kareerand Battery Energy Storage Facility.

3.4.1 National Protected Area Expansion Strategy (NPAES) for S.A. 2008 (2010)

Considering that South Africa's protected area network currently falls far short of sustaining biodiversity and ecological processes, the NPEAS aims to achieve cost-effective protected area expansion for ecological sustainability and increased resilience to Climate Change. Protected areas, recognised by the National Environmental Management: Protected Areas Act (Act 57 of 2003), are considered formal protected areas in the NPAES. The NPAES sets targets for expansion of these protected areas, provides maps of the most important protected area expansion, and makes recommendations on mechanisms for protected area expansion.

The NPAES identifies 42 focus areas for land-based protected area expansion in South Africa. These are large intact and un-fragmented areas suitable for the creation or expansion of large, protected areas. The property is designated as a private nature reserve (Bushybend Private Nature Reserve).

NPAES in the North West were selected based on Critical Biodiversity priority areas (i.e. corridors and priority conservation nodes) and include under protected ecosystem types particularly in the Central Bushveld, Arid Highveld Grasslands and Eastern Kalahari Bushveld ecosystems. The aim of these areas is to improve landscape connectivity between reserves (Department of Environmental Affairs, 2016). The site does not fall within the 2011 National PAES but it does fall within a negotiated focus area identified in 2018 but not yet formalised. Although the placement of the infrastructure may increase habitat fragmentation and thus impact on the ecological corridor, the footprint of the proposed development is small enough that the impact is likely to be low to negligible.

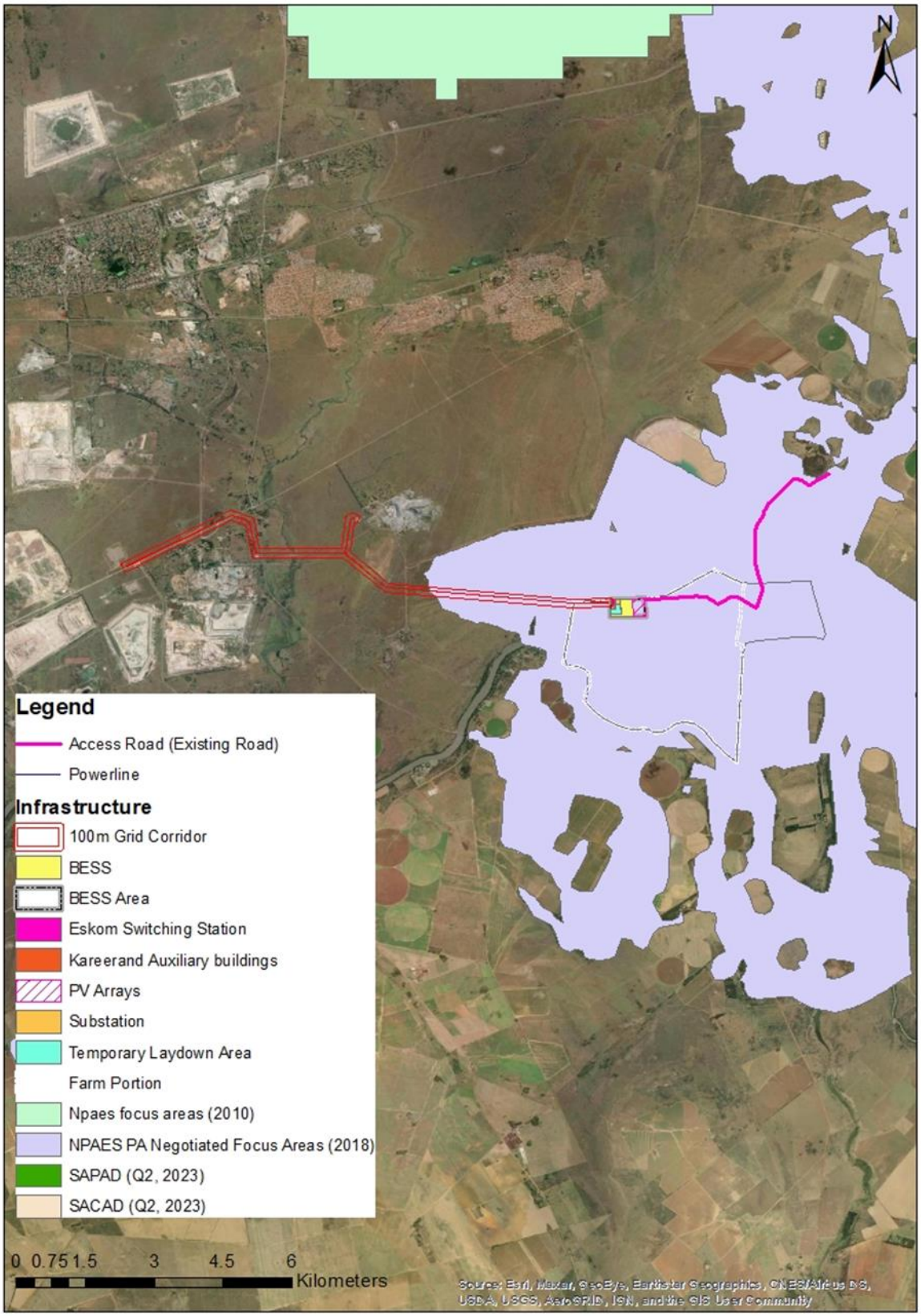

Figure 20: Kareerand Battery Energy Storage Facility in relation to the NPAES Expansion Areas (Biodiversity Africa, 2024).

It is noteworthy that the Bushybend Private Nature Reserve, as depicted in the SAPAD dataset is not indicated as a Formal Protected Area in the NPAES.

3.4.2 North West Province Biodiversity Sector Plan (2017)

A Critical Biodiversity Areas (CBA) Map is a spatial plan for ecological sustainability. It identifies a set of biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.

The North West Biodiversity Sector Plan gives legal status to the CBA Map through the National Environmental Management: Biodiversity Act (Act 10 of 2004),

The North West Biodiversity Spatial Plan classifies areas into Critical Biodiversity Areas (CBA1), Degraded Critical Biodiversity Areas (CBA2), Ecological Support Areas (ESA1 & ESA2), Other Natural Areas (ONA) and Protected Areas (PA). The figure below shows that the Kareerand Battery Energy Storage Facility overlaps with areas classified as:

- CBA2

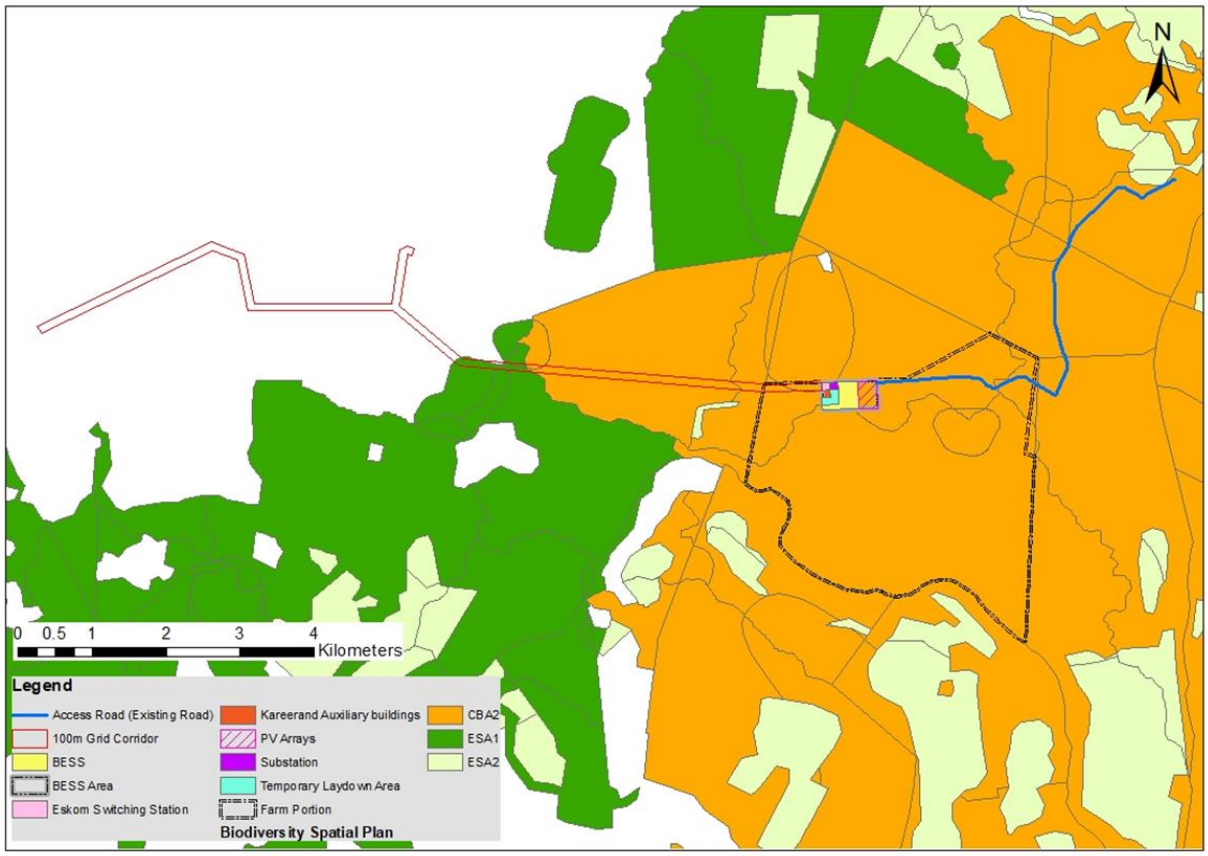

Figure 21: Kareerand Battery Energy Storage Facility in relation to Critical Biodiversity Areas (Biodiversity Africa, 2024).

The Terrestrial Biodiversity Specialist has confirmed the following reasons for inclusion in a CBA2.

Figure 22: Terrestrial Biodiversity comment on the features triggering CBA2 Status

CBA Category Triggered		Comment
T9	**Corridor Node**	If the vegetation present within the corridor and corridor node is natural, it is considered a CBA 2 but if it is not natural it is considered and ESA 2. Based on the data from the field survey, the area is degraded natural vegetation and therefore the CBA2 status remains.

T7	**Corridor**	However, given how wide the corridor is where the project is located (refer to Figure 6.1), the functioning of the corridor can persist to the east and west of the project area and as such the functioning of the broader CBA and ESA will continue.
	Vulnerable Ecosystem	The most recent literature, that describes Rand Highveld Grassland as Vulnerable rather than Endangered, has been applied. According to the North West Biodiversity Spatial Plan, modification of remaining patches of provincially Endangered and Vulnerable ecosystems (vegetation types) larger than 5ha should be *"limited to existing irreversibly modified or heavily degraded areas"*. The results from the field survey indicate that the site where the BESS is located is heavily degraded as a result of ongoing heavy grazing by livestock. Furthermore, the corridor along which the EGI is located is comprised of a combination of heavily degraded vegetation and transformed vegetation.

3.4.3 White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)

The White Paper on Renewable Energy Policy of 2003 supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of Renewable Energy and aims to create the necessary conditions for the development and commercial implementation of Renewable Energy technologies. The position of the White Paper on Renewable Policy is based on the integrated resource planning criterion of:

"Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options."

The White Paper on Renewable Energy Policy sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing Renewable Energy in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, and fairly accessible and affordable coal resources. However, massive Renewable Energy resources that can be sustainable alternatives to fossil fuels, have so far remained largely untapped. The White Paper on Renewable Energy Policy fosters the uptake of Renewable Energy in the economy and has a number of objectives that include: ensuring equitable resources are invested in renewable technologies; directing public resources for implementation of Renewable Energy technologies; introducing suitable fiscal incentives for Renewable Energy and; creating an investment climate for the development of the Renewable Energy sector.

The White Paper on Renewable Energy Policy set a target of 10 000GWh to be generated from Renewable Energy by 2013 to be produced mainly from biomass, wind, solar and small-scale hydro. The target was subsequently reviewed in 2009 during the Renewable Energy summit of 2009. The objectives of the White Paper on Renewable Energy Policy are considered in six focal areas, namely; financial instruments, legal instruments, technology development, awareness raising, capacity building and education, and market based and regulatory instruments. The policy supports the investment in Renewable Energy facilities as they contribute towards ensuring energy security through the diversification of energy supply, reducing GHG emissions and the promotion of Renewable Energy sources.

3.4.4 White Paper on the Energy Policy of the Republic of South Africa (1998)

The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of renewable energy and encouraging new entries into the generation market. South Africa has an attractive range of cost-effective renewable resources, taking into consideration social and environmental costs. Government policy on renewable energy is thus concerned with meeting the following challenges:

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

The policy states that the advantages of Renewable Energy include; minimal environmental impacts during operation in comparison with traditional supply technologies, generally lower running costs, and high labour intensities. Disadvantages include; higher capital costs in some cases; lower energy densities; and lower levels of availability, depending on specific conditions, especially with sun and wind-based systems. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future. The White Paper on Energy Policy therefore supports the advancement of Renewable Energy sources and ensuring energy security through the diversification of supply.

3.4.5 Integrated Energy Plan, 2016

The development of a National Integrated Energy Plan was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish the Integrated Energy Plan in the Government Gazette. The purpose of the Integrated Energy Plan is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development.

The Integrated Energy Plan notes that South Africa needs to grow its energy supply to support economi**c expansion and** in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives were identified, namely:

- Objective 1: Ensure security of supply;
- Objective 2: Minimise the cost of energy;
- Objective 3: Promote the creation of jobs and localisation;
- Objective 4: Minimise negative environmental impacts from the energy sector;
- Objective 5: Promote the conservation of water;
- Objective 6: Diversify supply sources and primary sources of energy;
- Objective 7: Promote energy efficiency in the economy; and
- Objective 8: Increase access to modern energy.

The Integrated Energy Plan provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and also take into account the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others.

Based on this information the Integrated Energy Plan then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated environmental impacts, socio-economic benefits and macroeconomic

impacts are also analysed. The Integrated Energy Plan is therefore focused on determining the long-term energy pathway for South Africa, taking into account a multitude of factors which are embedded in the eight objectives.

As part of the analysis four key scenarios were developed, namely the Base Case, Environmental Awareness, Resource Constrained and Green Shoots scenarios:

- The Base Case Scenario assumes that existing policies are implemented and will continue to shape the energy sector landscape going forward. It assumes moderate economic growth in the medium to long term;
- The Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, where a higher cost is placed on externalities caused by the supply of energy;
- The Resource Constrained Scenario in which global energy commodity prices (i.e., coal, crude oil and natural gas) are high due to limited supply;
- The Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the National Development Plan, are met.

The Integrated Energy Plan notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of renewable energy, the document refers to wind and solar energy. The document does however appear to support solar over wind noting that solar PV and CSP with storage present excellent opportunities to diversify the electricity mix, to produce distributed generation and to provide off-grid electricity. Solar technologies also present the greatest potential for job creation and localisation. Incentive programmes and special focused programmes to promote further development in the technology, as well as solar roll-out programmes should be pursued.

3.4.6 Integrated Resource Plan for Electricity (2010-2030)

The Integrated Resource Plan (IRP) for Electricity 2010 – 2030 is a subset of the Integrated Energy Plan and constitutes South Africa's national electricity plan. The primary objective of the IRP is to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.

The current iteration of the IRP, led to the Revised Balanced Scenario (RBS) that was published in October 2010. Following a round of public participation which was conducted in November / December 2010, several changes were made to the IRP model assumptions. The document outlines the proposed generation new-build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on a cost-optimal solution for new-build options (considering the direct costs of new build power plants), which was then "balanced" in accordance with qualitative measures such as local job creation.

The Policy-Adjusted IRP reflects recent developments with respect to prices for renewables. In addition to all existing and committed power plants, the plan includes 9.6GW of nuclear; 6.25GW of coal; 17.8GW of renewables; and approximately 8.9GW of other generation sources such as hydro, and gas.

3.4.7 National Development Plan 2030 (2012)

The National Development Plan 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030. The National Development Plan aims to achieve this by drawing on the energies of its people, growing and inclusive economy, building capabilities, enhancing the capacity of the state and promoting leaderships and partnerships throughout society. While the achievement of the objectives of the National Development Plan requires progress on a broad front, three priorities stand out, namely:

- Raising employment through faster economic growth.
- Improving the quality of education, skills development and innovation.
- Building the capability of the state to play a developmental, transformative role.

In terms of the Energy Sectors role in empowering South Africa, the National Development Plan envisages that, by 2030, South Africa will have an energy sector that promotes:

- Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.

The National Development Plan aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed project will assist in reducing carbon emissions targets and creating jobs in the local area as well as assist in creating a competitive infrastructure based on terms of energy contribution to the national grid.

3.4.8 The New Growth Path Framework

The aim of the New Economic Growth Path Framework is to enhance growth, employment creation and equity. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: energy, transport, communication, water and housing.

The New Growth Path also identifies five other priority areas as part of the programme, through a series of partnerships between the State and the private sector. The Green Economy as one of the five priority areas to create jobs, including expansions in construction and the production of technologies for solar, wind and biofuels. In this regard clean manufacturing and environmental services are projected to create 300 000 jobs over the next decade.

3.4.9 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthen the delivery of basic services. The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to improved economic growth.

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

- Five geographically focussed SIPs;
- Three spatial SIPs;
- Three energy SIPs;
- Three social infrastructure SIPs;
- Two knowledge SIPs;
- One regional integration SIP;
- One water and sanitation SIP.

The three energy SIPS that are related to Kareerand Battery Energy Storage Facility are SIP 8, 9 and 10.

Table 7: Strategic Infrastructure applicable to Kareerand Battery Energy Storage Facility

SIP 8: Green energy in support of the South African economy
Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010); Support bio-fuel production facilities.
SIP 9: Electricity generation to support socio-economic development
Accelerate the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy and address historical imbalances; Monitor implementation of major projects such as new power stations: Medupi, Kusile and Ingula.
SIP 10: Electricity transmission and distribution for all
Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.

Although this project aligns with these 3 SIP's, it will only receive formal SIP status once it is selected as a preferred bidder under the BESIPPPP.

3.4.10 Strategic Environmental Assessment (SEA) for Wind and Solar PV energy in South Africa

The Strategic Environmental Assessment (SEA) for wind and solar PV energy in South Africa (CSIR, 2013) identified eight (8) Renewable Development Zones (REDZs). The REDZs identified areas where large scale renewable energy facilities can be developed in in a manner that limits significant negative impacts on the environment while yielding the highest possible socio-economic benefits to the country.

The Phase 2 SEA identified a further 3 REDZ, which were formally gazetted in 2021. The Kareerand Battery Energy Storage Facility site is located within the Klerksdorp REDZ, which was formally gazetted as part of the Phase 2 REDZ in 2021. The area has therefore been identified as suitable for the establishment of renewable energy facilities, specifically large-scale solar farms.

3.4.11 Conservation of Migratory Species of Wild Animals

Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention) is an intergovernmental treaty and is the most appropriate instrument to deal with the conservation of terrestrial, aquatic and avian migratory species. The convention includes policy and guidelines with regards to the impact associated with man-made infrastructure. CMS requires that parties (South Africa is a signatory) take measures to avoid migratory species from becoming endangered (Art II, par. 1 and 2) and to make every effort to prevent the adverse effects of activities and obstacles that seriously impede or prevent the migration of migratory species i.e., power lines (Art 111, par. 4b and 4c).

An Avifaunal Specialist has been appointed to consider the impact of the proposed Kareerand Battery Energy Storage Facility as well as the LILO grid connection (Annexure E2). Birdlife Africa South Africa has also been given an opportunity to comment in this regard.

3.4.12 The Agreement on the Convention of African-Eurasian Migratory Water Birds

The Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA) is an intergovernmental treaty dedicated to the conservation of migratory waterbirds and their habitat across Africa, Europe, the Middle East Central Asia, Greenland and the Canadian Archipelago. The AEWA

covers 255 species of birds ecologically dependent on wetlands for at least part of their annual cycle and is a legally binding agreement by all contracting parties (South Africa included) to guarantee the conservation of migratory waterbirds within their national boundaries through species and habitat protection and the management of human activities. As mentioned above, an Avifaunal Specialist has been appointed to consider the impact of the proposed Kareerand Battery Energy Storage Facility (Annexure E3). Birdlife Africa South Africa has also been given an opportunity to comment in this regard.

3.4.13 Guidelines to minimise the impacts on birds of Solar Facilities and Associated Infrastructure in South Africa

The "Guidelines to minimise the impact on birds of Solar Facilities and Associated Infrastructure in South Africa" (Smit, 2012) is perhaps the most important (although not legally binding) document from an avifaunal impact perspective currently applicable to solar development in South Africa. The guidelines are published by BirdLife South Africa (BLSA) and detail the recommended procedure for conducting an avifaunal specialist study as well as list all of the potential impacts of interactions between birds and solar facilities and associated infrastructure. We are aware of changes to the BLSA best-practise guidelines recently published at the Birds and Renewable Energy Forum in Johannesburg (2015) and although the revised requirements are still a work in progress and have not yet been ratified, they will inform this assessment where applicable. Please refer to Annexure E3 for a copy of the Avifaunal assessment undertaken for this project.

3.4.14 Environmental Impact Assessment Guideline for Renewable Energy Projects

The Minister of Environmental Affairs published the Environmental Impact Assessment Guideline for Renewable Energy in terms of section 24J of the National Environmental Management Act, 1998 (Act No. 107 of 1998) on 16 October 2016.

In pursuit of promoting the country's Renewable Energy development imperatives, the Government has been actively encouraging the role of Independent Power Producers (IPPs) to feed into the national grid. Through its REIPPPP, the DoE has been engaging with the sector in order to strengthen the role of IPPs in renewable energy development. Launched during 2011, the REIPPPP is designed so as to contribute towards a target of 3 725 MW, and towards socio-economic and environmentally sustainable development, as well as to further stimulate the renewable industry in South Africa.

In order to facilitate the development of the first phase of IPPs in South Africa, these guidelines have been written to assist project planning, financing, permitting, and implementation for both developers and regulators. The guideline is principally intended for use by the following stakeholder groups:

- Public Sector Authorities (as regulator and/or competent authority);
- Joint public sector authorities and project funders, e.g., Eskom, IDC, etc.
- Private Sector Entities (as project funder/developer/consultant);
- Other interested and affected parties (as determined by the project location and/or scope).

This guideline aims to ensure that all potential environmental issues pertaining to renewable energy projects are adequately and timeously assessed and addressed as necessary so as to ensure sustainable roll-out of these technologies by creating a better understanding of the environmental approval process for renewable energy projects.

The guidelines list the following possible environmental impacts associated with the development of solar energy facilities.

Table 8: Potential environmental impacts of solar energy projects (Adapted from DEA, 2015) showing where they have been considered in this report.

Impact Description	Relevant Legislation	Applicability to this project
Visual Impact	NEMA	Specialist input attached in Annexure E8.
Noise Impact (CSP)	NEMA	Not applicable, as CSP is not considered as a technology alternative.
Land Use Transformation (fuel growth and production)	NEMA, NEMPAA, NHRA	Not Applicable to PV. Agricultural specialist input however attached in Annexure E4
Impacts on Cultural Heritage	NEMA, NHRA	Heritage impact assessment attached in Annexure E4, and E6.
Impacts on Biodiversity	NEMA, NEMBA, NEMPAA, NFA	Biodiversity specialist input attached in Annexure E1 and E2 (Terrestrial Biodiversity and Aquatic Biodiversity)
Impacts on Water Resources	NEMA, NEMICMA, NWA, WSA	The project will obtain water directly from the local municipality. A freshwater ecologist has assessed the potential impacts on freshwater resources (Annexure E2).
Hazardous Waste Generation (CSP and PV)	NEMA, NEMWA, HAS	The EMPr makes provision for damaged and defunct PV infrastructure for dismantling and re-use.
Electromagnetic Interference	NEMA	The nearest SKA station has been identified as SKA 004, at more than 500 km from the proposed Kareerand Battery Energy Storage Facility. SKA have been given an opportunity to provide comment in this regard.
Aircraft Interference	NEMA, MSA	The SA CAA have been automatically registered as an interested and affected party on this environmental process. There are no airports nor landing strips in the vicinity of the proposed site.
Loss of Agricultural Land	SALA	Agricultural specialist input is attached in Annexure E4
Sterilisation of mineral resources	MPRDA	The Department of Mineral Resources has been registered as an I&AP on this environmental process.

Assuming an IPP project triggers the need for BA or S&EIR under the EIA regulations (which in this case is a Basic Assessment), included in the assessment process is the preparation of an environmental management programme (EMPr). Project-specific measures designed to mitigate negative impacts and

enhance positive impacts should be informed by good industry practice and are to be included in the EMPr. Potential mitigation measures for solar energy projects include but are not limited to:

- Conduct pre-disturbance surveys as appropriate to assess the presence of sensitive areas, fauna, flora and sensitive habitats;
- Plan visual impact reduction measures such as natural (vegetation and topography) and engineered (berms, fences, and shades, etc.) screens and buffers;
- Utilise existing roads and servitudes as much as possible to minimise project footprint;
- Site projects to avoid construction too near pristine natural areas and communities;
- Locate developments away from important habitat for faunal species, particularly species which are threatened or have restricted ranges, and are collision-prone or vulnerable to disturbance, displacement and/or habitat loss;
- Fence sites as appropriate to ensure safe restricted access;
- Ensure dust abatement measures are in place during and post construction;
- Develop and implement a storm water management plan;
- Develop and implement waste management plan; and
- Re-vegetation with appropriate indigenous species to prevent dust and erosion, as well as establishment of alien species.

The recommendations of these guidelines have been explicitly considered in this scoping process and where necessary, additional specialist input has been obtained. Please see section 6 of this BAR for a full assessment of impacts.

3.4.15 Sustainability Imperative

The norm implicit to our environmental law is the notion of sustainable development (“SD”). SD and sustainable use and exploitation of natural resources are at the core of the protection of the environment. SD is generally accepted to mean development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. The evolving elements of the concept of SD *inter alia* include the right to develop; the pursuit of equity in the use and allocation of natural resources (the principle of intra-generational equity) and the need to preserve natural resources for the benefit of present and future generations. Economic development, social development and the protection of the environment are considered the pillars of SD (the triple bottom line).

“Man-land relationships require a holistic perspective, an ability to appreciate the many aspects that make up the real problems. Sustainable planning has to confront the physical, social, environmental and economic challenges and conflicting aspirations of local communities. The imperative of sustainable planning translates into notions of striking a balance between the many competing interests in the ecological, economic and social fields in a planned manner. The ‘triple bottom line’ objectives of sustainable planning and development should be understood in terms of economic efficiency (employment and economic growth), social equity (human needs) and ecological integrity (ecological capital).”

As was pointed out by the Constitutional Court, SD does not require the cessation of socio-economic development but seeks to regulate the manner in which it takes place. The idea that developmental and environmental protection must be reconciled is central to the concept of SD - it implies the accommodation, reconciliation and (in some instances) integration between economic development, social development and environmental protection. It is regarded as providing a “conceptual bridge” between the right to social and economic development, and the need to protect the environment.

Our Constitutional Court has pointed out that the requirement that environmental authorities must place people and their needs at the forefront of their concern so that environmental management can serve their developmental, cultural and social interests, can be achieved if a development is sustainable. "*The very idea of sustainability implies continuity. It reflects the concern for social and developmental equity between generations, a concern that must logically be extended to equity within each generation. This concern is reflected in the principles of inter-generational and intra-generational equity which are embodied in both section 24 of the Constitution and the principles of environmental management contained in NEMA.*" [Emphasis added.]

In terms of NEMA sustainable development requires the integration of the relevant factors, the purpose of which is *to ensure that development serves present and future generations.*[17]

It is believed that the proposed up to 115MW Kareerand Battery Energy Storage Facility supports the notion of sustainable development by presenting a reasonable and feasible alternative to the existing vacant land use type, which has limited agricultural potential due the lack of water and infrastructure.

Furthermore, the proposed alternative energy project (reliant on a natural renewable resource – solar energy) is in line with the national and global goal of reducing reliance on fossil fuels, thereby providing long-term benefits to future generations in a sustainable manner.

3.4.16 National Freshwater Ecosystem Priority Area Status

The National Freshwater Ecosystem Priority Areas (NFEPA) database forms part of a comprehensive approach to the sustainable and equitable development of South Africa's scarce water resources. This database guides how many rivers, wetlands and estuaries, and which ones, should remain in a natural or near-natural condition to support the water resource protection goals of the National Water Act (Act 36 of 1998). This directly applies to the National Water Act, which feeds into Catchment Management Strategies, water resource classification, reserve determination, and the setting and monitoring of resource quality objectives (Nel *et al*., 2011). The NFEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act's biodiversity goals (NEM:BA) (Act 10 of 2004), informing both the listing of threatened freshwater ecosystems and the process of bioregional planning provided for by this Act (Nel *et al.,* 2011). The Aquatic Biodiversity Specialist has confirmed that No FEPA rivers nor wetlands are within the PV Development Footprint or Project Area of Influence.

[17] Refer to definition of "sustainable development" in section 1 of NEMA.

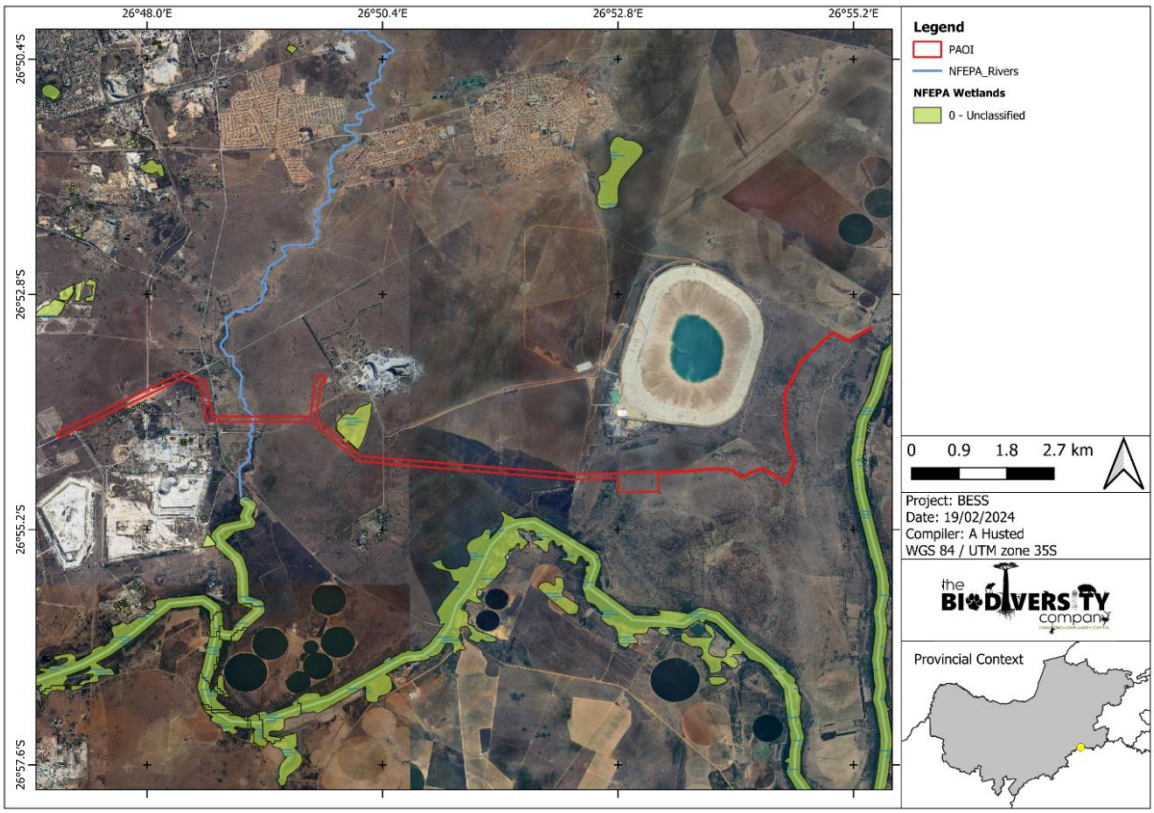

Figure 23: Kareerand Battery Energy Storage Facility in relation to the National Freshwater Ecosystem Priority Areas (The Biodiversity Company, 2024)

3.4.17 DFFE Screening Tool and Protocols

A screening tool report was generated for the proposed Kareerand Battery Energy Storage Facility and is attached in Appendix I. The outcomes of the various environmental theme's sensitivity as well as the level of study required by the protocols, are summarised in the table below.

Table 9: Sensitivity of the environmental themes and studies to be undertake in terms of these sensitivities.

Environmental Theme	Sensitivity	Required investigation	Discussion / Compliance
Agriculture Theme	High	Agricultural Impact Assessment	This High theme rating was disputed by the agricultural specialist who confirmed the whole site to be medium, See Annexure E4
Animal Species Theme	Medium	Animal Species compliance statement	This forms part of the Terrestrial Biodiversity Impact Assessment attached in Annexure E1.
Aquatic Biodiversity Theme	Low	Aquatic Compliance Statement	An Aquatic Compliance Statement is attached in Annexure E2.
Archaeological and Cultural Heritage Theme	Low	Heritage Compliance Statement.	Notwithstanding the low theme sensitivity, a Heritage Impact Assessment has been undertaken and is attached in Annexure E5 and 6
Civil Aviation (Solar PV) Theme	Medium	Compliance Statement	The South African Civil Aviation Authority will be provided an opportunity to

Environmental Theme	Sensitivity	Required investigation	Discussion / Compliance
			comment in this regard. The applicant will also apply for an obstacle certificate from CAA.
Landscape (Solar) Theme	Very High	Visual and Landscape Impact Assessment	A Visual Impact Assessment has been undertaken and is attached in appendix E7.
Plant Species Theme	Medium	Compliance Statement	This forms part of the Terrestrial Biodiversity Impact Assessment attached in Annexure E1.
RFI Theme	Medium	Compliance Statement	The South African Square Kilometre Array SKA-SA and SARAO will be requested to provide professional comment in this regard.
Terrestrial Biodiversity Theme	Very High	Terrestrial Biodiversity Impact Assessment	The terrestrial biodiversity assessment is attached in annexure E1.

The table below reflects the specialist studies recommended in the DEA Screening tool and whether they will be included in the Draft EIR.

Table 10: Specialist Studies recommended in the DEA Screening Tool.

Study Recommended	Discussion
Agricultural Impact Assessment	Has been undertaken. See Annexure 4 of this BAR
Landscape/Visual Impact Assessment	Has been undertaken. See Annexure E7 of this BAR
Archaeological and Cultural Heritage Impact Assessment	Has been undertaken. See Annexures E5 of this BAR
Palaeontology Impact Assessment	Has been undertaken. See Annexure E6 of this BAR
Terrestrial Biodiversity Impact Assessment	Has been undertaken. See Annexure E1 of this BAR
Aquatic Biodiversity Impact Assessment	Has been undertaken. See Annexure 2 of this BAR
Avian Impact Assessment	Has been undertaken. See Annexure E3 of this BAR
Civil Aviation Assessment	Has not been undertaken – The closest airstrip was identified as the Klerksdorp Airfield situated approximately 23 km from the Site. The South Avian Civil Aviation Authority will be given an opportunity to comment on this Basic Assessment Process. The applicant will submit an obstacle application (Part 30-27) to the South African Civil Aviation Authority.
Defence Assessment	Has Not been undertaken – the South African National Defence Force will be provided with an opportunity to comment on this Basic Assessment Process.
RFI Assessment	Has not been undertaken – The Kareerand Battery Energy Storage Facility facility is not within the Geographic Advantage Area, as it is situated outside of the Northern Cape. It was furthermore found to be situated more than 580km from the closest SKA station (SKA004). The South African SKA Project Office and the South African Radio Astronomy Observatory (SARAO) have been registered as a key stakeholder on this environmental

	process and have been requested to provide input in terms of the Astronomy Geographic Advantage Act and potential impact to SKA.
Geotechnical Assessment	Has not been undertaken – The Council for Geoscience will be approached for comment in this regard.
Socio-Economic Assessment	Has been undertaken. See Annexure E8 of this BAR
Plant Species Assessment	Has been undertaken. See Annexure E1 of this BAR
Animal Species Assessment	Has been undertaken. See Annexure E1 of this BAR

4. PLANNING CONTEXT

The following planning statement outlines the details of the planning process, as well as the responsibilities of the land use planning specialist once appointed, specifically pertaining to the project envisioned on the abovementioned property:

- The property is located within the JB Marks Local Municipality and any process of land use change will be subject to the Scheme Regulations and Municipal Planning By-laws of the said Municipality.
- The property is currently zoned as "Agricultural" in terms of the Klerksdorp Land Use Management Scheme, 2005. In order to allow for the development of a Renewable Energy Facility thereon, application for the amendment of the scheme by the rezoning of the applicable portion of the property from "Agricultural" to "Special" will have to be launched.
- The application will be compiled and submitted in terms of the Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA), as well as the JB Marks Spatial Planning and Land Use Management By-law, 2016.
- SPLUMA retracts the Removal of Restrictions Act, Act 84 of 1967, and any title deed restrictions on the property may be removed at the discretion of the local authority in terms of SPLUMA.

The town planning process is summarized in the following table:

Task	Detail	Outcome
1	Pre application information gathering (Application requirements)	All the documentation is available and signed off by client and other professionals.
2	Compilation of applications	Application ready for submission
3	Submission of applications	JB Marks Municipality confirms that a complete and compliant application has been submitted
4	Statutory requirements of the applications	Successful in complying with all requirements in terms of Section 62(1) of the JB Marks Spatial Planning and Land Use Management By-law, 2016.
5	Follow the application through JB Marks Municipality	To ensure that all relevant departments commended on application.
6	Approval application	That positive approvals are granted
7	Complying to conditions in approval document	To ensure that the client knows of any limitations on the Conditions of Approval (PCP) and extent of timeframes allowed to proclaim the amendment scheme.

5. SITE DESCRIPTION AND ATTRIBUTES

The following sections provide a description of the natural environment, built environment and social and economic context of Portion 3 of the Farm Kareerand No. 444, with particular focus on the site location for the proposed Kareerand Battery Energy Storage Facility.

5.1 LOCATION & BUILT ENVIRONMENT

The target property, Portion 3 of the Farm Kareerand No. 444, is located in the Dr Kenneth Kaunda District of the North West Province, within the jurisdiction area of the JB Marks Local Municipality. The property is approximately 959 hectares in size and is located East of Klerksdorp.

The proposed Kareerand Battery Energy Storage Facility site is accessed from the existing district road between Klerksdorp and Ventersdorp.

According to the heritage specialist there are no structures within the footprint of the proposed BESS.

5.2 GEOLOGY & SOILS

According to the Agricultural specialist, the underlying geology is Ventersdorp lava and Witwatersrand quartzite, shale and slate. A single land type, namely Bc23 covers the site. This land type is dominated by shallow soils on underlying rock and rock outcrops cover 22% of the land type. The field investigation confirmed the dominance of shallow soils on underlying rock.

5.3 CLIMATE

The area is characterised as having a moderate to cold semi-arid climate with maximum temperatures occurring in December and January and minimum temperatures occurring in June and July.

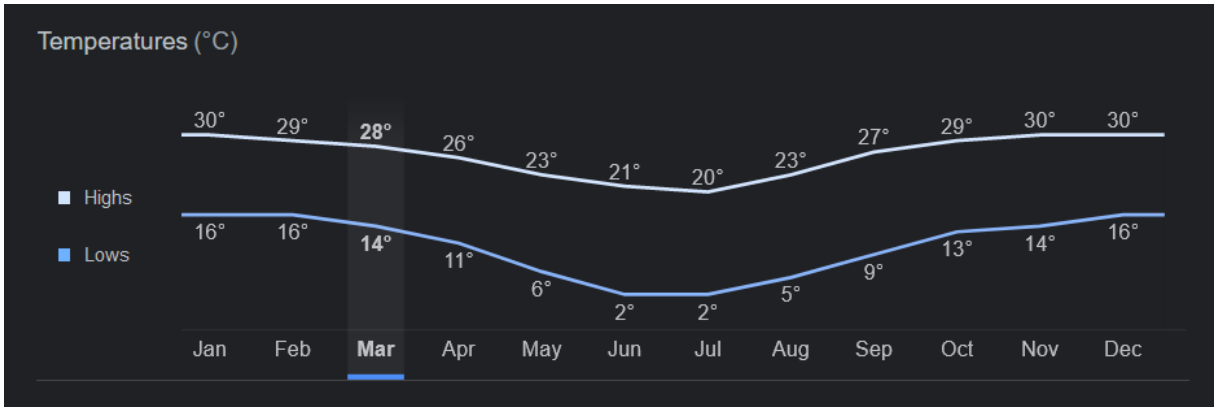

Figure 24: Average monthly temperatures in the project area.

The area receives a mean annual average rainfall of approximately 601mm. Precipitation is highest in January and lowest in June and August.

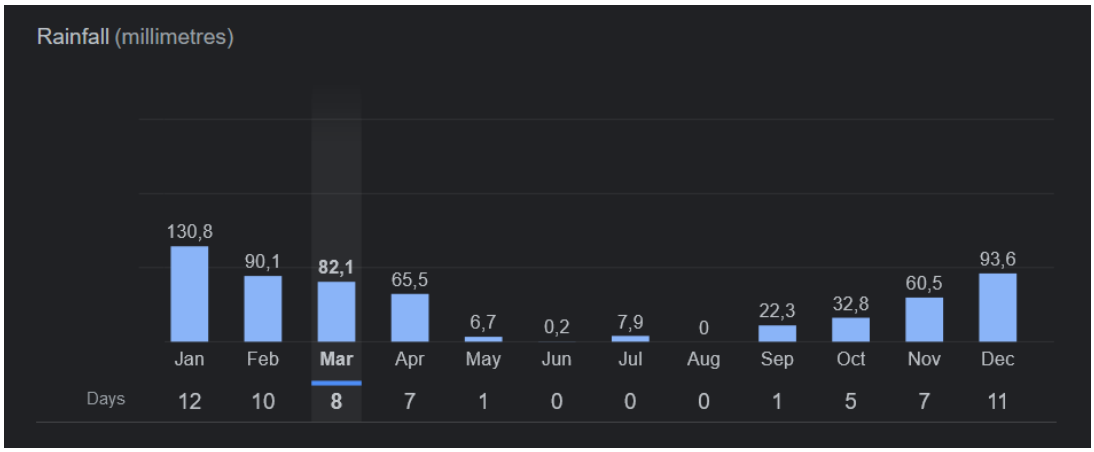

Figure 25: Average Monthly Rainfall in the project area.

5.4 TOPOGRAPHY

The regional topography is dominated by the Skoonspruit River Valley which trends in a north-south direction. The Project area is located on the south-west facing slopes of this valley at an average elevation of 1390mamsl. The slope percentage of the proposed project area has been calculated by the agricultural specialist and is shown in the figures below. Most of the project area is characterised by a slope percentage ranging between 0 to 4% with some irregularities in areas with slopes between 8 to 10%. The Digital Elevation Model (DEM) of the project area indicates an elevation of 1310 to 1327 Metres Above Sea Level.

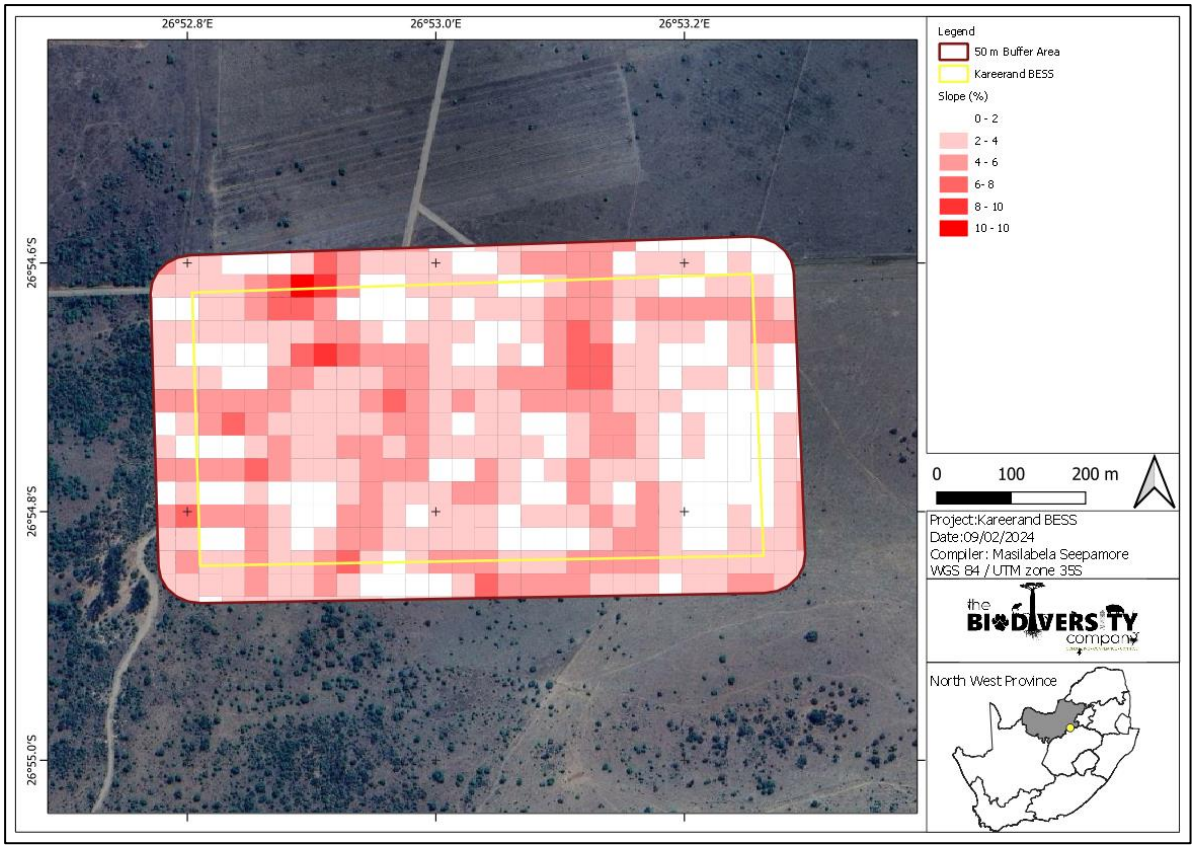

Figure 26: Slope percentage map for the project area (The Biodiversity Company, 2024)

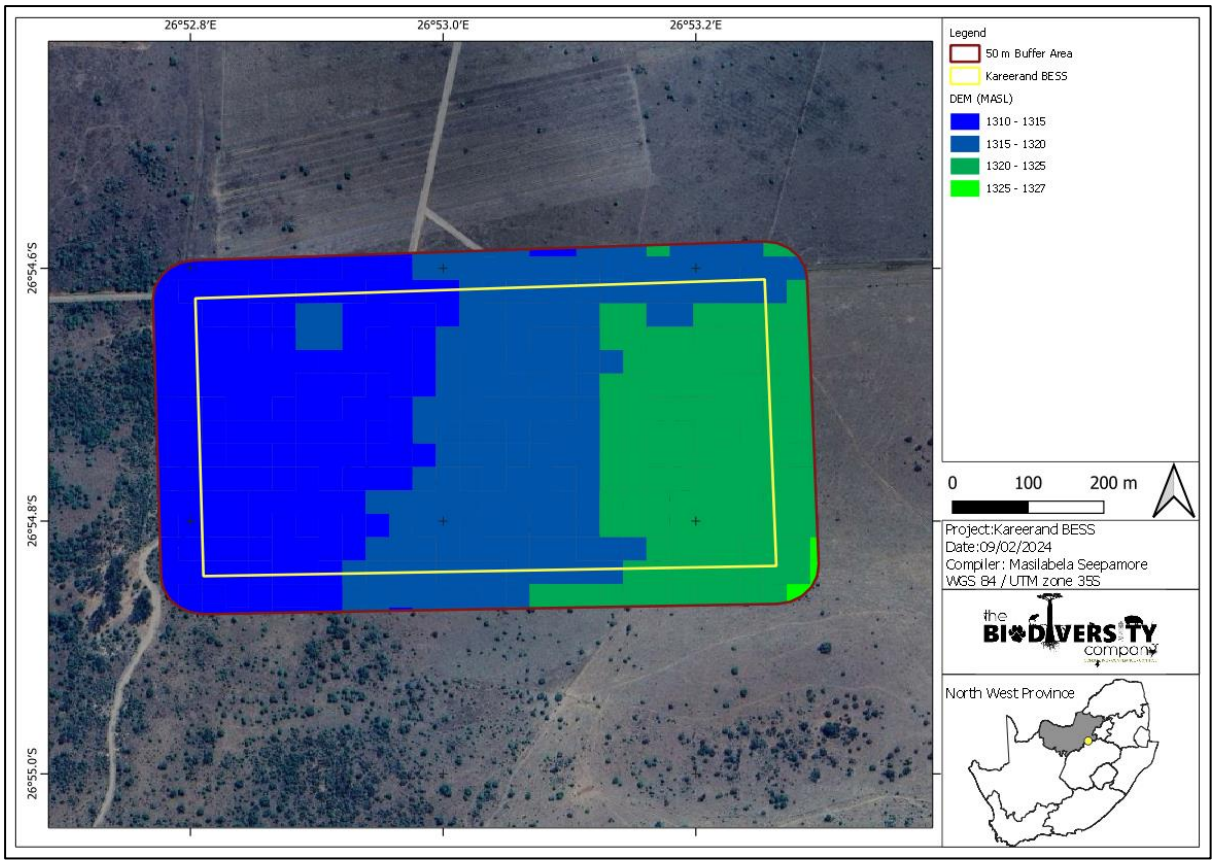

Figure 27: Digital Elevation Model of the project area (The Biodiversity Company, 2024)

5.5 BOTANICAL COMPOSITION OF THE SITE

Biodiversity Africa undertook a Botanical Impact Assessment which formed part of larger Terrestrial Ecosystems Impact Assessment. Please refer to the Terrestrial Biodiversity Impact Assessment attached in **Annexure E1** from which the following has been drawn.

5.5.1 Broad-Scale Vegetation Patterns

Site is situated in the Rand Highveld Grassveld vegetation types as per the image below.

Figure 28: Broad Scale Vegetation Types Associated with Kareerand Battery Energy Storage Facility and associated infrastructure (Biodiversity Africa, 2024).

5.5.2 Habitats & Plant Communities

The Terrestrial Biodiversity specialist identified three vegetation types within the project area:

- Degraded and Very Degraded Rand Highveld Grassland
- Vaal Reefs Dolomite Sinkhole Woodland
- Secondary Vegetation

Rand Highveld Grassland is listed as a Vulnerable ecosystem and as such the Conservation Importance is medium. Given the degraded and fragmented nature of the site, the Functional Index was medium and the receptor resiliance for degraded Rand Highveld Grassland was medium and for very degraded Rand Highveld Grassland it was High since species diversity is low and comprised of ruderal species that will recover quickly after a disturbance. The overall Site Ecological Importance for the area classified as degraded is medium and for the area classified as very degraded, it is low.

There are small patches of very degraded Vaal Reefs dolomite Sinkhole Woodland along the powerline corridor. These areas are highly fragmented and there is a low likelihood of SCC occurring within this vegetation type. As such, the conservation index is low, the functional Index is medium and the eceptor resiliance is high. The overall site ecological importance for this vegetation type is very low. Similarly, secondary vegetation also has a very low Site Ecological Importance.

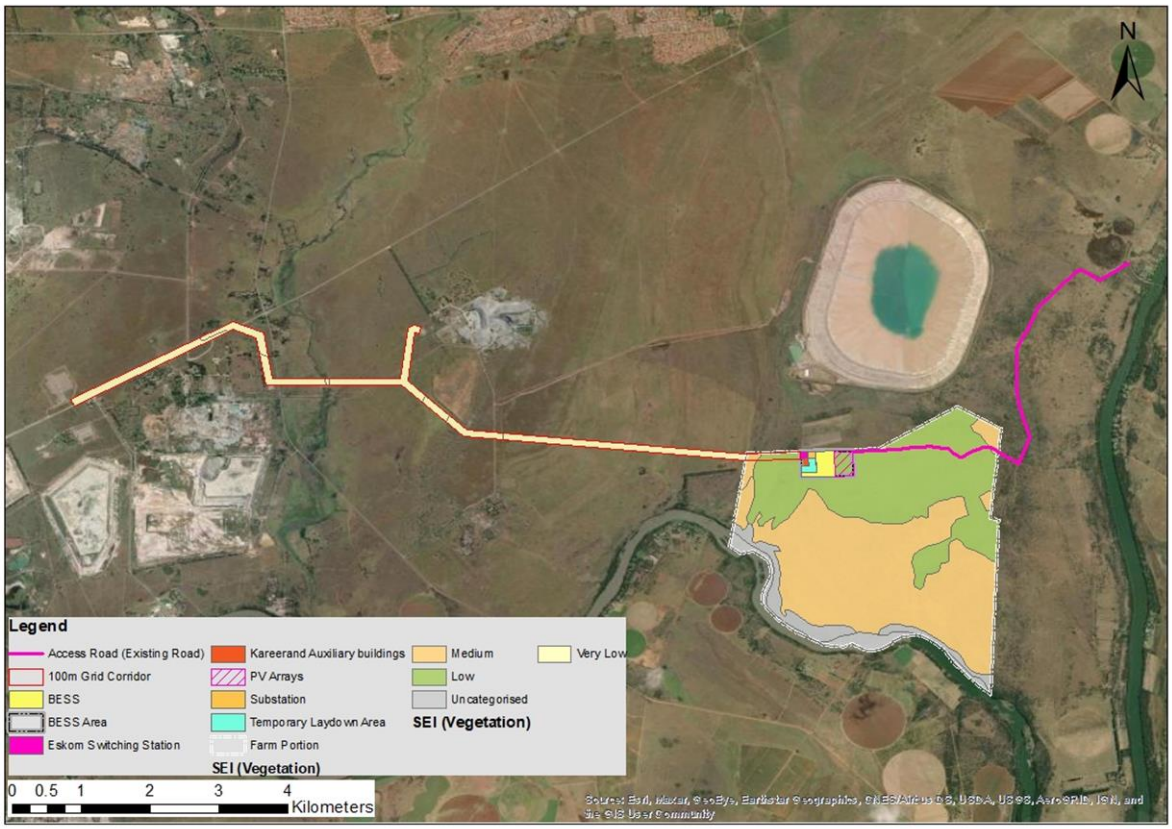

Figure 29: Botanical Sensitivity within the study site (Biodiversity Africa, 2024)

According to the Terrestrial Biodiversity Specialist, a total of 49 plant species from 26 families were recorded within the project area (a full species list has been included in Appendix 1 of the Terrestrial Biodiversity Assessment in Appendix E1).

Figure 30: Number and Family of Species Recorded in the Project Asre of Influence (Biodiversity Africa, 2024)

Family	No. Species	Family	No. Species
FABACEAE	5	ALLIACEAE	1
ASTERACEAE	4	ASPARAGACEAE	1
MALVACEAE	4	CACTACEAE	1
ANACARDIACEAE	3	CELASTRACEAE	1
APOCYNACEAE	3	COMMELINACEAE	1
ASPHODELACEAE	3	DIPSACACEAE	1
AGAVACEAE	2	HYPOXIDACEAE	1
CONVOLVULACEAE	2	OLEACEAE	1
HYACINTHACEAE	2	POLYGALACEAE	1
POACEAE	2	PTERIDACEAE	1
RHAMNACEAE	2	RUBIACEAE	1
SOLANACEAE	2	THYMELAEACEAE	1
VERBENACEAE	2	ULMACEAE	1

5.5.3 Species of conservation concern.

The Terrestrial Biodiversity Specialist conformed that of the 49 recorded species, 43 species are listed as Least Concern (LC) and six as Not Evaluated (NE). No SCC were recorded in the project area.

The DFFE Screening Report identified the Plant Species Theme as being medium based on the likely occurrence of one Species of Conservation Concern (sensitive species 691) within the project area. Sensitive specie 691 is listed as VU and is known from fewer than ten locations occurring between Belfast, Ermelo and Wolmaranstad. It is associated with undulating grassland in damp areas. Since there are wetlands present, the likelihood of occurrence of these species within these areas is medium. However, if present, project infrastructure can be designed to avoid populations of this species ensuring that impacts on individuals are low to negligible.

5.6 TERRESTRIAL FAUNAL COMPONENT OF THE SITE

Biodiversity Africa undertook an Animal Species Assessment which formed part of larger Terrestrial Biodiversity Impact Assessment. Please refer to the Terrestrial Biodiversity Impact Assessment attached in **Annexure E1** from which the following has been drawn.

5.6.1 Amphibians

The project area is included in the distribution of 18 amphibian species of which 14 have been confirmed within the same QDS as the project area.

Table 11: Amphibian Species with a distribution that includes the project area (The Biodiversity Company, 2024)

Family	Scientific name	Common name	Red list category
Bufonidae	*Schismaderma carens*	Red Toad	Least Concern
Bufonidae	*Sclerophrys capensis*	Raucous Toad	Least Concern
Bufonidae	*Sclerophrys garmani*	Olive Toad	Least Concern (IUCN, 2016)
Bufonidae	*Sclerophrys gutturalis*	Guttural Toad	Least Concern (IUCN, 2016)
Bufonidae	*Sclerophrys poweri*	Power's Toad	Least Concern
Hyperoliidae	*Kassina senegalensis*	Bubbling Kassina	Least Concern
Microhylidae	*Phrynomantis bifasciatus*	Banded Rubber Frog	Least Concern
Phrynobatrachidae	*Phrynobatrachus natalensis*	Snoring Puddle Frog	Least Concern (IUCN, 2013)
Pipidae	*Xenopus laevis*	Common Platanna	Least Concern
Pyxicephalidae	*Amietia delalandii*	Delalande's River Frog	Least Concern (2017)
Pyxicephalidae	*Amietia fuscigula*	Cape River Frog	Least Concern (2017)
Pyxicephalidae	*Cacosternum boettgeri*	Common Caco	Least Concern (2013)
Pyxicephalidae	*Pyxicephalus adspersus*	Giant Bull Frog	Near Threatened
Pyxicephalidae	*Strongylopus fasciatus*	Striped Stream Frog	Least Concern

No amphibians were observed during the field survey.

One species of conservation concern has a distribution which includes the project area, namely, the Giant Bull Frog (*Pyxicephalus adspersus*) which was listed as regionally Near-Threatened, but has since been downgraded to Least Concern by the IUCN SSC Amphibian Specialist Group.

5.6.2 Reptiles

The North West Province hosts 57 reptile species of which one is listed as vulnerable and three are endemic. Approximately 53 of these reptile species have a distribution range that includes the project area of which 32 have been observed within the same QDS as the project area.

Table 12: Reptile Species with a distribution that includes the project area (The Biodiversity Company, 2022)

Family	Scientific name	Common name	Red list category (SARCA 2014)
Lizards			
Agamidae	*Agama aculeata distanti*	Distant's Ground Agama	Least Concern
Agamidae	*Agama atra*	Southern Rock Agama	Least Concern
Chamaeleonidae	*Chamaeleo dilepis*	Common Flap-neck Chameleon	Least Concern
Gekkonidae	*Hemidactylus mabouia*	Common Tropical House Gecko	Least Concern
Gekkonidae	*Lygodactylus capensis*	Common Dwarf Gecko	Least Concern
Gekkonidae	*Pachydactylus capensis*	Cape Gecko	Least Concern
Gerrhosauridae	*Gerrhosaurus flavigularis*	Yellow-throated Plated Lizard	Least Concern
Lacertidae	*Nucras holubi*	Holub's Sandveld Lizard	Least Concern
Scincidae	*Panaspis wahlbergii*	Wahlberg's Snake-eyed Skink	Least Concern
Scincidae	*Trachylepis capensis*	Cape Skink	Least Concern
Scincidae	*Trachylepis punctatissima*	Speckled Rock Skink	Least Concern
Scincidae	*Trachylepis varia sensu lato*	Common Variable Skink Complex	Least Concern
Varanidae	*Varanus albigularis albigularis*	Rock Monitor	Least Concern
Varanidae	*Varanus niloticus*	Water Monitor	Least Concern
Snakes			
Colubridae	*Crotaphopeltis hotamboeia*	Red-lipped Snake	Least Concern
Colubridae	*Dasypeltis scabra*	Rhombic Egg-eater	Least Concern
Cordylidae	*Cordylus vittifer*	Common Girdled Lizard	Least Concern
Elapidae	*Hemachatus haemachatus*	Rinkhals	Least Concern
Elapidae	*Naja nivea*	Cape Cobra	Least Concern
Lamprophiidae	*Boaedon capensis*	Brown House Snake	Least Concern
Lamprophiidae	*Lamprophis aurora*	Aurora House Snake	Least Concern
Lamprophiidae	*Lycophidion capense capense*	Cape Wolf Snake	Least Concern
Lamprophiidae	*Psammophis brevirostris*	Short-snouted Grass Snake	Least Concern
Lamprophiidae	*Psammophylax tritaeniatus*	Striped Grass Snake	Least Concern
Lamprophiidae	*Pseudaspis cana*	Mole Snake	Least Concern
Typhlopidae	*Afrotyphlops bibronii*	Bibron's Blind Snake	Least Concern
Typhlopidae	*Rhinotyphlops lalandei*	Delalande's Beaked Blind Snake	Least Concern
Viperidae	*Bitis arietans arietans*	Puff Adder	Least Concern
Viperidae	*Causus rhombeatus*	Rhombic Night Adder	Least Concern
Tortoises and Terrapins			
Pelomedusidae	*Pelomedusa galeata*	South African Marsh Terrapin	Not evaluated
Testudinidae	*Kinixys lobatsiana*	Lobatse Hinged Tortoise	Least Concern
Testudinidae	*Stigmochelys pardalis*	Leopard Tortoise	Least Concern

No reptile species of conservation concern have a distribution range which includes the project area.

5.6.3 Mammals

The QDS within which the project area occurs has confirmed the historical occurrence of 65 mammal species of which 55 could occur within the project area, namely, nine antelope species, 18 carnivore species, two primate species, four hare species, nine rodent species and the Aardvark, Hyrax, shrew and hedgehog species. Mammal species recorded during the field survey include the Warthog (*Phacochoerus africanus*), South African Ground Squirrel (*Xerus inauris*), Yellow Mongoose (*Cynictis penicillate*), Meerkat (*Suricata suricatta*) and Steenbok.

Table 13: Mammal Species with a distribution that includes the project area (The Biodiversity Company, 2024)

Family	Scientific name	Common name	Red list category
Artiodactyla			
Bovidae	*Damaliscus pygargus phillipsi*	Blesbok	Least Concern
Bovidae	*Pelea capreolus*	Vaal Rhebok	Near Threatened
Bovidae	*Raphicerus campestris*	Steenbok	Least Concern
Bovidae	*Redunca arundinum*	Southern Reedbuck	Least Concern
Bovidae	*Redunca fulvorufula*	Mountain Reedbuck	Least Concern
Bovidae	*Sylvicapra grimmia*	Bush Duiker	Least Concern
Bovidae	*Taurotragus oryx*	Common Eland	Least Concern
Bovidae	*Tragelaphus scriptus*	Bushbuck	Least Concern
Bovidae	*Tragelaphus strepsiceros*	Greater Kudu	Least Concern
Suidae	*Phacochoerus africanus*	Common Warthog	Least Concern
Carnivores			
Canidae	*Canis mesomelas*	Black-backed Jackal	Least Concern
Canidae	*Vulpes chama*	Cape Fox	Least Concern
Felidae	*Caracal caracal*	Caracal	Least Concern
Felidae	*Leptailurus serval*	Serval	Near Threatened
Felidae	*Pantherus pardus*	Leopard	Vulnerable
Felidae	*Felis nigripes*	Black-footed Cat	Vulnerable
Herpestidae	*Atilax paludinosus*	Marsh Mongoose	Least Concern
Herpestidae	*Cynictis penicillata*	Yellow Mongoose	Least Concern
Herpestidae	*Herpestes sanguineus*	Slender Mongoose	Least Concern
Herpestidae	*Ichneumia albicauda*	White-tailed Mongoose	Least Concern
Herpestidae	*Suricata suricatta*	Meerkat	Least Concern
Hyaenidae	*Hyaena brunnea*	Brown Hyena	Near Threatened
Hyaenidae	*Proteles cristata*	Aardwolf	Least Concern
Mustelidae	*Aonyx capensis*	African Clawless Otter	Near Threatened
Mustelidae	*Hydructus maculicollis*	Spotted-necked Otter	Near Threatened
Viveridae	*Genetta maculata*	Common Large-spotted Genet	Least Concern
Viverridae	*Genetta genetta*	Common Genet	Least Concern
Viverridae	*Genetta tigrina*	Cape Genet (Cape Large-spotted Genet)	Least Concern
Primates			
Cercopithecidae	*Chlorocebus pygerythrus*	Vervet Monkey	Least Concern

Family	Scientific name	Common name	Red list category
Cercopithecidae	*Chlorocebus pygerythrus pygerythrus*	Vervet Monkey (subspecies pygerythrus)	Least Concern
Cercopithecidae	*Papio ursinus*	Chacma Baboon	Least Concern
Lagomorph			
Leporidae	*Lepus capensis*	Cape Hare	Least Concern
Leporidae	*Lepus saxatilis*	Scrub Hare	Least Concern
Leporidae	*Pronolagus randensis*	Jameson's Red Rock Hare	Least Concern
Pedetidae	*Pedetes capensis*	South African Spring Hare	Least Concern
Rodents			
Bathyergidae	*Cryptomys hottentotus*	Southern African Mole-rat	Least Concern
Hystricidae	*Hystrix africaeaustralis*	Cape Porcupine	Least Concern
Muridae	*Aethomys namaquensis*	Namaqua Rock Mouse	Least Concern
Muridae	*Rhabdomys pumilio*	Xeric Four-striped Grass Rat	Least Concern
Sciuridae	*Paraxerus cepapi*	Smith's Bush Squirrel	Least Concern
Sciuridae	*Xerus inauris*	South African Ground Squirrel	Least Concern
Thryonomyidae	*Thryonomys swinderianus*	Greater Cane Rat	Least Concern
Muridae	*Otymys auratus*	Vlei Rat	Near Threatened
Nesomyidae	*Mystromys albicaudatus*	White-tailed Rat	Vulnerable
Tubulidentata			
Orycteropodidae	*Orycteropus afer*	Aardvark	Least Concern
Hyracoidea			
Procaviidae	*Procavia capensis*	Cape Rock Hyrax	Least Concern
Eulipotyphla			
Erinaceidae	*Atelerix frontalis*	Southern African Hedgehog	Near Threatened
Soricidae	*Myosorex varius*	Forest Shrew	Least Concern

Four vulnerable and seven near threatened mammal species have a distribution which includes the project area. Of these species, only three (Southern African Hedgehog, Grey Rhebok and Serval) have a high likelihood of occurrence within the project area of influence. Since the Serval is typically associated with watercourses and the rhebok with ridges, the likelihood that the project will have a direct impact on these species' habitat is low. The hedgehog prefers dense vegetation and rocky outcrops for nesting and foraging and as such the likelihood of it using the project site is low as neither of these habitat requirements are present.

5.7 AVIFAUNAL COMPONENT OF THE STUDY SITE

Mr Lukas Niemand of Pachnoda consulting undertook an Avifaunal Assessment for the proposed Kareerand Battery Energy Storage Facility. Please refer to the Avifaunal Impact Assessment attached in **Annexure E3** from which the following general descriptions of the avifauna on site has been drawn.

The avifaunal specialist identified the following avifaunal habitat types across the study site (this includes both the BESS site as well as the Grid Connection Infrastructure that is being facilitated as part of a separate environmental process:

- Open savannoid grassland with bush clump mosaics.

- Rocky grassland with bush clump mosaics.
- Dense microphyllous bushveld.
- Vachellia erioloba bushveld.
- Secondary/regenerating grassland.
- Wetlands and floodplains: Koekemoerspruit.
- Wetlands and floodplains.
- Transformed areas.

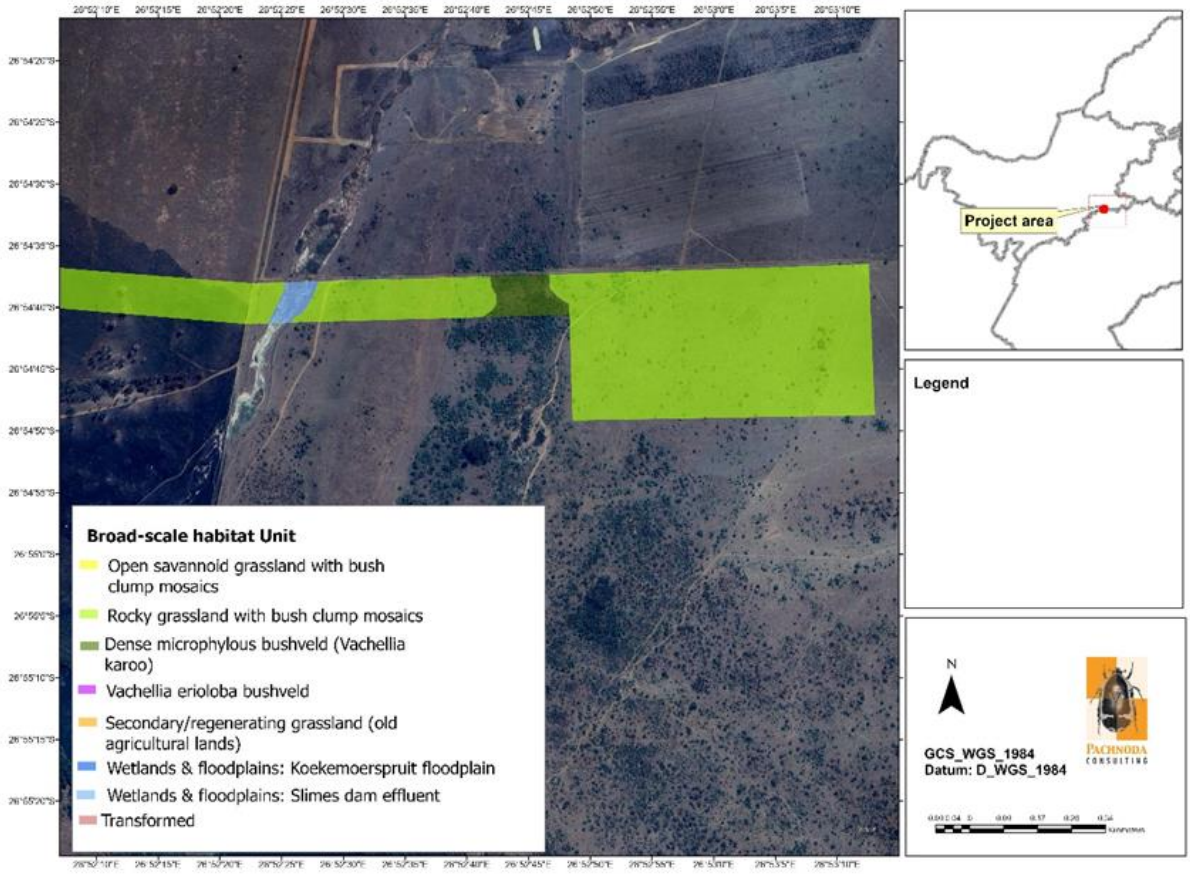

Figure 31: Avifaunal Habitat Map (Pachnoda, 2024).

The Proposed BESS site was classified by the specialist as having a Medium Avifaunal Sensitivity.

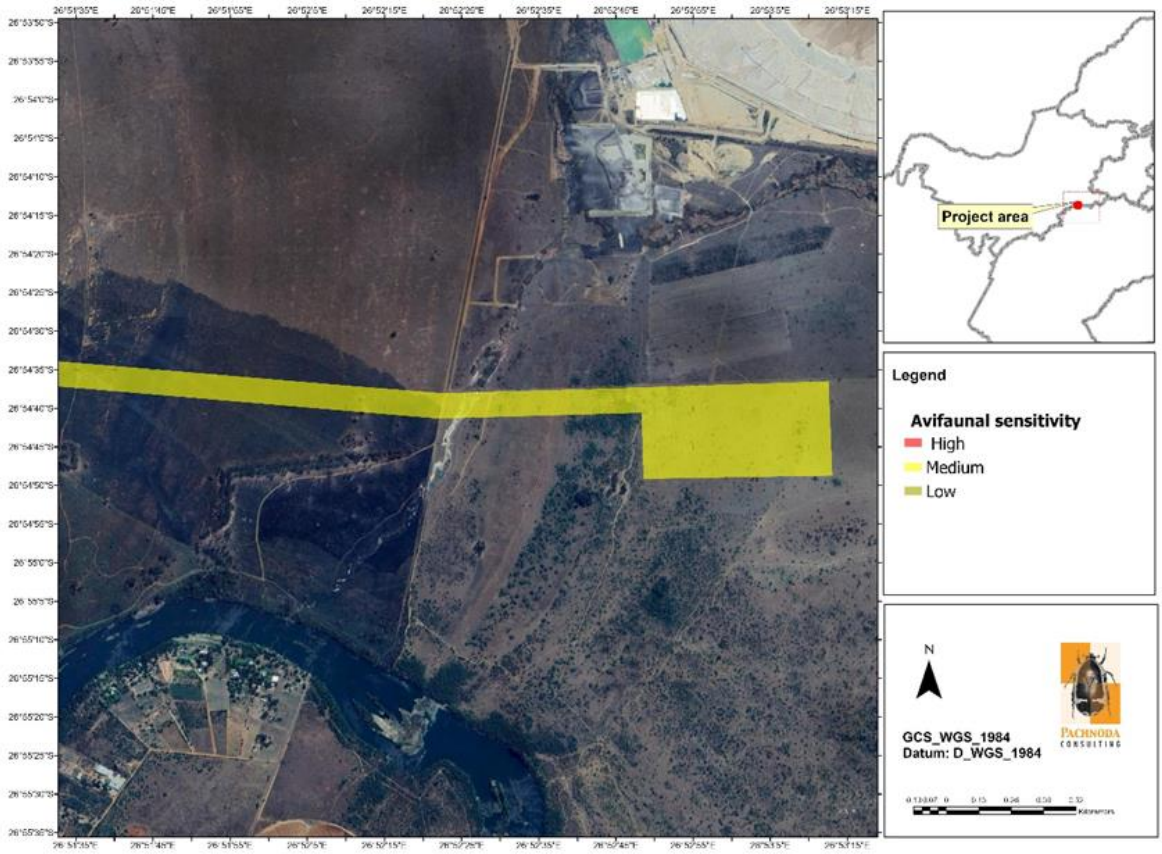

Figure 32: Avifaunal Sensitivity (Pachnoda, 2024)

Approximately 223 bird species are expected to occur in the wider study area. This equates to 23 % of the approximate 987 species listed for the southern African subregion (and approximately 26 % of the 871 species recorded within South Africa).

However, the species richness obtained from the pentad grid 2640_2635 corresponding to the project area was slightly higher than the expected number of species, with 231 species recorded. The latter mainly includes waterbird and shorebird taxa which were predominantly absent from the study site due to the absence of suitable wetland habitat.

Of the 223 bird species expected to occur in the project area, 11 are threatened or near threatened species , 16 are southern African endemics and 25 are near-endemic species. In addition, one threatened species (Secretarybird Sagittarius serpentarius) was observed on habitat immediately adjacent to the study site. Furthermore, 10 southern African endemics and 14 near-endemic species were confirmed on the study site and the immediate surroundings.

5.8 AQUATIC COMPOSITION OF THE STUDY SITE

The Biodiversity Company undertook an Aquatic Ecosystems Assessment. Please refer to the Aquatic Biodiversity Compliance Statement attached in **Annexure E2** from which the following has been drawn.

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices (GN) 320 (20 March 2020): “Procedures for the Assessment and Minimum Criteria

for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation" (Reporting Criteria). The National Web based Environmental Screening Tool has characterised the aquatic theme sensitivity as "Low" for the PAOI.

The specialist confirmed that development area was traversed on foot, with serval checks being undertaken to identify any soil wetness indicators, and to determine the local soil forms.

No natural wetlands are riverine systems are located within the Project Area of Influence. There is a delineated valley bottomed wetland present to the west of the proposed BESS Footprint. This Valley Bottom Wetland will be traversed by the proposed grid connection infrastructure (Application to be administered by the provincial authority)

5.9 SOCIO ECONOMIC CONTEXT

This section is summarised from the Social Impact Assessment undertaken by Donaway Environmental (Appendix E8) and provides an overview of the spatial context of the Province, District Municipality, and Local Municipality within which Kareerand Battery Energy Storage Facility is proposed, and furthermore provides the socio-economic basis against which potential social issues have been identified and assessed.

Table 14: Spatial Context of the study area for the development of the Kareerand Battery Energy Storage Facility Facility and associated infrastructure

Province	North West Province
District Municipality	Dr Kenneth Kaunda District Municipality
Local Municipality	JB Marks Local Municipality
Ward number(s)	1 & 18
Nearest town(s)	Klerksdorp

5.9.1 North West Province

The North West Province is situated in the central-northern extent of South Africa. The Province is bordered by Northern Cape Province to the west, and south-west; Free State Province to the south; Gauteng Province to the east; Limpopo Province to the north-east; and Botswana to the north. It occupies an area of land approximately 104 882km² in extent, making it South Africa's 6th largest in terms of area; and has a population of 3 509 953 (2011) and population density of 33/km² (2011), making it South Africa's 7th most densely populated Province.

The North West Province is characterised by altitudes ranging from 920 – 1782m amsl, which makes it one of the provinces with the most uniform terrain. The central and western extents of the Province are characterised by gently undulating plains, while the eastern extent is characterised as mountainous, and includes the Magaliesberg mountain range. Ancient igneous rock formations dominate the north-eastern and north-central extent of the Province; and the Gatsrand between Potchefstroom and Carletonville is considered to be one of the most ancient preserved landscapes in the world. The geology of the Province is significant given its mineral resources which are rich in platinum, gold, uranium, iron, chrome, manganese and diamonds.

In terms of land use patterns, approximately 69% of the North West Province is in a natural, or near-natural state; while 31% of the province is irreversibly modified as a result of croplands (25.6%), urban (3.5%), and mining (0.7%) activities. The Province is predominantly rural with the main economic activities comprising mining and agriculture. The North West Province comprises 4 Districts, namely Bojanala Platinum, Ngaka Modiri Molema, Dr Ruth Segomotsi Mompati, and Dr Kenneth Kaunda.

5.9.2 Dr Kenneth Kaunda DM

The Dr Kenneth Kaunda District Municipality (DKKDM) is situated at the southern part of the North West Province and borders both the Gauteng (located 65km south-west of Johannesburg) and the Free State Province. The DKKDM is the smallest of the four districts and is made up of three local municipalities namely, B Marks, City of Matlosana, and Maquassi Hills.

Mining is the dominant economic activity of the district, Additional sectors in terms of employment are social services, trade and farming. Potchefstroom is home to several tertiary institutions and training centres while the economic base for Ventersdorp is agriculture. The main economic sectors in the DKKDM include mining, trade, finance, business services, manufacturing, construction, government services and agriculture.

The district is serviced by several primary roads, with the N12 Treasure Corridor forming the main development axis in the district and serving as a potential concentration point for future industrial, commercial and tourism development. DKKDM is a region with a rich and diverse natural and cultural heritage, with the potential for sustained economic growth. The major cities/towns in the District municipality include, Hartbeesfontein, Klerksdorp, Leeudoringstad, Makwassie, Orkney, Potchefstroom, Stilfontein, Ventersdorp, Witpoort and Wolmaransstad.

5.9.3 JB Marks Local Municipality

The JB Marks Local Municipality (CMLM) is located in the DKKDM in the North West Province. It is one four local municipalities in this district. he major towns are Hartbeesfontein, Klerksdorp, Orkney and Stilfontein (Local government handbook, 2021). The CMLM is also located 115km south of Rustenburg and the platinum belt. Klerksdorp, Jouberton, Alabama, Manzilpark, Orkney, Kanana, Vaal Reefs, Stilfontein, Khuma, Tigane and Hartebeesfontein area all areas that form part of the CMLM. The following characteristiecs are found within the CMLM (South African Cities Network, 2012):

- Klerksdorp was originally established and developed as a regional service centre between the gold mining areas on the Rand and the diamond mining fields in the Cape in the late 1800s. The paper makes the specific point that this historical role as regional/rural service centre has helped to mitigate the impact of mine downscaling since the early 1990s. Although Klerksdorp has always been the main economic hub of the greater municipal area, it has not specifically been involved in the mining activities but has maintained the function of a regional service centre in terms of agricultural supplies, retail facilities, schools and medical services which stretches further than the boundaries of the Dr Kenneth Kaunda District Municipality into the North West Province and even Botswana. It is precisely this notion which has helped sustain the area in a period of considerable mining decline over the last 20 years.
- Since the early 1990s but more specifically since 2001, mining activities have downscaled drastically. This downscaling also lead to nearly 75% of the original workforce in 1996 being retrenched by 2011. It seems as if significant percentages of these retrenchment packages have been reinvested in the area because the housing market has improved despite the decrease in employment. Entrepreneurial activities have also intensified due to compulsory self-employment advancements..
- The declining mining industry has resulted in the number of people living in poverty almost doubling between 1996 and 2011. This is due to the fact that the municipal area is characterised by high unemployment levels (19.6%) – albeit the fact that this percentage is somewhat lower than the national average.
- Although the economic decline of the area is similar to that experienced in the Free State Goldfields the overall impact in JB Marks seems significantly less than in the Free State

Goldfields. The rapid economic decline of the area has been buffered by (1) the regional service character of the area (2) a business focus which has expanded into Botswana (3) proximity to platinum belt (4) proximity to Gauteng (in fact some researchers view the areas as a spatial extension of Gauteng) and more specifically, proximity to the West Rand.

- Currently, the N12 Treasure Route puts Klerksdorp in the centre of new developments. Towards the west of the N12, developments comprise residential development, retail nodes and mixed land usages. This is where the new Rio Casino Resort and shell garage (future truck inn) was developed as well as a Tower Mall retail centre to open at the end of 2013. The east of this corridor is earmarked for bulk services, with projects like a regional shopping complex, integrated housing, IT Call Centre, and light industry (medical and mining supplies show potential). This development has also affected the decentralisation of business into the northern suburbs of Klerksdorp and business activities along the N12. These activities probably have two main implications. In the first place the emphasis on new trade space probably confirms the regional service role of the town. In fact the distance of influence has probably increased over the past 20 years. Secondly, the corridor development suggests the importance of the link with Gauteng.
- Like many other cities and towns in South Africa, old infrastructure is a matter of concern. The old infrastructure systems are already in need of drastic upgrades and continuous maintenance – this pressure will only increase, resulting in various challenges. At the same time the historic role related to mining has created significant problems for municipal management in the advent of mine downscaling and closure. One such an example is the inability of the municipality to institute an appropriate billing system.

5.10 VISUAL CONTEXT

Donaway Environmental undertook a Visual Impact Assessment of the proposed Kareerand Battery Energy Storage Facility (See Appendix E7). The following visual context was determined from this study.

5.10.1 Landscape Context

The proposed project is located in a region with limited array of natural landforms and with lower differences in elevation as it falls in a region mainly focused on crop cultivation and livestock farming. Additionally, mining plays a big role in the surrounding region with mine heaps and tailings dams as prominent elevated landscape features. The region slopes in a southern direction toward the Vaal River, located approximately 800m south of the powerline corridor and 1.1km south-west of the BESS facility. Within a 10km PAOI from the grid connection and BESS facility, the elevation above mean sea level (AMSL) varies with about 113m. The higher areas reach approximately 1396m AMSL atop a mine tailings dam, while the lower regions descend to 1283m AMSL at the Vaal River.

For a better understanding of the visual landscape surrounding the proposed development, please refer to the Topography map below as well as photos of the surrounding landscape

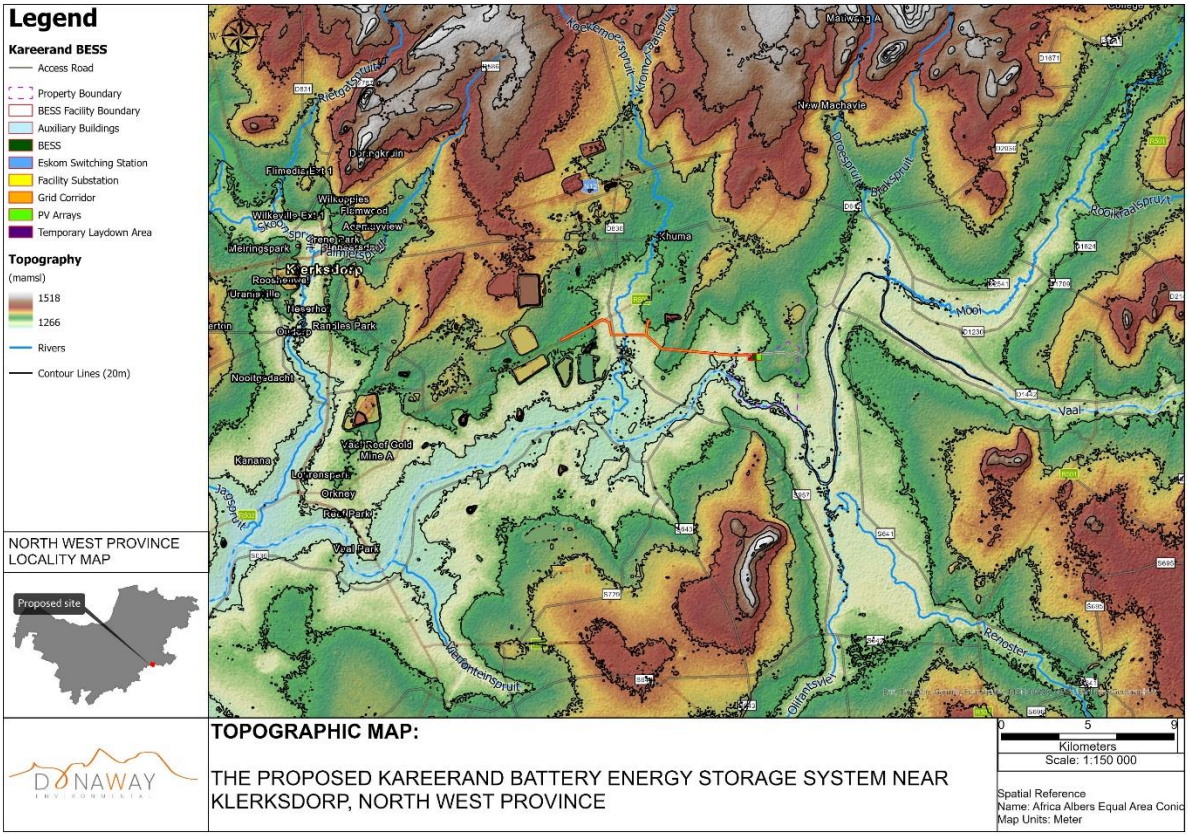

Figure 33. Topographical Map, (Donaway Environmental, 2024)

5.10.2 VISUAL FEATURES AND SENSITIVE RECEPTORS

The study area is characterised by a variety of landscape features that possess a visual or scenic value. These natural elements along with potential sensitive visual receptors serve as a visual baseline for assessing the surroundings. The following landscape features and potential sensitive visual receptors can be observed::

Table 15: Landscape Features (Donaway Environmental, 2024)

Scenic Resource	Landscape features within the 10km PAOI.
Topographic Features	No significant topographic features, except for mine heaps and tailings dams scattered throughout the region. These features do not add to scenic value but are historical in nature. The nearest topographic feature as part of mining developments is a tailings dam, located a mere 700m north of the proposed development.
Water Features	The Vaal River stands out as the most prominent water feature. The Vaal River is known for recreational activities and one of South Africa's most important rivers. More scenic views along the Vaal River.
Vegetation Features	The only specific vegetation that draws more attention is the vegetation along the Vaal River and certain area to the south with more pleasant vegetation features. The project property has better vegetation features in terms of trees as it being used for game farming. Please refer to **section 3.1.2: Vegetation Patterns** for a detailed overview.
Cultural Landscapes	No specific cultural landscape except that of the agriculture landscape where some farms are carried over to new generations within the family.

Table 16: Potential Sensitive Receptors (Donaway Environmental, 2024)

Sensitive Receptors	Potential sensitive receptors within the 10km PAOI.
Nature reserves and national parks	Two nature reserves are located within the 10km PAOI namely: • Bushybend Private Nature Reserve (part of development footprint). Proclamation – 1973. • Mispah Game Farm. Proclamation – 2001. Activities with this nature reserve consist only of mining.
Human settlements and farmsteads	Urban development within the 10km PAOI includes the town of Stilfontein and associated township, Khuma, as well as Vaal Reefs a residential mining development. Numerous farmsteads and river homes are also located within the 10km PAOI. River homes are mainly used for recreational purposes and residents.
Scenic routes and arterial roads	No specific scenic routes. Arterial roads include the R502 regional road and National Route 12 (N12).
Cultural and heritage sites	These form part of the heritage study, if any. A development might have a visual impact on cultural or heritage sites only if these sites are visited frequently by tourists or interested parties.
Tourism facilities / sites	Some lodging facilities in the area, especially along the Vaal River, but no specific tourism sites.

6. IMPACT ASSESSMENT

This section was of the report was completed with input from the following specialists:

- Terrestrial Biodiversity (Biodiversity Africa, 2024)
- Avifauna (Pachnoda Consulting, 2024)
- Plant Species (Biodiversity Africa, 2024)
- Animal Species (Biodiversity Africa, 2024)
- Aquatic Biodiversity (The Biodiversity Company, 2024)
- Agricultural (The Biodiversity Companyy, 2024)
- Palaeontology (Prof Marion Bamford, 2024)
- Archaeology and Heritage (Beyond Heritage, 2024)
- Visual (Donaway Environmental, 2024)
- Socio Economic (Donaway Environmental, 2024)

The impacts will firstly be discussed per specialist discipline and then summarised in the impact summary and statement below.

6.1 ASSESSMENT METHODOLOGY

All possible impacts need to the assessed – the **direct, in-direct as well as cumulative impacts**. The following general assessment methodology has been applied:

- **Nature of the impact:** impacts associated with the proposed Kareerand Battery Energy Storage Facility have been described in terms of whether they are negative or positive and to what extent.
- **Duration of impacts**: Impact were assessed in terms of their anticipated duration:

- Short term (e.g., during the construction phase – 0 – 2 years)
- Medium term (e.g., during part or all of the operational phase – 2 - 20 years)
- Long term (e.g., > 20 years)
- Permanent (e.g., where the impact is for all intents and purposes irreversible)
- Discontinuous or intermittent (e.g., where the impact may only occur during specific climatic conditions or during a particular season of the year)

- **Intensity or magnitude**: The size of the impact (if positive) or its severity (if negative):
  - Low, where the receiving environment (biophysical, social, economic, cultural etc) is negligibly affected or where the impact is so low that the remedial action is not required;
  - Medium, where the receiving environment (biophysical, social, economic, cultural etc) is altered, but not severely affected, and the impact can be remedied successfully; and
  - High, where the receiving environment (biophysical, social, economic, cultural etc) would be substantially (i.e., to a very large degree) affected. If a negative impact, could lead to irreplaceable loss of a resource and/or unacceptable consequences for human wellbeing.
- **Probability**: Should describe the likelihood of the impact actually occurring indicated as:
  - Improbable, where the possibility of the impact is very low either because of design or historic experience;
  - Probable, where there is a distinct possibility that the impact will occur;
  - Highly probable, where it is most likely that the impact will occur; or
  - Definite, where the impact will occur regardless of any prevention measures.
- **Significance:** The significance of impacts can be determined through a synthesis of the assessment criteria. Significance can be described as:
  - Low, where it would have negligible effect on the receiving environment (biophysical, social, economic, cultural etc), and on the decision;
  - Medium, where it would have a moderate effect on the receiving environment (biophysical, social, economic, cultural etc), and should influence the decision;
  - High, where it would have, or there would be a high risk of, a large effect on the receiving environment (biophysical, social, economic, cultural etc). These impacts should have a major influence on the decision;
  - Very high, where it would have, or there would be a high risk of, an irreversible negative impact on the receiving environment (biophysical, social, economic, cultural etc) and irreplaceable loss of natural capital/resources or a major positive effect on human well-being. Impacts of very high significance should be a central factor in decision-making.
  - Provision should be made for with and without mitigation scenarios.
- **Reversibility:**
  - Reversible, the impact can be managed to a low to high degree and is not permanent; or
  - Irreversible, the impact can only be managed to a limited degree and is permanent.
- **Confidence**: The level of confidence in predicting the impact can be described as:

  - Low, where there is little confidence in the prediction, due to inherent uncertainty about the likely response of the receiving ecosystem, or inadequate information;
  - Medium, where there is a moderate level of confidence in the prediction, or
  - High, where the impact can be predicted with a high level of confidence
- **Consequence**: What will happen if the impact occurs
  - Insignificant, where the potential consequence of an identified impact will not cause detrimental impact to the receiving environment;
  - Significant, where the potential consequence of an identified impact will cause detrimental impact to the receiving environment.
  - Provision must be made for with and without mitigation scenarios.

The impacts should also be assessed in terms of the following aspects:

- **Status of the impact**

The specialist should determine whether the impacts are negative, positive or neutral ("cost – benefit" analysis). The impacts are to be assessed in terms of their effect on the project and the environment. For example, an impact that is positive for the proposed development may be negative for the environment. It is important that this distinction is made in the analysis.

- **Cumulative impact**

Consideration must be given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts must be evaluated with an assessment of similar developments planned and already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

Care must be taken to ensure that where cumulative impacts can occur that these impacts are considered and categorised as **additive** (incremental or accumulative); **interactive**, **sequential** or **synergistic**.

Based on a synthesis of the information contained in the above-described procedure, the specialists assessed the potential impacts in terms of the following significance criteria:

- **No significance**: The impacts do not influence the proposed development and/or environment in any way.
- **Low significance**: The impacts will have a minor influence on the proposed development and/or environment. These impacts require some attention to modification of the project design where possible, or alternative mitigation.
- **Moderate significance**: The impacts will have a moderate influence on the proposed development and/or environment. The impact can be ameliorated by a modification in the project design or implementation of effective mitigation measures.
- **High significance**: The impacts will have a major influence on the proposed development and/or environment.

Where relevant, all specialists have assessed the preferred footprint (Layout Alternative 1) and the No-Go Alternative 1 using the abovementioned general methodology as a Basis. Please note that each specialist utilises rating and weighting criteria specific to their discipline in order to determine the significance of specific impacts.

6.2 IDENTIFICATION OF IMPACTS ASSESSED

This section simply lists the potential key impacts identified and assessed by the various specialists (more details on the significance and ratings of these impacts are provided in section 6.4 – 6.11 below and in the specialist reports attached in Appendix E).

6.2.1 Terrestrial Biodiversity Impacts Assessed[18]

The terrestrial biodiversity specialist confirmed that the impacts on Terrestrial Biodiversity are likely to be negligible.

6.2.2 Agricultural Impacts Assessed[19]

Construction Phase Agricultural Impacts

- Loss of agricultural potential by occupation of land.
- Loss of agricultural potential by soil degradation

Operational Phase Agricultural Impacts

- Enhanced agricultural potential through increased financial security for farming operations.[20]
- Improved security against stock theft and other crime due to the presence of security infrastructure and security personal at the facility.[21]

6.2.3 Avifaunal Impacts Assessed

Construction Phase Avifaunal Impacts

- Loss of habitat and displacement of birds
- Creation of "new" avian habitat and bird pollution

Operational Phase Avifaunal Impacts

- Collision trauma caused by photovoltaic panels (the "lake-effect")
- Interaction with overhead power lines and reticulation
- Physical disturbances and habitat destruction caused during construction and maintenance.

Decommissioning Phase Avifaunal Impacts

- Loss of habitat and displacement of birds

6.2.4 Aquatic Biodiversity Impacts Assessed

The aquatic biodiversity specialist concluded that no freshwater resources as defined in the National Water Act are present on site. The proposed footprint has furthermore been set back to be outside of the 500m Zone of Regulation from any watercourse. The proposed project is therefore unlikely to have any impact on Aquatic Biodiversity.

6.2.5 Heritage Impacts Assessed[22]

- Impact on possible grave KRR01[23].

[18] Terrestrial Impacts Assessed, include the assessment of impacts on Plant and Animal Species as per the environmental themes and protocols.

[19] The agricultural impacts identified apply equally to all phases of the development.

[20] This is deemed to be a positive agricultural impact.

[21] This is deemed to be a positive agricultural impact.

[22] Impact on heritage resources will occur in the construction phase and that impact will remain.

[23] This is situated outside of the gird corridor, the site could be indirectly impacted, and the site should be avoided with a 30m buffer zone. If the site cannot be avoided, further investigation will be required to verify that the site is a grave or not

6.2.6 Visual Impacts Assessed

Construction Phase Visual Impacts

- Loss of site landscape character due to the removal of vegetation and the construction of the PV structures and associated infrastructure.
- Wind-blown dust due to the removal of large areas of vegetation.
- Possible soil erosion from temporary roads crossing drainage lines.
- Wind-blown litter from the laydown and construction sites.

Operational Phase Visual Impacts

- Loss of site landscape character due to the operation of the PV structures and associated infrastructure.
- Visual intrusion to adjacent property owners and road users.

Decommissioning Phase Visual Impacts

- Movement of large vehicles required for the removal of the PV panels, power lines, mono-poles and substations.
- Wind-blown dust from impacts to vegetation.
- Wind-blown litter from the laydown and construction sites.

6.2.7 Traffic Impacts Assessed

Construction Phase Traffic Impacts

- Increased Traffic on regional haulage routes
- Increased traffic on local routes
- Construction and maintenance of Gravel Roads in the Vicinity of the Site

Operational Phase Traffic Impacts

- Increased Traffic During operational Phase.

Decommissioning Phase Traffic Impacts

- Increased traffic on local routes
- Construction and maintenance of Gravel Roads in the Vicinity of the Site

6.2.8 Social Impacts Assessed

Construction Phase Social Impacts

- Direct and indirect employment opportunities
- Economic multiplier effects
- Influx of jobseekers and change in population
- Safety and security impacts
- Impacts on daily living and movement patterns
- Nuisance impacts, including noise and dust
- Visual impacts and sense of place impacts

Operational Phase Social Impacts

- Direct and indirect employment opportunities
- Development of non-polluting, renewable energy infrastructure
- Contribution to Local Economic Development (LED) and social upliftment
- Visual and sense of place impacts
- Impacts associated with the loss of agricultural land.

6.3 TERRESTRIAL BIODIVERSITY IMPACTS

A Terrestrial Biodiversity Compliance Statement (covering Animal Species, Plant Species and Terrestrial Biodiversity) was undertaken by Biodiversity Africa and is attached in Annexure E1**.**

No faunal or plant species of conservation concern were recorded within the project area or are likely to occur within the project area.

Although the vegetation recorded within the project area is Rand Highveld Grassland, which is listed as a VU ecosystem, it is heavily degraded as a result of ongoing grazing by livestock such as cattle. Furthermore, the infrastructure will only result in the loss of 0.0006% of the remaining extent of this vegetation type. The SEI analysis for the project area takes into account the presence of threatened ecosystems and SCC combined with functional integrity and receptor resilience. Based on the degraded nature of the project area and the small infrastructure footprint, the project area has a sensitivity of low to very low.

Given that the overall SEI for the project area is low, impacts from project activities on the terrestrial biodiversity, fauna and flora are low to negligible. Management guidelines indicate that for area of low SEI, medium to high impacts are acceptable provided mitigation measures are implemented and for areas of very low SEI, development of medium to high impacts are acceptable and mitigation measures may not be required.

Recommended management actions that include mitigation measures to further reduce the impact of the project on the terrestrial biodiversity environment have been outlined in chapter 8. These recommendations must be included in the Environmental Management Plan and as a condition of authorisation.

6.4 AVIFAUNAL IMPACTS

An Avifaunal Impact Assessment was undertaken by Mr Lukas Niemand of Pachnoda Consulting and is attached in Annexure E3**.** The following has been summarised from this assessment.

The specialist identified the following avifaunal impacts that have been assessed further in the tables below:

- Loss of habitat and displacement of birds
- Creation of "new" avian habitat and bird pollution
- Collision trauma caused by photovoltaic panels (the "lake-effect")
- Interaction with overhead power lines and reticulation
- Areas where bird collisions are likely to be high could be ameliorated by marking the lines with
- Physical disturbances and habitat destruction caused during construction and maintenance

6.4.1 Construction Phase Avifaunal Impacts

Table 17: Assessment of Avifaunal Impacts during the construction phase.

Nature: The loss of natural habitat and displacement of birds through physical transformation, modifications, removals and land clearance.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Site
Duration	Long-term	Long-term
Magnitude / Severity	Moderate	Low
Probability	Definite	Highly Probable

Significance	**Medium**	**Medium**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment.	Yes	Yes
Can impact be mitigated?	Yes, to some extent.	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	
Residual:	Decreased bird species richness, low evenness values and subsequent loss of avian diversity on a local scale. The impact will also result in fragmentation of habitat.	

6.4.2 Operational Phase Avifaunal Impacts

Table 18: Assessment of Avifaunal Impacts During the operational phase

Nature: The creation of novel or new avian habitat for commensal bird species or superior competitive species.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Footprint	Footprint
Duration	Medium-term	Medium-term
Magnitude / Severity	Minor	Minor
Probability	Probable	Improbable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	No	No
Can impact be mitigated?	Yes, with experimentation.	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	
Residual:	Secondary displacement by completive bird species such as crows and increased fecundity rate for commensal bird species that are adapted to anthropogenic activities. The impact is regarded as low.	

Nature: Avian collision impacts related to the PV arrays (collision with the PV panels).		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Site and immediate surroundings	Site
Duration	Long-term	Medium-term
Magnitude / Severity	Moderate	Low
Probability	Probable	Probable
Significance	**Medium**	**Low**

Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment.	Yes, potential loss of waterfowl species.	Yes, potential loss of some waterfowl species.
Can impact be mitigated?	Yes, with experimentation.	Yes, with experimentation.
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	
Residual:	Direct mortality is possible and may still occur irrespective of applied mitigation measures. Regular and systematic monitoring is proposed to assess the efficacy of applied mitigation and further research and testing is suggested to improve mitigation measures (e.g. bird deterrent devices). The residual impact is regarded as moderate.	

Nature: Avian collision impacts related to overhead power lines.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Long-term	Long-term
Magnitude / Severity	High	Moderate
Probability	Highly Probable	Highly Probable
Significance	**Medium**	**Medium**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment.	Yes (to some extent), owing to the potential collision by terrestrial birds, waterbird species and certain bird of prey species.	Yes (to some extent), owing to the potential collision by terrestrial birds, waterbird species and certain bird of prey species.
Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	
Residual:	Direct mortality is possible and may still happen irrespective of applied mitigation measures. The residual impact will be low.	

Nature: Avian electrocution related to the new distribution lines.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Site
Duration	Long-term	Long-term
Magnitude / Severity	High	Moderate
Probability	Highly Probable	Probable
Significance	**Medium**	**Low-Medium**
Status	Negative	Negative
Reversibility	Low	Low

Irreplaceable loss of resources / Sensitivity of receiving environment.	Yes (to some extent), owing to the potential collision by terrestrial birds, waterbird species and certain bird of prey species.	Yes (to some extent), owing to the potential collision by terrestrial birds, waterbird species and certain bird of prey species.
Can impact be mitigated?	Yes, to some extent.	Yes, to some extent.
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

6.4.3 Decommissioning Phase Avifaunal Impacts

The decommissioning avifaunal impacts are deemed to be the same as the construction phase impacts. Please see the tables above for an assessment of the construction phase impacts, that will apply equally to decommissioning.

6.4.4 Concluding Statement – Avifauna

The specialist confirmed that seven avifaunal habitat types were identified on the study area and surroundings, consisting of open grassland with bush clumps (ranging from open savannoid grassland to rocky grassland), wetlands and floodplains, secondary grassland and Vachellia dominated bushveld. The wetlands and floodplains (e.g. Koekemoerspruit) provided foraging, roosting and breeding habitat for many waterbird and wading bird taxa, although the occurrence of such taxa on the BESS facility was considered to be low. Approximately 286 bird species were expected to occur in the wider study area, of which 210 species were observed in the area. The expected richness included 12 threatened or near threatened bird species. However, the occurrence of threatened and near threatened bird species was predicted to be low, apart from the regionally vulnerable Lanner Falcon (Falco biarmicus) which was regarded as a regular foraging visitor to the area. In addition, large sections of open grassland east of the Koekemoerspruit (along the proposed grid connection) provided suitable foraging habitat for Secretarybirds (Sagittarius serpentarius), although this species was regarded as uncommon in the area (sensu SABAP Reporting rates). Approximately,17 southern African endemics and 23 near-endemic species were expected to be present.

An evaluation of potential and likely impacts on the avifauna revealed that the impact significance was moderate to low after mitigation (depending on the type of impact). No fatal-flaws were identified during the assessment, although it was recommended that the proposed mitigation measures a be implemented during the construction and operational phase of the project.

6.5 AGRICULTURAL IMPACTS

The Biodiversity Company completed a specialist assessment of the potential impacts of Kareerand Battery Energy Storage Facility on the agricultural environment. A copy of this assessment is attached in Annexure E3, and the outcome of the assessment is summarised below.

6.5.1 Assessment of Agricultural Impacts

An Agricultural Compliance Statement is not required to complete an impact assessment, but where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr must be provided. The following measures are provided:

- Vegetation clearance must be restricted to areas authorised for development;
- Land clearing and preparation may only be undertaken immediately prior to construction activities and within authorised areas;
- A stormwater management plan must be developed and implemented for the project; and
- If soil erosion is detected, the area must be stabilised using geo-textiles and facilitated re-vegetation.

6.5.2 Concluding Statement – Agriculture

The three soil forms found in the proposed project area were Vaalbos, Iswepe and Glenrosa soil forms characterised by a restrictive land potential "L7" and ultimately a "Low" sensitivity due to the present poor climate conditions. The soils have low suitable for crop production based on their very restrictive permeability.

The land capability sensitivity (DAFF, 2017) is dominated by land capabilities with "Low Moderate to Moderate", with few areas associated with "Moderate High" sensitivity. There were no field crop boundaries identified within the proposed project area, following the agricultural theme screening tool.

It is the specialist's opinion that the proposed Kareerand BESS project and associated infrastructure will have an overall low residual impact on the agricultural production ability of the land. That being the case, the proposed Kareerand BESS project and associate infrastructure may be favourably considered for development.

6.6 HERITAGE IMPACTS

A detailed Heritage Impact Assessment including an Archaeological Impact Assessment and Palaeontology Impacts Assessment was undertaken by Mr Jaco van der Walt of Beyond Heritage with palaeontological input from professor Marian Bamford. A copy of these assessments are attached in Annexures E5 and E6 and the outcome of the various assessments are summarised below.

Impacts to heritage resources without mitigation within the project footprint will be permanent and negative and occur during the pre-construction and construction activities.

6.6.1 Construction Phase Heritage Impacts

Table 19: Assessment of Heritage Impacts During the Construction phase

Nature: Construction activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Permanent	Permanent
Magnitude / Severity	Moderate	Moderate
Probability	Probable	Probable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Yes	Yes
Can impact be mitigated?	NA	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

6.6.2 Operational Phase Heritage Impacts

All Impacts on surface and sub surface heritage resources occur during the construction phase of the development and persist through all phases, i.e. they are not reversible.

6.6.3 Closure and Decomissioning Phase Heritage Impacts

All Impacts on surface and sub surface heritage resources occur during the construction phase of the development and persist through all phases, i.e. they are not reversible.

6.6.4 Concluding Statement – Heritage

The specialist confirmed that during the survey, a possible grave (KRR01) marked by white rocks packed into the shape of a cross was recorded just outside the grid corridor near the BESS area. The possible grave is situated outside the grid corridor and should be avoided with a 30m buffer zone. No heritage resources were recorded within the BESS facility area.

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of varying sensitivities of very high, high, moderate, low, and insignificant paleontological sensitivity and an independent study by Prof Marion Bamford concluded that it is extremely unlikely that any fossils would be preserved in the overlying soils and sands of the Quaternary. There is a very small chance that fossils may occur below ground in dolomites of the Malmani Subgroup so a Fossil Chance Find Protocol should be added to the EMPr.

The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) 's approval.

6.7 VISUAL IMPACTS

Donaway Environmental undertook a detailed visual impact assessment of the proposed Kareerand Battery Energy Storage Facility. A copy of this assessment is attached in Annexure E8 of the BAR and a summary outcome thereof is provided below.

The visual specialist identified the following impacts that have been assessed in the tables below.

6.7.1 Construction Phase Visual Impacts

Table 20: Assessment of Visual Impacts during the construction phase.

Nature: Visual impact of construction activities on sensitive visual receptors and a rural landscape (BESS & PV).		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Short-term	Short-term
Magnitude / Severity	High	High
Probability	Definite	Probable
Significance	**Medium**	**Medium**
Status	Negative	Negative
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Significant loss of resources	Marginal loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Visual impact of construction activities on sensitive visual receptors and a rural landscape (Powerline Corridor).

	Without Mitigation	With Mitigation
Extent / Spatial Scope	Local/District	Local/District
Duration	Short-term	Short-term
Magnitude / Severity	Medium	Medium
Probability	Possible	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Marginal loss of resources	Marginal loss of resources
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

6.7.2 Operational Phase Visual Impacts

Table 21: Assessment of Visual Impacts during the Operational phase.

Nature: Visual impact of industrial operational infrastructure on sensitive visual receptors, landscape and scenic resources. Change in the sense of place of the local area (BESS & PV).		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Long-term	Long-term
Magnitude / Severity	Medium	Medium
Probability	Definite	Probable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Significant loss of resources	Marginal loss of resources
Can impact be mitigated?	Yes, but partially.	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Visual impact of industrial operational infrastructure on sensitive visual receptors, landscape and scenic resources. Change in the sense of place of the local area (Powerline Corridor).		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Long-term	Long-term
Magnitude / Severity	Medium	Medium
Probability	Probable	Possible

Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Marginal loss of resource	Marginal loss of resource
Can impact be mitigated?	Yes, but partially.	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Visual impacts of lighting at night on sensitive visual receptors and the effect of sky glow on a rural landscape.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Long-term	Long-term
Magnitude / Severity	Medium	Medium
Probability	Probable	Possible
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Marginal loss of resource	No loss of resource
Can impact be mitigated?	Yes, but only partially.	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

6.7.3 Decommissioning Phase Visual Impacts

The visual impacts during the Decomissioning Phase are deemed to be similar to those of the construction phase.

6.7.4 Concluding Statement – Visual

The visual specialist concluded that aesthetic characteristics are subjective, and some people find energy facilities and their associated infrastructure pleasant and optimistic while others may find it visually invasive; It is mostly perceived as symbols of energy independence, and local prosperity. The visual impact is also dependant on the land use of an area and the sensitivity thereof in terms of visual impact, such as protected areas, parks and other tourism related activities.

The proposed development is of a modest scale when compared to other proposed alternative energy initiatives and the existing expansive mining operations in the area. Given the relatively small footprint of the project and the prevailing visual pollution generated by extensive mining activities, coupled with the region's economic reliance on mining and industrial ventures, it is anticipated that the visual impact of the proposed development will be inconspicuous against the backdrop of the dominating mining infrastructure. Therefore, it is recommended that the development proceed, taking into account its minimal visual impact within the context of the prevalent industrial landscape.

It is therefore Donaway Environmental' s recommendation that the project be approved, provided that the proposed mitigation measures are implemented.

6.8 AQUATIC BIODIVERSITY IMPACTS

An Aquatic Biodiversity Compliance Statement was undertaken by The Biodiversity Company and is attached in Annexure E2. The following section has been summarised from this study.

The aquatic biodiversity specialist concluded that no freshwater resources as defined in the National Water Act are present on site. The proposed footprint has furthermore been set back to be outside of the 500m Zone of Regulation from any watercourse. The proposed project is therefore unlikely to have any impact on Aquatic Biodiversity.

6.9 SOCIAL IMPACTS

Donaway Environmental undertook a Social Impact Assessment of the proposed Kareerand Battery Energy Storage Facility. A copy of this assessment is included in **Annexure E8,** and the following summary is provided in this regard.

6.9.1 Assessment of social impacts associated with the construction phase

Table 22: Assessment of social impacts during the construction phase

Nature: Direct and indirect employment opportunities and skills development		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Short-term	Short-term
Magnitude / Severity	Medium	Medium
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Positive	Positive
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Economic Multiplier Effect		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Province/Region
Duration	Short-term	Short-term
Magnitude / Severity	Medium	High
Probability	Possible	Probable
Significance	**Low**	**Medium**
Status	Positive	Positive
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource

Can impact be mitigated?	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.

Nature: Potential loss of productive farmland.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Site	Site
Duration	Short-term	Short-term
Magnitude / Severity	Medium	Medium
Probability	Probable	Possible
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Partly reversible	Partly reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Marginal loss of resource	Marginal loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Influx of jobseekers and change in population.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Permanent	Long-term
Magnitude / Severity	Medium	Low
Probability	Possible	Possible
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Irreversible	Irreversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Significant loss of resources.	Significant loss of resources.
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Safety and security impacts.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Short-term	Short-term
Magnitude / Severity	High	Medium
Probability	Probable	Possible

Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Impacts on daily and movement patterns.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Short-term	Short-term
Magnitude / Severity	High	Medium
Probability	Probable	Possible
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Nuisance impacts (noise and dust).		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Short-term	Short-term
Magnitude / Severity	High	Medium
Probability	Probable	Possible
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Increased risk of potential veld fires.

	Without Mitigation	With Mitigation
Extent / Spatial Scope	Local/District	Site
Duration	Short-term	Short-term
Magnitude / Severity	High	Medium
Probability	Probable	Probable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Significant loss of resources	Marginal loss of resources
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Visual and sense of place impacts.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Short-term	Short-term
Magnitude / Severity	High	Medium
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Barely reversible	Partly reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

6.9.2 Assessment of social Impacts Associated with the operational phase.

Table 23: Assessment of social impacts during the operational phase.

Nature: Direct and Indirect employment opportunities and skills development.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Province/Region	Province/Region
Duration	Long-term	Long-term
Magnitude / Severity	Low	Low
Probability	Probable	Definite
Significance	**Low**	**Low**
Status	Positive	Positive

Reversibility	Barely reversible	Irreversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Development of non-polluting, renewable energy infrastructure or alternative energy solutions.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	International and National	International and National
Duration	Permanent	Permanent
Magnitude / Severity	Low	Low
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Positive	Positive
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Marginal loss of resource	Marginal loss of resource
Can impact be mitigated?	No	No
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Potential loss of agricultural land.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Site	Site
Duration	Long-term	Long-term
Magnitude / Severity	Medium	Low
Probability	Probable	Possible
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Marginal loss of resource	Marginal loss of resource
Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Contribution to Local Economic Development (LED) and social upliftment.		
	Without Mitigation	**With Mitigation**

Extent / Spatial Scope	Definite	Definite
Duration	Long-term	Long-term
Magnitude / Severity	High	Very High
Probability	Probable	Probable
Significance	**Medium**	**High**
Status	Positive	Positive
Reversibility	Partly reversible	Barely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Impact on tourism.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Long-term	Long-term
Magnitude / Severity	Medium	Medium
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Positive / Negative	Positive / Negative
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Visual and sense of place impacts.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local/District	Local/District
Duration	Long-term	Long-term
Magnitude / Severity	Medium	Low
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Significant loss of resources	Marginal loss of resource

Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

6.9.3 Assessment of social Impacts Associated with the Closure and Decomissioning phase

The closure and Decomissioning phase social impacts will be largely similar to the construction phase impacts.

6.9.4 Concluding Statement - Social

The social specialist confirmed that the proposed project and associated infrastructure are unlikely to result in permanent damaging social impacts. From a social perspective it is concluded that the project could be developed subject to the implementation of recommended mitigation measures and management actions identified for the project.

The proposed Kareerand BESS facility has the potential to generate additional income and employment opportunities for Klerksdorp and the surrounding communities. This benefit could be particularly significant to reduce the dependency of job opportunities in the mining sector, with the majority of the economic development and working opportunities associated with the mining activities. As a whole, unemployment in South Africa is significantly high and additional job opportunities would not only benefit the region but the overall South African employment ratio. Positive impacts can be associated with the Kareerand BESS facility with regard to a reduction in electricity supply strain, as the facility could supply required power to the grid during higher demand stages where supply could not achieve the set out requirement. In return, this could lead to a reduction in load shedding and the strain on Eskom power and renewable utilities.

6.10 TRAFFIC IMPACTS[24]

Due to the potentially low number of construction trips associated with a project of this scale, a Traffic Impact Assessment was not commissioned. The EPC will however be required to comply with any conditions of abnormal load permits associated with the delivery of transformers and Battery Units.

Based on the scale of the proposed Kareerend Battery Energy Storage Facility, the following impacts are envisioned.

6.10.1 Construction Phase Traffic Impacts

Table 24: Assessment of Construction Phase Traffic Impacts

Nature: Increased Traffic on regional haulage routes		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Regional	Regional
Duration	Short Term	Short Term
Magnitude / Severity	Small	Small
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative

[24] This Section was completed by the EAP and not a Specialist.

Irreplaceable loss of resources / Sensitivity of receiving environment	No Loss	No Loss
Reversibility	Completely	Completely
Can impact be mitigated	Yes	
Mitigation:	• Stagger Trips • Schedule deliveries so that peak hour traffic in local towns is not impacted by construction traffic.	

Nature: Increased traffic on local routes		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short Term	Short Term
Magnitude / Severity	Small	Small
Probability	Probable	Probable
Significance	Low	**Low**
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	No Loss	No Loss
Can impact be mitigated	Yes	
Reversibility	Completely	Completely
Mitigation:	• Stagger Trips • Schedule deliveries so that peak hour traffic in local towns is not impacted by construction traffic	

Nature: Construction and maintenance of Gravel Roads in the Vicinity of the Site		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short Term	Short Term
Magnitude / Severity	Small	Small
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Neutral	Neutral
Irreplaceable loss of resources / Sensitivity of receiving environment	No Loss	No Loss
Can impact be mitigated	Yes	
Reversibility	Completely	
Mitigation:	• Maintenance of all lower order roads to be undertaken by the contractor.	

6.10.2 Operational Phase Traffic Impacts

. **Table 25:** Assessment of Operational Phase Traffic Impacts

Nature: Increased Traffic During operational Phase		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Long Term	Long Term
Magnitude / Severity	Small	Small
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Neutral	Neutral
Irreplaceable loss of resources / Sensitivity of receiving environment	No Loss	No Loss
Reversibility	Completely	
Can impact be mitigated	Yes, to a limited extent	
Mitigation:	None required as operational phase traffic will be negligible	

6.10.3 Decommissioning Phase Traffic Impacts

The decommissioning impacts are deemed to be similar to those assessed for the construction phase. Please refer to the impact assessment tables for Construction phase traffic impacts, which will apply equally to the decommissioning impacts.

6.11 CUMULATIVE IMPACT ASSESSMENT

This section is summarised from the cumulative impact assessments that took place by each of the participating specialists. For further details in this regard, the reader is referred to the specialist assessments contained in **Appendix E**.

Where appropriate, certain specialists did include a cumulative assessment of a much wider area than the accepted 30km radius.

The 2014 EIA Regulations (as amended) (GNR 326) define a cumulative impact as follows:

"Cumulative impact in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities."

A Strategic Environmental Assessment process was undertaken by the CSIR in order to identify geographical areas most suitable for the rollout of Renewable Energy projects and the supporting electricity grid network. The aim of the assessment was to designate REDZs within which such development will be incentivised and streamlined. Subsequent to the SEA, these REDZ have been gazetted. Kareerand Battery Energy Storage Facility is within one of these Gazetted REDZ and as such deemed more suitable for such development on a cumulative scale.

Cumulative impacts that could occur due to the development of solar energy facilities and associated infrastructure in close proximity to each other include impacts such as:

- Visual impacts
- Socio-economic impacts
- Loss of vegetation and the inability to achieve conservation targets
- Impacts to soil and agricultural potential

- Impacts on heritage resources (particularly relating to Archaeology resources)
- Impacts on Surface water resources

In terms of possible cumulative impacts, one needs to look at the presence of similar facilities on the farm portion as well as the greater landscape.

- Cumulative impacts due to the cumulative effects of Kareerand Battery Energy Storage Facility added to all other renewable energy facilities in the Immediate Area. These impacts need to be managed through strategic spatial planning documents such as an SEA and SDF and not through individual EIA processes.

According the DFFE Database of renewable energy facilities, there are 4 renewable energy facilities within 30km of Kareerand Battery Energy Storage Facility.

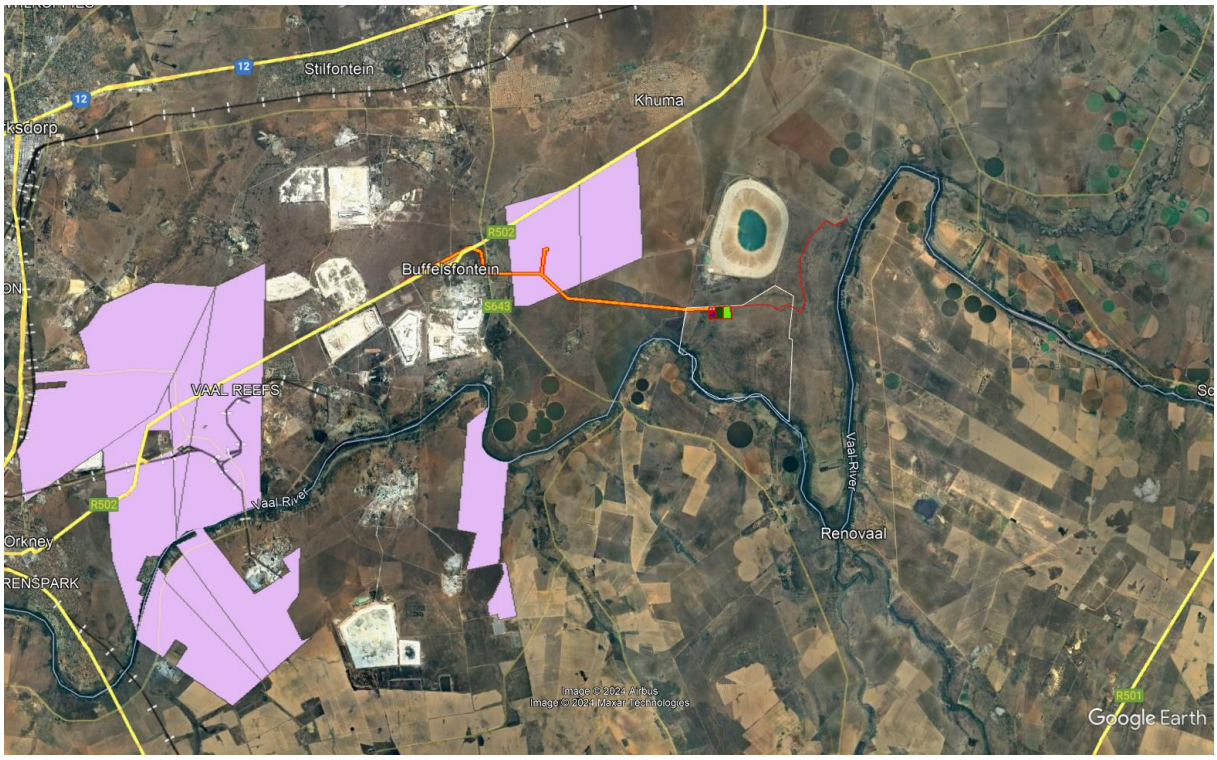

Figure 34: Renewable Energy Facilities within proximity of Portion 3 of the Farm Kareerand No. 444.

Cape EAPrac does not have details on the exact configuration of these facilities, however, based on the assumption that each facility will have a maximum generation capacity of 100MW and will on average result in the transformation of a maximum of 250ha, one expect the cumulative transformation of approximately 1180 hectares of the vegetation types present (i.e. Highveld Dry Grassland) within 30km of this development.

Table 26: Potential habitat transformation proximity to Kareerand Battery Energy Storage Facility.

Status	Transformation Area in Hectares
In operation	0
Under construction	0
Authorised	1000
EIA in Progress	25

It is impossible to foresee how many of these projects will reach preferred bidder status in terms of the REIPPPP or BESIPPPP and will eventually be constructed. As a worst-case scenario one can assume a total cumulative transformation of 1180 hectares (based on the currently available information).

It is important to note that the projects in the area affect other vegetation types, including Klerksdorp Thornveld Vegetation type, Vaal Vet Sandy Grassland Vegetation and Vaal Reef Dolomite Sinkhole woodland and as such the cumulative impact in the landscape will not be limited to a single habitat type.

Table 27: Assessment of Cumulative Impacts associated with Kareerand Battery Energy Storage Facility [25].

Nature: Regional losses of natural habitat and subsequent displacement of birds.		
	Overall impact of the proposed project considered in isolation.	**Cumulative impact of the project and other projects in the area.**
Extent / Spatial Scope	Site	Local and immediate surroundings
Duration	Long-term	Long-term
Magnitude / Severity	Low	Moderate
Probability	Highly Probable	Highly Probable
Significance	**Medium**	**Medium**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment.	Yes	Yes
Can impact be mitigated?	Yes, to some extent.	Yes, to some extent.
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Cumulative visual impacts of proposed projects.		
	Impact in isolation	**Cumulative impact**
Extent / Spatial Scope	Local/District	Local/District
Duration	Long-term	Long-term
Magnitude / Severity	Medium	Medium
Probability	Probable	Possible
Significance	**Low**	**Medium**
Status	Negative	Negative
Reversibility	Partly reversible	Barely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Cumulative impact from employment, skills and business opportunities.		
	Impact Isolation	**Cumulative Impact**
Extent / Spatial Scope	Province/Region	Province/Region
Duration	Long-term	Long-term

[25] This includes cumulative impacts associated with the facility.

Magnitude / Severity	Low	High
Probability	Probable	Definite
Significance	**Low**	**Medium**
Status	Positive	Positive
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

Nature: Cumulative impact with large scale in-migration of people.		
	Impact in isolation	**Cumulative impact**
Extent / Spatial Scope	Possible	Possible
Duration	Medium-term	Long-term
Magnitude / Severity	Medium	High
Probability	Possible	Probable
Significance	**Low**	**Medium**
Status	Negative	Negative
Reversibility	Completely reversible	Completely reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	No loss of resource	No loss of resource
Can impact be mitigated?	Yes	Yes
Mitigation:	Kindly refer to Section 7 in this Draft Basic Assessment Report.	

As can be seen in the table above cumulative impacts are of medium significance and no high cumulative impacts are expected.

6.12 Impact Associated with Protected Area Status of the property.

As 3.1.3 of this report, the property is listed on the South African Protected Areas Database as constituting a private nature reserve known as Bushybend Private Nature Reserve.

Notwithstanding this designation, it has been confirmed that the property has not been used for any conservation purposes in the past or currently. This statement is corroborated by the following:

1. Analysis of historical Aerial Photographs indicates that the property has been historically utilised for agricultural purposes.
2. The landowner has confirmed that the property has not been used for conservation purposes and has always been utilised for agricultural (mostly extensive) use.
3. The property is zoned for agricultural use.
4. The property is not designated for conservation use in the Spatial Development Framework.
5. There are no title deed restrictions associated with conservation use on the property.

Considering the above, it is clear, that although designated as a private nature reserve in the SAPAD spatial dataset, it does not align with the Objectives of the National Environmental Management: Protected Areas Act.

Notwithstanding this, it is important to note that the conservation worthy habitat on the property will be retained and not impacted upon by the proposed BESS and PV facility. The existing Biodiversity pattern and process function of the remnant natural areas on the property will be retained.

The DFFE protected areas directorate have been registered as an I&AP to provide further guidance on the status of the spatial designation and any additional requirements that may be applicable for the development of portions of this property.

6.13 IMPACT SUMMARY

The table below summarises the significance (with mitigation) of all impacts assessed in the sections above[26].

For ease of easy references, impacts are visually reflected using the following colour scheme[27].

All positive impacts (regardless of their significance)

Neutral or Negligible negative impacts

Low negative impacts

Moderate negative impacts

High and Very High negative impacts

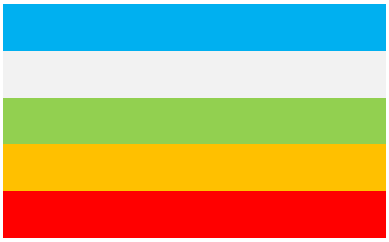

Table 28: Summary of the significance of impacts associated with Kareerand Battery Energy Storage Facility [28].

CONSTRUCTION PHASE AVIFAUNAL IMPACTS		
Nature: The loss of natural habitat and displacement of birds through physical transformation, modifications, removals and land clearance.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
OPERATIONAL PHASE AVIFAUNAL IMPACTS		
Nature: The creation of novel or new avian habitat for commensal bird species or superior competitive species.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Avian collision impacts related to the PV arrays (collision with the PV panels).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Avian collision impacts related to overhead power lines.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Avian electrocution related to the new distribution lines.		

[26] In order to attain these outcomes, the mitigation measures reflected in section 7 of the report need to be implemented.

[27] Where specialist ratings fall across 2 of the groups, the worst case is reflected in the quick reference.

[28] This includes cumulative impacts associated with the facility

	Without Mitigation	With Mitigation
Significance	**Medium Negative**	**Low-Medium Negative**
CONSTRUCTION PHASE HERITAGE IMPACTS		
Nature: Construction activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
CONSTRUCTION PHASE VISUAL IMPACTS		
Nature: Visual impact of construction activities on sensitive visual receptors and a rural landscape (BESS & PV).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Visual impact of construction activities on sensitive visual receptors and a rural landscape (Powerline Corridor).		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
OPERATIONAL PHASE VISUAL IMPACTS		
Nature: Visual impact of industrial operational infrastructure on sensitive visual receptors, landscape and scenic resources. Change in the sense of place of the local area (BESS & PV).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Visual impact of industrial operational infrastructure on sensitive visual receptors, landscape and scenic resources. Change in the sense of place of the local area (Powerline Corridor).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Visual impacts of lighting at night on sensitive visual receptors and the effect of sky glow on a rural landscape.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
CONSTRUCTION PHASE SOCIAL IMPACTS		
Nature: Direct and indirect employment opportunities and skills development		
	Without Mitigation	**With Mitigation**
Significance	**Low Positive**	**Low Positive**
Nature: Economic Multiplier Effect		
	Without Mitigation	**With Mitigation**
Significance	**Low Positive**	**Medium Positive**
Nature: Potential loss of productive farmland.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Influx of jobseekers and change in population.		

	Without Mitigation	With Mitigation
Significance	**Medium Negative**	**Low Negative**
Nature: Safety and security impacts.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**

Nature: Impacts on daily and movement patterns.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Nuisance impacts (noise and dust).		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Increased risk of potential veld fires.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Visual and sense of place impacts.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
OPERATIONAL PHASE SOCIAL IMPACTS		
Nature: Direct and Indirect employment opportunities and skills development.		
	Without Mitigation	**With Mitigation**
Significance	**Low Positive**	**Low Positive**
Nature: Development of non-polluting, renewable energy infrastructure or alternative energy solutions.		
	Without Mitigation	**With Mitigation**
Significance	**Low Positive**	**Low Positive**
Nature: Potential loss of agricultural land.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Contribution to Local Economic Development (LED) and social upliftment.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Positive**	**High Positive**
Nature: Impact on tourism.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Visual and sense of place impacts.		
	Without Mitigation	**With Mitigation**

Significance	**Low Negative**	**Low Negative**
CONSTRUCTION PHASE TRAFFIC IMPACTS		
Nature: Increased Traffic on regional haulage routes		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increased traffic on local routes		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Construction and maintenance of Gravel Roads in the Vicinity of the Site		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
OPERATIONAL PHASE TRAFFIC IMPACTS		
Nature: Increased Traffic During operational Phase		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**

6.14 IMPACT STATEMENT

The majority of impacts range from high positive to medium negative. All medium-high, high, very high and critical negative impacts have been avoided by the avoidance of sensitive features and habitats or have been mitigated to acceptable levels.

None of the participating specialists identified any impacts that remain high or very-high after mitigation. The preferred layout (Layout Alternative 1) avoids the main sensitive features.

The affected area is therefore considered suitable for development and there are no impacts associated with Kareerand Battery Energy Storage Facility that cannot be mitigated to an acceptable level. With the enhancement measures suggested by the Social Specialist, high positive impacts on Creation of employment and business opportunities, Economic Multiplier effects, Generation income for affected landowner and Cumulative impact on local economies can be expected.

As such there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. The preferred alternative in this assessment (Layout Alternative 1), and the upgrade of the existing access road can be supported subject to the implementation of the mitigation measures outlined in section 7 of the report.

A map showing the proposed activity in relation to the key sensitive features is in attached in Appendix D. All sensitive features along with their appropriate buffers are shown in this plan. As required by the EMPr, all areas outside of the proposed development footprint are to be demarcated as no go areas.

Please refer to the table in the section above listing the key impacts and their significance post mitigation for the preferred alternative. This section must be read in conjunction with the suggested mitigation measures listed in section 7 of this Report.

7. MITIGATION MEASURES

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac. This table summarises the mitigations, and details whether they should be included as conditions of approval, or whether they have been included as actions in the EMPr. The table furthermore reflects to which stage of the development the proposed mitigation measures are applicable. In instances where suggested mitigations have already been incorporated into the design phase, they have been reflected as such.

Table 29: Recommended mitigation measures required for the construction, operation and decommissioning of the Kareerand Battery Energy Storage Facility development.

Mitigation	Condition of Approval	Included in EMPr	Construction[29] Phase	Operational Phase	Decommissioning Phase
Aquatic Biodiversity					
No Mitigation of Management Measures are required.					
Terrestrial Biodiversity					
Construction vehicles and machinery must not encroach into identified 'no-go' areas or areas outside the project footprint.		✓	✓		✓
Topsoil (20 cm, where possible) must be collected and stored in an area of low (preferable) and medium sensitivity and used to rehabilitate impacted areas that are no longer required during the operational phase (e.g. laydown areas).		✓	✓		✓
Only indigenous species must be used for rehabilitation.		✓	✓		✓
Where possible, lay down areas must be located within previously disturbed sites		✓	✓		
Employees must be prohibited from making open fires during the construction phase		✓	✓		
Employees must be prohibited from collecting plants. It is recommended that spot checks of pockets and bags are done on a regular basis to ensure that no unlawful harvesting of plant species is occurring.		✓	✓		✓
An alien invasive management plan for the site must be created.		✓		✓	
Plant translocation to adjacent suitable habitat may only be done for species that are not range restricted and for populations that have not been quantified as regionally significant.		✓	✓		
The vegetation under the solar panels will be brushcut during the construction and operational phases. The vegetation should be allowed to return to its natural state once the infrastructure has been decommissioned		✓		✓	

[29] In this instance, the construction phase includes mitigation measures associated with pre-construction and planning.

Mitigation	Condition of Approval	Included in EMPr	Construction[29] Phase	Operational Phase	Decommissioning Phase
Rehabilitation efforts must provide habitat for faunal species by placing logs and rocks at strategic sites to provide shelter for small mammals and reptiles		✓	✓	✓	
Construction vehicles and machinery must not encroach into identified 'no-go' areas or areas outside the project footprint.		✓	✓		
Employees must be prohibited from making open fires during the construction phase to prevent uncontrolled run-away fires		✓	✓		
Topsoil from the footprints of the road and structures should be dealt with in accordance with EMP.		✓	✓		
The buildings should be painted a grey-brown colour		✓	✓		
Fencing around the offices and laydown area should be simple, diamond shaped (to catch wind-blown litter) and appear transparent from a distance. The fences should be checked on a monthly basis for the collection of litter caught on the fence.		✓	✓		
Fencing should be placed around the PV panels and not extend up to the boundary. Electric fencing can be used. There should be no security lighting along the fence line		✓	✓		
Signage on the adjacent road should be moderated.		✓	✓		
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 should be used.		✓		✓	
Control of lights at night to allow only local disturbance to the current dark sky night landscape (refer to appendix for general guidelines).		✓		✓	
Continued erosion control and management of dust.		✓		✓	
Continue management of the 50m screening buffer such that grasslands and trees do not become a fire risk.		✓		✓	
All structures should be removed and where possible, recycled.		✓			✓
Building structures should be broken down (including foundations).		✓			✓
The rubble should be managed according to NEMWA and deposited at a registered landfill if it cannot be recycled or reused.		✓			✓
All compacted areas should be rehabilitated according to a rehabilitation specialist.		✓			✓
Monitoring for soil erosion should be undertaken on a routine basis.		✓			✓
Traffic					
It is proposed that the access roads in close proximity to the site be investigated for rehabilitation prior to construction and be maintained during construction in order to mitigate against the		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction[29] Phase	Operational Phase	Decommissioning Phase
possibility of damaged goods due to poor road infrastructure.					
The formalisation of the site access point, will likely be a requirement as part of the wayleave approval of the local and provincial roads authorities		✓	✓		
Adequate traffic accommodation signage must be erected and maintained on eitherside of the access throughout the construction period of the project.		✓	✓		
While no construction of the PV facility occurs within the servitude, the construction and provision of internal roads that cross the servitude need to be according to Eskom wayleave requirements.		✓	✓		
Avifauna					
It is difficult to mitigate against the loss of habitat when fixed infrastructure is applied. However, proper site selection of the facility is key to reducing the predicted impacts.	Already incorporated into the design of the facility.				
Concentrate all surface infrastructure on habitat of medium to low avifaunal sensitivity. The development footprint of the various individual facilities must be kept as small as possible and sensitive habitats must be avoided.	Already incorporated into design of the facility				
Where possible, existing access roads should be used and the construction of new roads should be kept to a minimum.	Already incorporated into the design of the facility				
Prevent an overspill of construction activities into areas that are not part of the proposed construction site.		✓	✓		
Use indigenous plant species native to the study site during landscaping and rehabilitation		✓	✓	✓	✓
All internal electrical reticulation should be placed underground, while the alignment of the power line and substation should be placed parallel to existing lines.		✓	✓		
Reduce or minimise the use of outdoor lighting to avoid attracting birds to the lights or to reduce potential disorientation to migrating birds.		✓	✓	✓	
Use indigenous plant species native to the study area during landscaping and rehabilitation.		✓	✓	✓	
Apply systematic reflective/dynamic markers to the boundary fence to increase the visibility of the fence for approaching birds (e.g. korhaan taxa) and to avoid potential bird collisions with the fence structure.		✓	✓	✓	
All internal electrical infrastructure and cabling should be placed underground.		✓	✓	✓	
Heritage					
Implementation of a chance find procedure for the Project;		✓	✓		
Avoidance of potential grave site with 30m buffer.	✓	✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction[29] Phase	Operational Phase	Decommissioning Phase
Known heritage sites (apart from DH001) in the area should be indicated on development plans and avoided during all phases of the Project.	Already incorporated into design.				

8. PUBLIC PARTICIPATION PROCESS

Section 41 in Chapter 6 of regulation 982 details the public participation process that has to take place as part of an environmental process. The table below provides a quick reference to show how this environmental process has or intends to comply with these legislated requirements relating to public participation.

Please refer to **Appendix F**, where all evidence of public participation is included.

Table 30: Public participation requirements in terms of S41 of R982

Regulated Requirement	Description
(1) 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. (2) Sub regulation (1) does not apply in respect of-. (a) linear activities;	Proof of landowner consent for Kareerand Battery Energy Storage Facility is attached in Annexure G2. .
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 -	
(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;	A site notice was placed at three positions along the property boundary along the main road. Photographic evidence and the location of these notices is attached in Annexure F3.
(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;	The landowner has been requested to notify any tenants on the property. There are no tenants that that fall within the footprint of the proposed PV.
(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;	Owners of adjacent properties have been notified of this environmental process. Such owners have been requested to inform the occupiers of the land of this environmental process. Please refer to Annexure F4 for copies of these notifications
(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;	The ward councillor has been notified of this environmental process. Please refer to Annexure F4 for copies of these notifications
(iv) the municipality which has jurisdiction in the area;	The JB Marks municipality (Planning and Technical Services) as well as the Dr Kenneth Kaunda District

Regulated Requirement	Description
	Municipality have been notified of this environmental process. Please refer to Annexure F4 for copies of these notifications.
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	Please refer to section Annexure F1 showing the list of organs of state that were notified as part of this environmental process. Please refer to Annexure F4 for copies of these notifications.
(vi) any other party as required by the competent authority;	The DFFE has been given an opportunity to comment on this Draft BAR, any other parties identified will be given an opportunity to comment.
(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;	An advert calling for registration of I&APs and notifying of the availability of the Draft Basic Assessment Report was placed in the Klerksdorp Herald local newspaper. Please refer to Annexure F3 for a copy of this advertisement. There is currently no official Gazette that has been published specifically for the purpose of providing public notice of applications
(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	Adverts were not placed in provincial or national newspapers, as the potential impacts will not extend beyond the borders of the municipal area.
(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.	Notifications have included provision for alternative engagement in the event of illiteracy, disability or any other disadvantage. In such instances, Cape EAPrac will engage with such individuals in such a manner as agreed on with the competent authority.
(3) A notice, notice board or advertisement referred to in sub regulation (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.	Please refer to Annexure F3.
(4) A notice board referred to in sub regulation (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.	Please refer to Annexure F3.
(5) Where public participation is conducted in terms of this regulation for an application or proposed application, sub regulation (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 sub regulation (2)(a), (b), (c) and (d); and	This will be complied with if final reports are produced later on in the environmental process.

Regulated Requirement	Description
(b) written notice is given to registered interested and affected parties regarding where the - (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. (7) Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.	All reports that are submitted to the competent authority will be subject to a public participation process. These include: - Draft BAR - Draft EMPr - All specialist reports that form part of this environmental process.

8.1 REGISTRATION OF KEY STAKEHOLDERS

A number of key stakeholders were automatically registered and were given an opportunity to comment on the Draft BAR. Copies and proof of these notifications are included in **Annexure F4**. A list of key stakeholders registered for this process included in the table below.

Table 31: Key Stakeholders automatically registered as part of the Environmental Process

Stakeholders Registered		
Neighbouring property owners	Department of Environmental Affairs (North West)	Department of Water and Sanitation
North West Department of Transport and Public Works	JB Marks Municipality	Department of Science and Technology
JB Marks Ward Councillor	South African National Roads Agency Limited	The Council for Scientific and Industrial Research
South African Heritage Resources Agency	Heritage North West	The South African Square Kilometre Array
Catchment Management Agency	Department of Health	The South African Civil Aviation Authority
Department of Forestry, Fisheries and the Environment: Biodiversity Conservation Directorate	Department of Minerals and Energy	Affected Landowners for both Linear and non-linear activities.
Provincial Department of Agriculture	Eskom	Department of Communications
Endangered Wildlife Trust.	Department of Mineral Resources	SENTECH
North West Department of Agriculture and Nature Conservation	Birdlife South Africa.	South African National Defence Force.

Stakeholders Registered		
Department of Forestry, Fisheries and the Environment – Protected Areas Directorate.	ATNS	Department of Water and Sanitation

8.2 AVAILABILITY OF DRAFT BASIC ASSESSMENT REPORT.

This Draft Basic Assessment report is available to all Registered and Potential Interested and Affected Party for a 30 day-comment period extending from **20 February 2024 – 20 March 2024.**

9. CONCLUSION AND RECOMMENDATIONS

This environmental process is currently being undertaken to present proposals to the public and potential I&APs and to identify and assess environmental impacts, issues and concerns raised as a result of the proposed development.

Cape EAPrac is of the opinion that the information contained in this Basic Assessment Report and the documentation attached hereto is sufficient to allow the I&APs to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for.

This environmental process has not identified any fatal flaws with the proposal and as such it is our reasoned view that the project should be considered for authorisation, subject to the outcome of the public participation process and on condition that all the mitigation measures outlined in section 7 of the report are adopted and implemented. All specialists concur that the development as proposed (Layout Alternative 1) and the upgrade of the existing road can be considered for approval subject to the implementation of all mitigation measures. All impacts range from medium positive to medium negative and all high, very high and critical negative impacts have been avoided by the risk adverse approach or mitigated to acceptable levels.

All stakeholders are requested to review the Draft BAR and the associated appendices, and provide comment, or raise issues of concern, directly to *Cape EAPrac* within the specified 30-day comment period. All comments received during this comment period will be considered, responded and included in the Final BAR that will be submitted to DFFE for decision making.

It is the recommendation of Cape EAPrac that the development proposal, Layout Alternative 1 and the upgrade of the Existing Gravel Road be considered for approval by the competent Authority, subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

9.1 REMAINDER OF ENVIRONMENTAL PROCESS

The following process is to be followed for the remainder of the environmental process:

- All registered I&AP's are provided with an opportunity to review and comment on this document.
- All comments will be considered and responded to and the proposed development adapted where necessary.
- The Final BAR will then be submitted to the DFFE for consideration and decision-making;
- The DFFE's decision (Environmental Authorisation) and the appeal process will be communicated with all registered I&APs.

10. ABBREVIATIONS

AIA	Archaeological Impact Assessment
BGIS LUDS	Biodiversity Geographic Information System Land Use Decision Support
CBA	Critical Biodiversity Area
CDSM	Chief Directorate Surveys and Mapping
CEMPr	Construction Environmental Management Programme
DEA	Department of Environmental Affairs
DEA&NC	Department of Environmental Affairs and Nature Conservation
DME	Department of Minerals and Energy
DSR	Draft Scoping Report
EAP	Environmental Impact Practitioner
EHS	Environmental, Health & Safety
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GPS	Global Positioning System
GWh	Giga Watt hour
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
kV	Kilo Volt
LUDS	Land Use Decision Support
LUPO	Land Use Planning Ordinance
MW	Mega Watt

NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
PM	Post Meridiem; “Afternoon”
PSDF	Provincial Spatial Development Framework
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
S.A.	South Africa
SACAA / CAA	South African Civil Aviation Authority
SAHRA	South African National Heritage Resources Agency
SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards
SDF	Spatial Development Framework
TOPS	Threatened and Protected Species

11. REFERENCES

[30]**DEA** (2010). National Climate Change Response Green Paper 2010.

DEA (January 2008). *National Response to South Africa's Electricity Shortage.* Interventions to address electricity shortages.

DEA&DP (2003). Waste Minimisation *Guideline for Environmental Impact Assessment reviews.* NEMA EIA Regulations Guideline & Information Series, Department Environmental Affairs & Development Planning.

DEA&DP (2005). *Guideline for the review of specialist input in the EIA process*. NEMA EIA Regulations Guideline & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2005). *Guideline for involving biodiversity specialists in the EIA process*. NEMA EIA Regulations Guideline & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2005). *Guideline for environmental management plans*. NEMA EIA Regulations Guideline & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2005). *Provincial urban edge guideline*. Department Environmental Affairs & Development Planning.

DEA&DP (2006). *Guideline on the Interpretation of the Listed Activities.* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guide on Alternatives,* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guideline on Appeals,* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guideline on Exemption Applications.* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guideline on Public Participation*. NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Need & Desirability,* NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Alternatives*, NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Transitional Arrangements,* NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Exemption Applications*. NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Appeals*. NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

[30] This reference list excludes specialist studies that form part of this environmental process, and which are contained in Annexure E1 – E12

DEA&DP (2009). *Guideline on Public Participation*. NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP. (May 2006). *Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape*: Specialist Study: Executive Summary - CNdV Africa prepared for Provincial Government of the Western Cape.

Department of Mineral & Energy (1998). White Paper on Energy Policy of the Republic of South Africa**.**

Department of Mineral & Energy (2003). *The White Paper on Renewable Energy***.**

DEAT (2002). Integrated Environmental Management Information Series 3: *Stakeholder Engagement*. Department of Environmental Affairs and Tourism, Pretoria.

DEAT (2004). *Criteria for determining alternatives in EIAs*, Integrated Environmental Management, Information Series 11, Department of Environmental Affairs & Tourism, Pretoria.

DEAT (2004). *Environmental Management Plans*, Integrated Environmental management, Information Series 12, Department Environmental Affairs & Tourism.

DEAT (2005). *Assessment of Impacts and Alternatives*, Integrated Environmental Management Guideline Series, Department of Environmental Affairs & Tourism, Pretoria.

DEAT (2005). Guideline 4: *Public Participation*, in terms of the EIA Regulations 2005, Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism, Pretoria.

DEAT (2006). *EIA Regulations* in terms of the National Environmental Management Act (Act No 107 of 1998) (Government Notice No R 385, R 386 and R 387 in Government Gazette No 28753 of 21 April 2006).

DWA (2001). *Generic public participation guideline*. Department of Water Affairs and Forestry.

Hsai-Yang, F (Ed)(2006). *Environmental Geotechnology Dictionary* (online version). University of North Caroline, Charlotte, USA.

Integrated Resource Plan for Electricity (Oct. 2010). Revision 2, Version8.

International Finance Corporation – World Bank Group. (April 2007). Environmental, Health and Safety Guidelines for Electric Power Transmission and Distribution.

International Finance Corporation – World Bank Group. (April 2007). *Environmental, Health and Safety Guidelines for Wind Energy.*

International Finance Corporation – World Bank Group. (April 2007). *General Environmental, Health and Safety Guidelines.*

Keatimilwe K & Ashton PJ 2005. *Guideline for the review of specialist input in EIA processes.* Department Environmental Affairs & Development Planning.

Lochner P (2005). *Guideline for Environmental Management Plans*. Department Environmental Affairs & Development Planning.

Lower Orange River Trans frontier Conservation Area Planning: Background Information Document (August 2007). Retrieved on 29 March 2012 from:

www.dwaf.gov.za/Documents/Other/RMP/LOR/LORRMPBIDAug07.pdf

Mucina, L. & Rutherford, M.C. (eds) 2006. *The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19.* South African National Biodiversity Institute, Pretoria.

Münster, F. (2005). *Guidelines for Determining the Scope of Specialist Involvement in EIA Processes: Edition 1.* CSIR Report No ENV-S-C 2005 053 A. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

Oberholzer B (2005). *Guideline for involving visual & aesthetic specialists*. Department Environmental Affairs & Development Planning.

National Energy Regulator of South Africa (NERSA)(Feb.2010). Rules on selection criteria for renewable energy projects under the REFIT Programme.

National Protected Area Expansion Strategy for S.A. 2008: Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. Government of South Africa, Pretoria, 2010. ISBN 978-1-919976-55-6.

Northern Cape Business online. Retrieved from: http://www.northerncapebusiness.co.za on 27 March 2012.

Northern Cape Business online. *Solar Power.* Retrieved from: http://www.northerncapebusiness.co.za/special_features/941417.htm on 27 March 2012.

Saayman, I. (2005). *Guideline for Involving Hydrogeologists in EIA Processes: Edition 1.* CSIR Report No ENV-S-C 2005 053 D. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

SANBI Biodiversity GIS (2007). South African National Biodiversity Institute, Cape Town, South Africa.

Winter S & Beaumann N (2005). *Guideline for involving heritage specialists in EIA processes.* Department Environmental Affairs & Development Planning.