WAAIHOEK BATTERY ENERGY STORAGE SYSTEM AND RESEVOIR, EMADLANGENI LOCAL MUNICIPALITY, AMAJUBA DISTRICT, IN KWA-ZULU NATAL PROVINCE

DEFF Reference Number:

DRAFT BASIC ASSESSMENT REPORT

PREPARED FOR:

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INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

The Environmental Impact Assessment (EIA) Regulations, promulgated in terms of the National Environmental Management Act (NEMA, Act no. 107 of 1998 as amended) dated 8th of December 2014, were amended in April 2017. In terms of Appendix 1 (3) of the EIA Regulations (2014 and subsequent 2017 amendments), a Basic Assessment Report (BAR) must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include –

SCOPE OF ASSESSMENT & CONTENT OF BASIC ASSESSMENT REPORTS	
(a) Details of - (i) The EAP who prepared the report; and (ii) The expertise of the EAP, including a curriculum vitae.	Chapter 1 & Appendix A
(b) The location of the activity, including – (i) The 21-digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; and (iii) Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	Chapter 2
(c) A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Chapter 2
(d) A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered and being applied for; and (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Chapter 3, section 3.4
(e) A description of the policy and legislative context within which the development is proposed including (i) An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks and instruments.	Chapter 3
(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.	Chapter 4
(g) A motivation for the preferred site, activity and technology alternative.	Chapter 6
(h) A full description of the process followed to reach the proposed preferred alternative within the site, including – (i) Details of all the alternatives considered; (ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified 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;	Chapters 5 to 10

(vi) The methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) The possible mitigation measures that could be applied and level of residual risk; (ix) The outcome of the site selection matrix; (x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) A concluding statement indicating the preferred alternatives, including the preferred location of the activity.	
(i) A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including – (i) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.	Chapters 9 and 10
(j) An assessment of each identified potentially significant impact and risk, including – (i) Cumulative impacts; (ii) The nature, significance and consequences of the impact and risk; (iii) The extent and duration of the impact and risk; (iv) The probability of the impact and risk occurring; (v) The degree to which the impact and risk can be reversed; (vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) The degree to which the impact and risk can be avoided, managed or mitigated.	Chapter 10
(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 report.	Chapters 8 and 10
(l) An environmental impact statement which contains – (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Chapter 11
(m) Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for inclusion in the EMPr.	Chapter 11
(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 the authorisation.	*None to date*
(o) A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed.	Chapter 11
(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.	Chapter 11
(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.	*Not Applicable*
(r) An undertaking under oath or affirmation by the EAP in relation to – (i) The correctness of the information provided in the reports; (ii) The inclusion of comments and inputs from stakeholders and I&APs; (iii) The inclusion of inputs and recommendations from the specialist reports where relevant; and	Appendix B

	(iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	
(s)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post-decommissioning management of negative environmental impacts.	*None to date*
(t)	Any specific information that may be required by the competent authority.	Appendix E
(u)	Any other matters required in terms of section 24 (4)(a) and (b) of the Act.	*None to date*

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TABLE OF ACRONYMS

ADM	Amajuba District Municipality
BA	Basic Assessment
BAR	Basic Assessment Report
BESS	Battery Energy Storage System
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Area
CESA	Critical Ecological Support Area
CLO	Community Liaison Officer
CR	Critically endangered
CV	*Curriculum Vitae*
DEFF	Department of Environment, Forestry and Fisheries

DM	District Municipality
DoE	Department of Energy
DWS	Department of Water & Sanitation
EN	Endangered
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
ELM	eMadlangeni Local Municipality
EMPr	Environmental Management Programme
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
GN	Government Notice
GHG	Greenhouse Gas
ha	Hectares
HIA	Heritage Impact Assessment
IDP	Integrated Development Plan
IPP	Independent Power Producers
IRP	Integrated Resource Plan
I&AP	Interested and Affected Party
ISCW	Institute for Soil, Climate & Water
IUCN	International Union for Conservation of Nature
kV	Kilovolt
l	litres
KZN	Kwa-Zulu Natal
KZNSCP	KZN Systematic Conservation Plan
LM	Local Municipality
m^3	Cubic meters
MW	Megawatt
MWp	Megawatt Peak
NBA	National Biodiversity Assessment
NDP	National Development Plan
NEMA	National Environmental Management Act
NEM:BA	National Environment Management: Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NEM:WA	National Environmental Management Waste Act
NERSA	National Energy Regulator of South Africa
NFEPA	National Freshwater Ecosystem Priority Areas

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NHRA	National Heritage Resources Act
NPAES	National Protected Areas Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
NSD	Noise Sensitive Developments (receptor)
NWA	National Water Act
OHSA	Occupational Health and Safety Act
PES	Present Ecological State
PGDP	Provincial Growth and Development Plan
PIA	Paleontological Impact Assessment
PPP	Public Participation Process
PNECO	Provincial Nature and Environmental Conservation Ordinance
QDS	Quarter Degree Square
RDB	Red Data Book
REC	Recommended Ecological Category
REIPP	Renewable Energy Independent Power Producers
RFB	Redox Flow Batteries
RMO	Resource Management Objectives
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resource Agency
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SPLUMA	Spatial Planning and Land Use Management Act
UNFCCC	United Nations Framework Convention on Climate Change
VRFB	Vanadium Redox flow batteries
VU	Vulnerable
WULA	Water Use License Application
WEF	Wind Energy Facility
WMA	Water Management Area

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1 PROJECT TEAM

1.1 CES COMPANY PROFILE (OVERVIEW)

CES was established in 1990 as a specialist environmental consulting company and has considerable experience in terrestrial, marine and freshwater ecology, the Social Impact Assessment (SIA) process, State of Environment Reporting (SOER), Integrated Waste Management Plans (IWMP), Environmental Management Programme (EMPr), Spatial Development Frameworks (SDF), public participation, as well as the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) processes. CES has been active in all of the above fields, and in so doing have made a positive contribution towards environmental management and sustainable development in the Eastern Cape, South Africa and many other African countries.

1.2 DETAILS OF THE EAP

CES has been appointed Waaihoek Wind Farm (Pty) Ltd, a subsidiary of South Africa Mainstream Renewable Power Developments (Pty) Ltd, as the independent EAP to apply for an Environmental Authorisation (EA) for the proposed Waaihoek Battery Energy Storage System (BESS) and reservoir, located south-east of Utrecht in the Emadlangeni Local Municipality (ELM), KwaZulu Natal Province.

EAP: Dr Alan Carter Pr.Sci.Nat and registered with EAPASA
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Email: a.carter@cesnet.co.za
Website: www.cesnet.co.za

Dr Alan Carter

EAP, Project Leader & Report Reviewer

Alan is the executive of the CES East London Office. He holds a PhD in Marine Biology and is a Certified Public Accountant, with extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He has 25 years' experience in environmental management and has specialist skills in sanitation, coastal environments and industrial waste. Dr Carter is registered as a Professional Natural Scientist under the South African Council for Natural Scientific Professions (SACNASP). He is also registered as an EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA). Alan will assume the role of project leader and report reviewer.

Please find the CV and proof of SACNASP and EAPASA registration in Appendix A

1.3 CES PROJECT TEAM

Ms Caryn Clarke

Report Writer & Project Manager

Caryn holds a M.Sc. Environmental Science (2012), B.Sc. Hon. Environmental Science, and a B.Sc. Environmental Science and Economics (2009) from Rhodes University. Her M.Sc. thesis was titled "Responses to the linked stressors of Climate Change and HIV/AIDS amongst vulnerable rural households in the Eastern Cape, South Africa". Her B.Sc. Hon. thesis investigated climate change perceptions, drought responses and

views on carbon farming amongst commercial livestock and game farmers within the Great Fish River Valley, Eastern Cape, from which a paper was published in the African Journal of Range and Forage Science 2012, 29(1):13-23. Caryn has further completed a Carbon Footprint Analysis Course (2013). Caryn's expertise includes project management, environmental impact assessments including public participation, MPRDA applications, environmental compliance monitoring, various licensing and permit applications, feasibility assessments and GIS mapping. Caryn is a registered Candidate Natural Scientist under SACNASP.

Please find the CV and proof of SACNASP registration in Appendix A

1.4 EXPERTISE OF THE PROJECT TEAM

Table 1-1 consist of the expertise of the project team. Please refer to Appendix A (CVs) for detailed project experience.

Table 1-1: Expertise of the Project Team.

NAME	POSITION IN COMPANY	HIGHEST QUALIFICATION	YEARS EXPERIENCE	ROLE ON PROJECT
Dr Alan Carter	Executive	PhD in Plant Science (Rhodes University)	25+	• EAP • Project Leader • Report Reviewer
Ms Caryn Clarke	Senior Consultant	MSc Environmental Science (Rhodes University)	5	• Lead Report Writer • Project Manager • GIS Mapping

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2 PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND

South Africa Mainstream Renewable Power Developments (Pty) Ltd. (Mainstream) received Environmental Authorisations (EA) in 2015 for the Waaihoek Wind Energy Facility (WEF) and Powerline to be developed south-east of Utrecht in the Emadlangeni Local Municipality (ELM), KwaZulu Natal Province (DEFF Ref: 14/12/16/3/3/2/655 and 14/12/16/3/3/2/654).

2.2 PROJECT DESCRIPTION

Waaihoek Wind Farm (Pty) Ltd, a subsidiary of South Africa Mainstream Renewable Power Developments (Pty) Ltd, are proposing to develop the following in association with the authorised Waaihoek Wind Energy Facility (WEF) and Powerline (14/12/16/3/3/2/655 and 14/12/16/3/3/2/654):

1. Waaihoek Battery Energy Storage System (BESS) adjacent to the authorised (but not existing) Waaihoek substation; and
2. Waaihoek reservoir to meet the water demands during construction of the authorised WEF.

2.2.1 Waaihoek BESS

Waaihoek Wind Farm (Pty) Ltd is proposing the construction and operation of a BESS and associated infrastructure for the authorised Waaihoek Wind, located south-east of Utrecht, in the eMadlangeni Local Municipality, Amajuba District Municipality (ADM), in Kwa-Zulu Natal (KZN) Province of South Africa.

The need for a BESS stems from the fact that electricity is only produced by the WEF while wind is blowing, while the peak demand may not necessarily occur during the daytime. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the facility is more efficient, reliable and electricity supply more constant.

The BESS will:

- Store and integrate a greater amount of renewable energy from the Waaihoek WEF into the electricity grid;
- This will assist with the objective to generate electricity by means of renewable energy to feed into the National Grid which will be procured under either the Renewable Energy Independent Power Producer Procurement Program (REIPPPP) other government run procurement programmes or for sale to private entities if required.

Table 2-1: BESS Technical Specifications

TECHNICAL SPECIFICATIONS	
BESS Footprint	Up to 2 ha
BESS Capacity	Up to 200MWh
BESS Technology	Lithium Ion
A BESS may be constructed, if it is deemed economically feasible to do so, for the renewable energy facility adjacent to the on-site substation or office building. The need for a BESS stems from the fact that electricity is only produced by the renewable energy facility while the sun is shining or wind is blowing, while the peak demand may not necessarily occur during the daytime. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the facility is more efficient, reliable	

and electricity supply more constant. Currently, the battery technologies being considered are either Solid State Batteries or Redox Flow Batteries.

Solid State Batteries

These energy storage units come in a range of containerised systems with size categories from 500 KWh to 4 MW. The total footprint area required for the containerised systems to accommodate a 75 MW project with this type of battery is approximately 1 ha. A 200MW system would have a footprint of up to 2 ha. The figure below provides a visual representation the difference between conventional battery system and the solid-state battery as well as the advantages of using the solid-state battery technology.

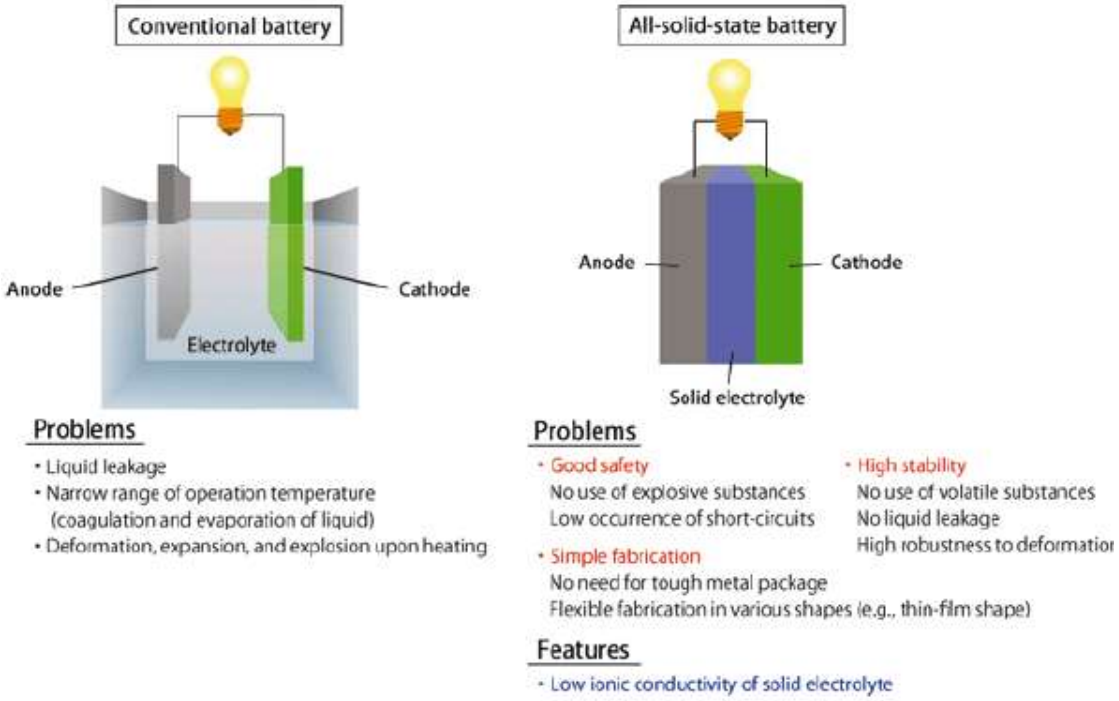

Figure 2-1: Conventional battery system vs solid-state battery.

Solid state batteries consist of multiple battery cells that collectively form modules. Each cell contains an anode, cathode and a solid electrolyte. Modules are usually assembled within shipping containers and delivered to the project site. Multiple containers will be required. The container unit dimensions are approximately 17 m long, 3.5 m wide, and 4 m high. Containers will be placed on a raised concrete plinths (30 cm) and may be stacked on top of each other to a maximum height of approximately 15 m. Additional instrumentation, including inverters and temperature control equipment, may be positioned between the battery containers. The typical layout of such a facility is presented below.

Figure 2-2: Typical layout of a solid-state battery system.

Redox Flow Batteries

Flow-battery technologies are also being considered as an alternative for power smoothing purposes. For this technology, energy is stored as an electrolyte in the flow cells. Options include Sodium polysulfide/bromine (PSB) flow batteries, Vanadium Redox flow batteries (VRFB), and Zinc-Bromine (ZNBR) flow batteries which would be contained in small bunded areas. Redox Flow Batteries (RFB) generally consist of two half-cells containing liquid electrolyte systems. Once supplied with electrical energy a reduction-oxidation (redox) reaction between ions of the two electrolytes, separated by a membrane, charge the electrodes with energy (anode [-] and cathode [+]). Energy discharge from a RFB is achieved by a reversed redox reaction between ions resulting in the potential for electrical energy to be drawn from the electrodes. The footprint of a RFB system is approximately 150 x 100 m, with a height of 15 m. The system consists of two electrolyte storage tanks that are contained within a 2.5 m high berm wall which prevents leakage of the electrolyte chemical into the surrounding environment. A conceptual layout of a RFB system is presented in the figure below.

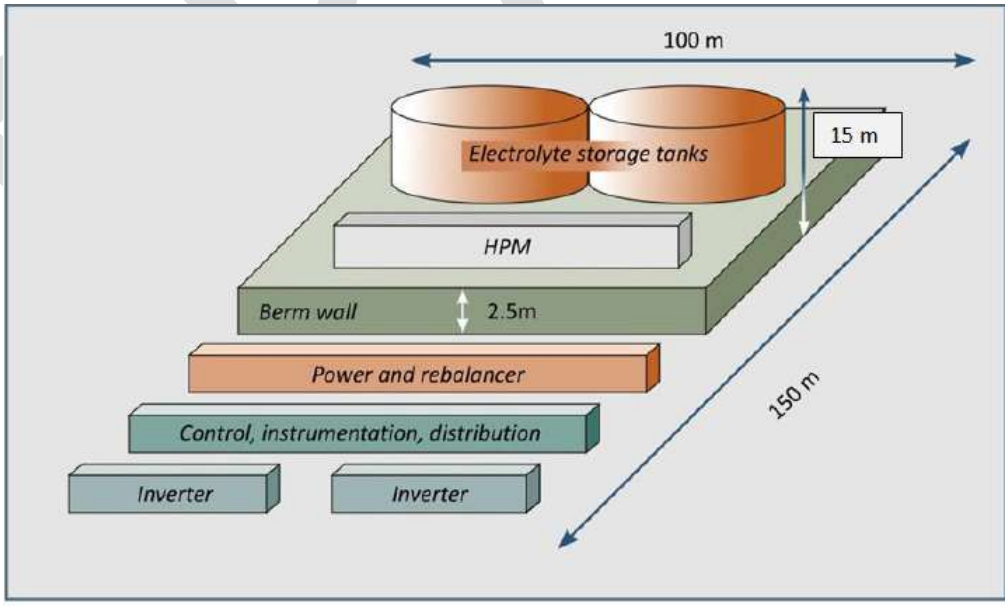

Figure 2-3: Conceptual layout of an RFB system.

2.2.2 Waaihoek reservoir

The Waaihoek reservoir is proposed to be located within the Waaihoek Substation assessment area or within the BESS assessment area (alternatives considered) (refer to Figure 2-5 below) . It will be used to meet the water demands of the Waaihoek WEF (and all associated infrastructure) during construction.

The reservoir will be built on well compacted 150-250mm thick G5 material. The sides will be corrugated iron lined with sail, which is bound with 5mm steel cable 6 rings on the outside. Measurements will be 2,5m high, 15m diameter which contains 400,000 litres of water (400m^3) (refer to Figure 2-4 below).

Water pipelines will not be installed or required. Water tankers will abstract water from boreholes and transport it to the reservoir. Thereafter, when water is required from the reservoir, the water tankers will abstract via a pump and transport the water to the WEF batching plant.

Figure 2-4: Example of the water reservoir

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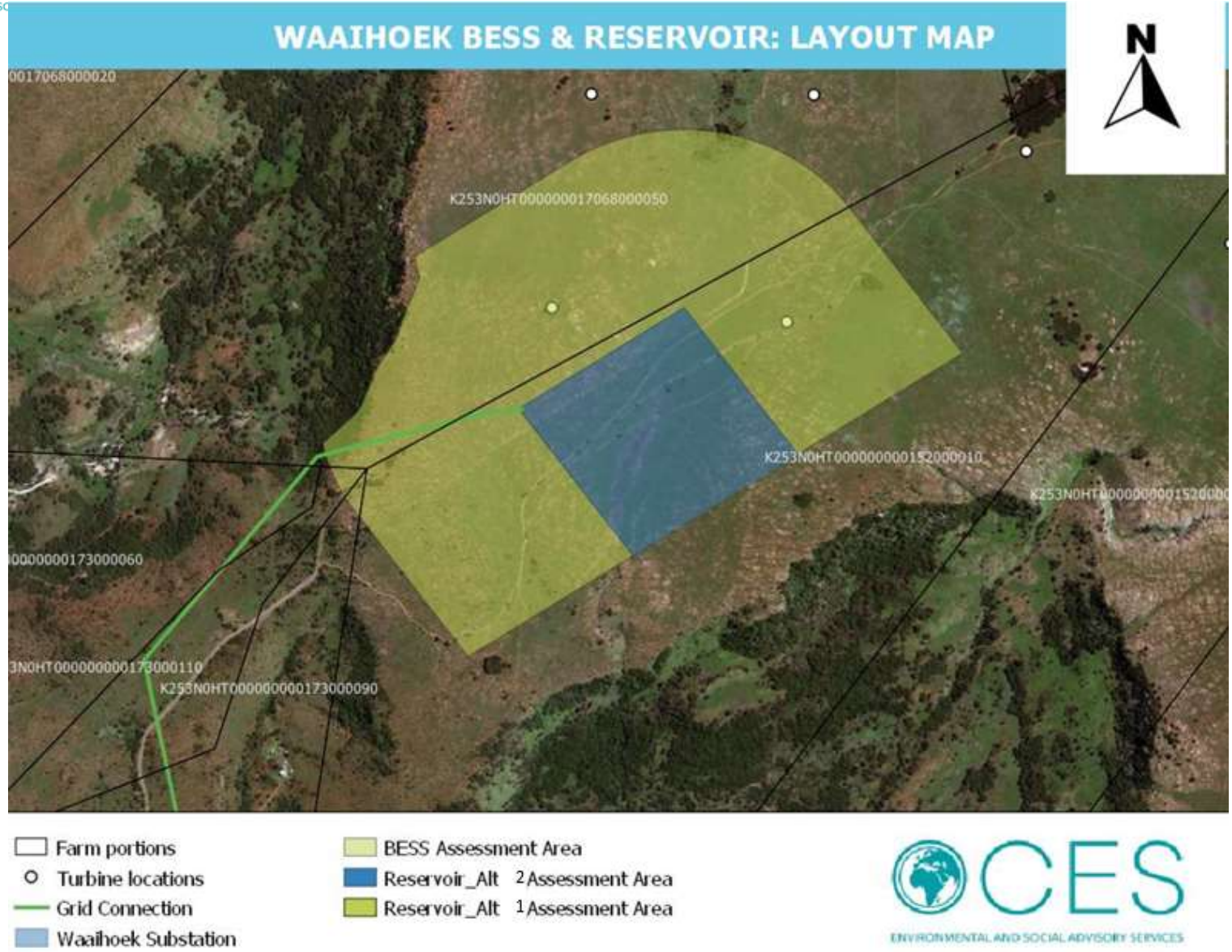

Figure 2-5: Layout Map of the proposed Waaihoek BESS and reservoir.

2.3 PROJECT LOCALITY

Waaihoek Wind Farm (Pty) Ltd., a subsidiary of South Africa Mainstream Renewable Power Developments (Pty) Ltd (the Applicant), is proposing the development of a battery energy storage system (BESS), associated with the Waaihoek Wind Energy Facility (WEF), south-east of Utrecht, within Ward 3 of the eMadlangeni Local Municipality, Amajuba District, in Kwa-Zulu Natal Province of South Africa (refer to Figure 2-6 below).

Table 2-2 (and Figure 2-5) below lists the proposed properties which will be affected by the proposed infrastructure. Table 2-3 provides the corner coordinates of the project area.

Table 2-2: 21-Digit Surveyor General (SG) Codes of the affected properties.

NO	FARM NAME	FARM/ ERF NO	PORTION	SG 21 CODE
1	GROOTHOEK	152	1	NOHT00000000015200001
2	WAAIHOEK	173	9	NOHT00000000017300009
3	WAAIHOEK	173	11	NOHT00000000017300011
4	WIJDGELEGEN	17068	5	N0HT00000001706800005

Table 2-3: Corner coordinates of the Waaihoek BESS and reservoir project area

NO.	CORNER POINT COORDINATES (DEGREES, DECIMAL MINUTES)	
1.	27°44'57.00"S	30°26'22.91"E
2.	27°44'47.62"S	30°26'28.87"E
3.	27°44'39.89"S	30°26'31.04"E
4.	27°44'29.03"S	30°26'49.26"E
5.	27°44'28.95"S	30°27'1.05"E
6.	27°44'48.16"S	30°27'20.80"E
7.	27°44'57.52"S	30°27'5.92"E
8.	27°45'15.75"S	30°26'35.84"E

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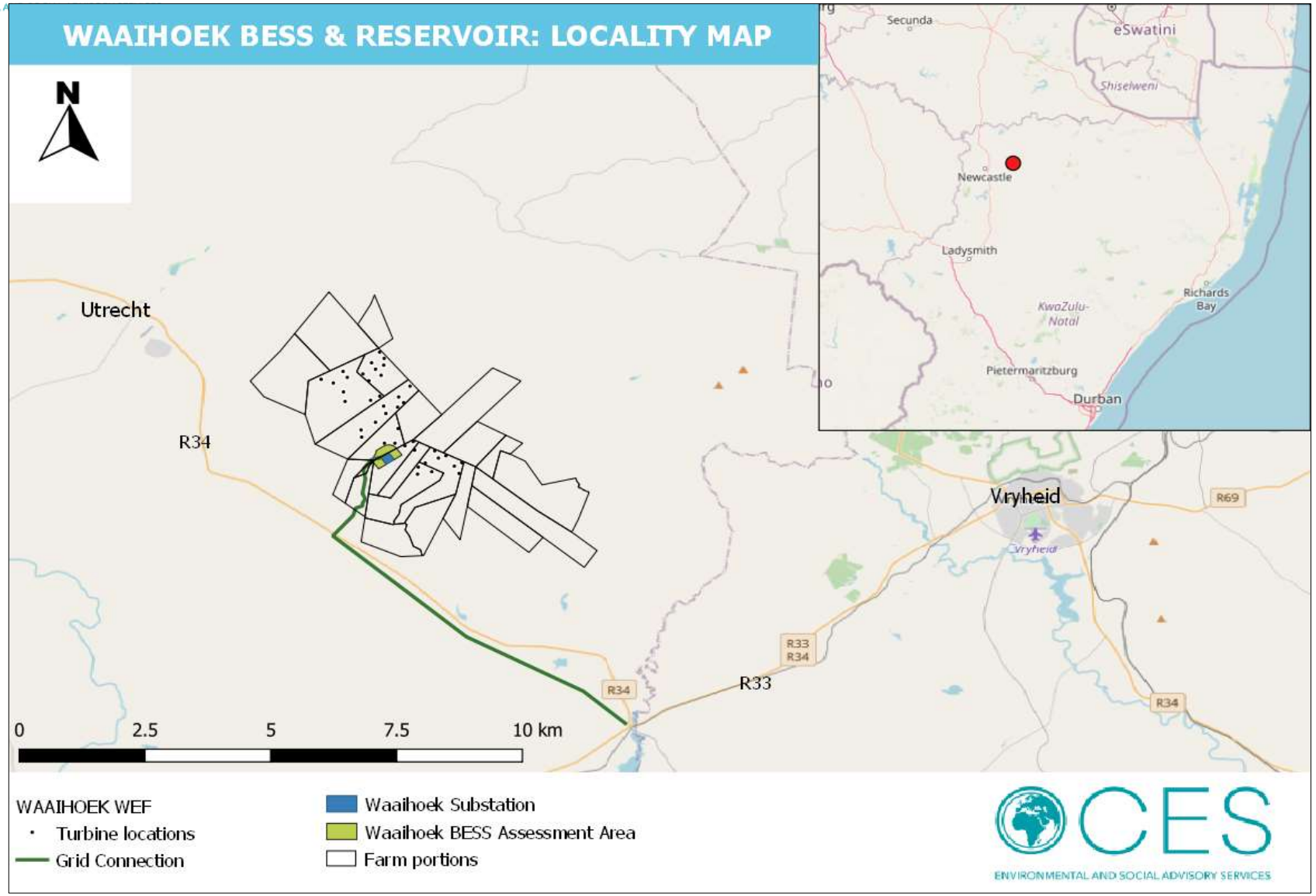

Figure 2-6: Locality Map

3 RELEVANT LEGISLATION

The development of the proposed Waaihoek BESS and reservoir will be subject to the requirements of various items of South African legislation. These are described below.

3.1 NATIONAL AND PROVINCIAL LEGISLATION

Table 3-1 below consists of the legislation which is relevant to the proposed Waaihoek BESS and reservoir.

Table 3-1: Relevant Legislation, Policies & Guidelines.

TITLE OF LEGISLATION, POLICY OR GUIDELINE	APPLICABILITY TO THE PROJECT
Constitution Act (Act No. 108 of 1996)	The developer is obligated to ensure that the development of the proposed Waaihoek BESS and reservoir will not result in pollution and ecological degradation. In addition, the Developer is obligated to ensure that the development is ecologically sustainable and that it demonstrates economic and social development.
National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) Environmental Impact Assessment Regulations (2014 and subsequent 2017 amendments)	The construction of the proposed Waaihoek BESS and reservoir triggers listed activities in terms of Listing Notice 1 and Listing Notice 3 of the NEMA EIA Regulations (2014 and subsequent 2017 amendments). Environmental Authorisation (EA) is required from the National Department of Environment, Forestry and Fisheries (DEFF) prior to the commencement of construction.
National Environmental Management: Biodiversity Act (NEM:BA Act No. 10 of 2004)	The developer must not cause a threat to any endangered ecosystems and must protect and promote biodiversity; must assess the impacts of the proposed development on endangered ecosystems; may not remove or damage any protected species without a permit; and must ensure that the site is cleared of alien vegetation using appropriate means.
National Water Act (NWA, Act No. 36 of 1998)	The proposed Waaihoek BESS and reservoir may occur within 100 meters of a watercourse. In addition, abstraction from boreholes will be required during construction. Water use authorisation will be required from the Department of Water and Sanitation (DWS) prior to the commencement of the construction phase.
National Environmental Management: Protected Areas Act (NEM:PAA, Act No. 57 of 2003).	The proposed Waaihoek BESS and reservoir falls within 5km of private nature reserves. The developer must ensure that the relevant stakeholders are notified accordingly.
Mineral and Petroleum Resources Development Act (MPRDA, Act No. 28 of 2002)	The Department of Mineral Resources (DMR) should be made aware of the proposed development and should any activities associated with the construction of the proposed Waaihoek BESS and reservoir require the excavation/extraction of sand or hard rock for construction purposes, the necessary approvals and/or permits must be obtained from the DMR prior to the commencement of these activities.
National Heritage Resources Act (NHRA, Act No. 25 of 1999)	The proposed Waaihoek BESS and reservoir could impact sensitive heritage resources. The South African Heritage Resource Agency (SAHRA) and the KZN Provincial Heritage Resources Authority must be informed of the proposed development and the relevant authorisation and/or permits must be obtained prior to the commencement of the construction phase, if required.
KwaZulu-Natal Heritage Act (No. 4 of 2008)	
National Environmental Management: Waste Act (NEM:WA, Act No. 59 of 2008)	The developer must ensure that all activities associated with the proposed Waaihoek BESS and reservoir address waste-related matters in compliance with the requirements on the NEM:WA. The developer should communicate with the

	affected Local Municipalities (LMs) to ensure that waste is disposed of at a suitable registered landfill site.
National Forestry Act (NFA, Act No. 84 of 1998)	If any protected trees or indigenous forest in terms of this Act occur on site, the developer will require a license from the Department of Environment, Forestry and Fisheries (DEFF: Forestry) prior to commencement of the activity in such areas.
Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974)	In KZN the relevant statute is the 1974 Provincial Nature Conservation Ordinance. In terms of this Ordinance, a permit must be obtained from Ezemvelo KZN Wildlife to remove or destroy any plants listed in the Ordinance. The proposed Waaihoek BESS and reservoir development footprints could contain Species of Conservation Concern (SCC). The necessary permissions and/or permits must be obtained prior to the clearance of vegetation.
Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983)	The DEFF: Forestry must be informed of the proposed Waaihoek BESS and reservoir. An invasive species monitoring, control and eradication plan for land/activities under their control should be developed as part of the environmental plans in accordance with CARA.
Electricity Regulation Act (Act No. 4 of 2006)	The proposed Waaihoek BESS and reservoir must be in line with the Electricity Regulation Act.
Occupational Health and Safety Act (OHSA, Act No. 85 of 1993)	The developer must be mindful of the principles and broad liability and implications associated with the OHSA and mitigate any potential impacts which are identified prior to the construction phase.
National Environmental Management: Air Quality Act (NEM:AQA, Act No. 39 of 2004)	No major air quality issues are expected due to the proposed Waaihoek BESS and reservoir; however, the developer should be mindful of the impacts associated with dust generation during the construction phase.
National Road Traffic Act (NRTA, Act No. 93 of 1996)	The developer must comply with all the requirements in terms of the NRTA during the construction and operational phases of the proposed Waaihoek BESS and reservoir.
National Veld and Forest Fire Act (NVFFA, Act No. 101 of 1998)	The developer must ensure that appropriate fire-fighting equipment, protective clothing and trained personnel (for extinguishing fires) are present onsite during the construction of the Waaihoek BESS.
Subdivision of Agricultural Land Act (No. 70 of 1970)	The Subdivision of Agricultural Land Act (No. 70 of 1970) controls the subdivision of all agricultural land in South Africa and prohibits certain actions relating to agricultural land. In terms of the Act, the owner of agricultural land is required to obtain consent from the Minister of Agriculture in order to subdivide agricultural land. Approval will be required from the DEFF: Forestry for any activities on the land zoned for agriculture and any proposed rezoning or sub-divisions of agricultural land.

3.2 OTHER RELEVANT NATIONAL LEGISLATION

Other national legislation that may be relevant to the proposed Waaihoek BESS and reservoir include:

- The Environment Conservation Act (No. 73 of 1989) (ECA) Noise Control Regulations, which specifically provide for regulations to be made with regard to the control of noise, vibration and shock, including prevention, acceptable levels, powers of local authorities and related matters.

In addition to the above, aside from the environmental authorisation, there are other permits, contracts and licenses that will need to be obtained by the project proponent for the proposed project some of which fall outside the scope of the BA process. However, for the purposes of completeness, these include:

- KwaZulu-Natal Planning and Development Act (No. 6 of 2008).
- National Energy Regulator of South Africa (NERSA): Generation License.
- Eskom: Connection agreement and Power Purchase Agreement (PPA).

3.3 MUNICIPAL POLICY

3.3.1 eMadlangeni Municipal by-laws

Certain activities related to the proposed development may, in addition to National legislation, be subject to control by municipal by-laws. These will need to be confirmed with the eMadlangeni Local Municipality prior to construction.

3.3.2 Spatial Development Frameworks (SDF)

ADM Spatial Development Framework (SDF) (2017/2018) identifies land use categories. The proposed Waaihoek BESS and reservoir fall within an area designated for agricultural land use (Figure 3-1), and falls within land classified as 'good potential land' in terms of the ELM SDF (Figure 3-2). Since BESS activities are not mutually exclusive from farming activities, the proposed Waaihoek BESS and reservoir is not in conflict with the future spatial planning in the ADM or ELM.

The ELM (SDF) incorporates the objectives of the KZN Provincial Growth and Development Strategy (2019) to respond to the effects of climate change by advancing alternative energy generation, whilst managing the current pressure on biodiversity.

Although no areas have been "set aside" for alternative energy, biodiversity, environmental and agricultural areas have been mapped (Figure 3-3). The proposed Waaihoek BESS and reservoir project area falls on agricultural land categorised as 'threatened'. However, as the BESS and reservoir will be located within the approved Waaihoek WEF development footprint, the proposed development, is not expected to have a significant impact on the loss of agricultural land.

3.3.3 Integrated Development Plan (IDP)

The ADM IDP (2018-2019) discusses alternative energy as a response to a disaster risk management category involving infrastructure failure with regards to electrical service delivery. The focus is to implement a program for the development of alternative energy sources as an alternative route to achieve the objectives of service delivery. The IDP speaks mainly to self-sustaining sources of energy for example solar water heating but does not investigate options for large-scale energy generation from any other alternative sources.

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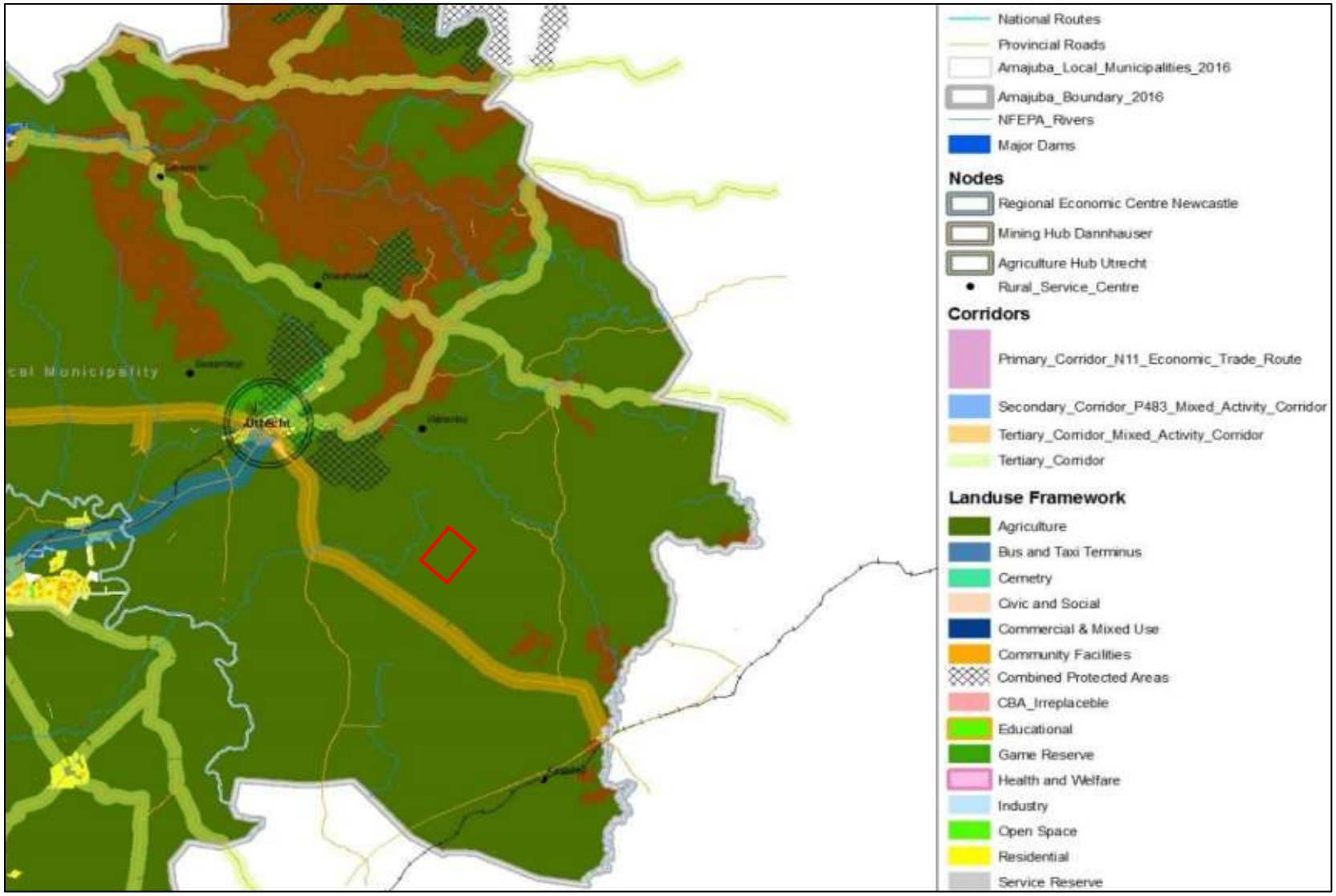

Figure 3-1: ADM SDF 2017/2018 (project area outlined in red).

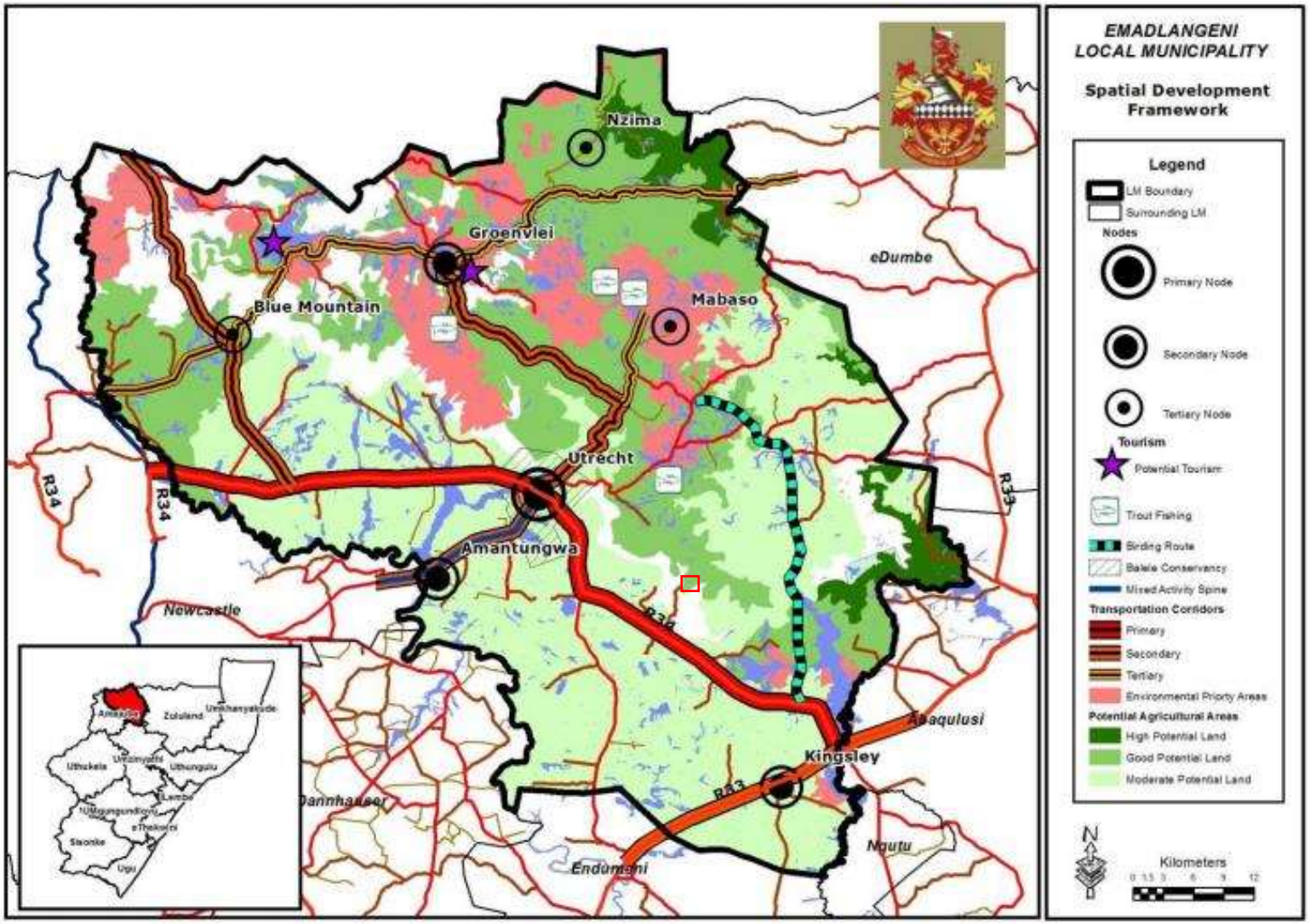

Figure 3-2: ELM SDF 2017/2018 (project area outlined in red).

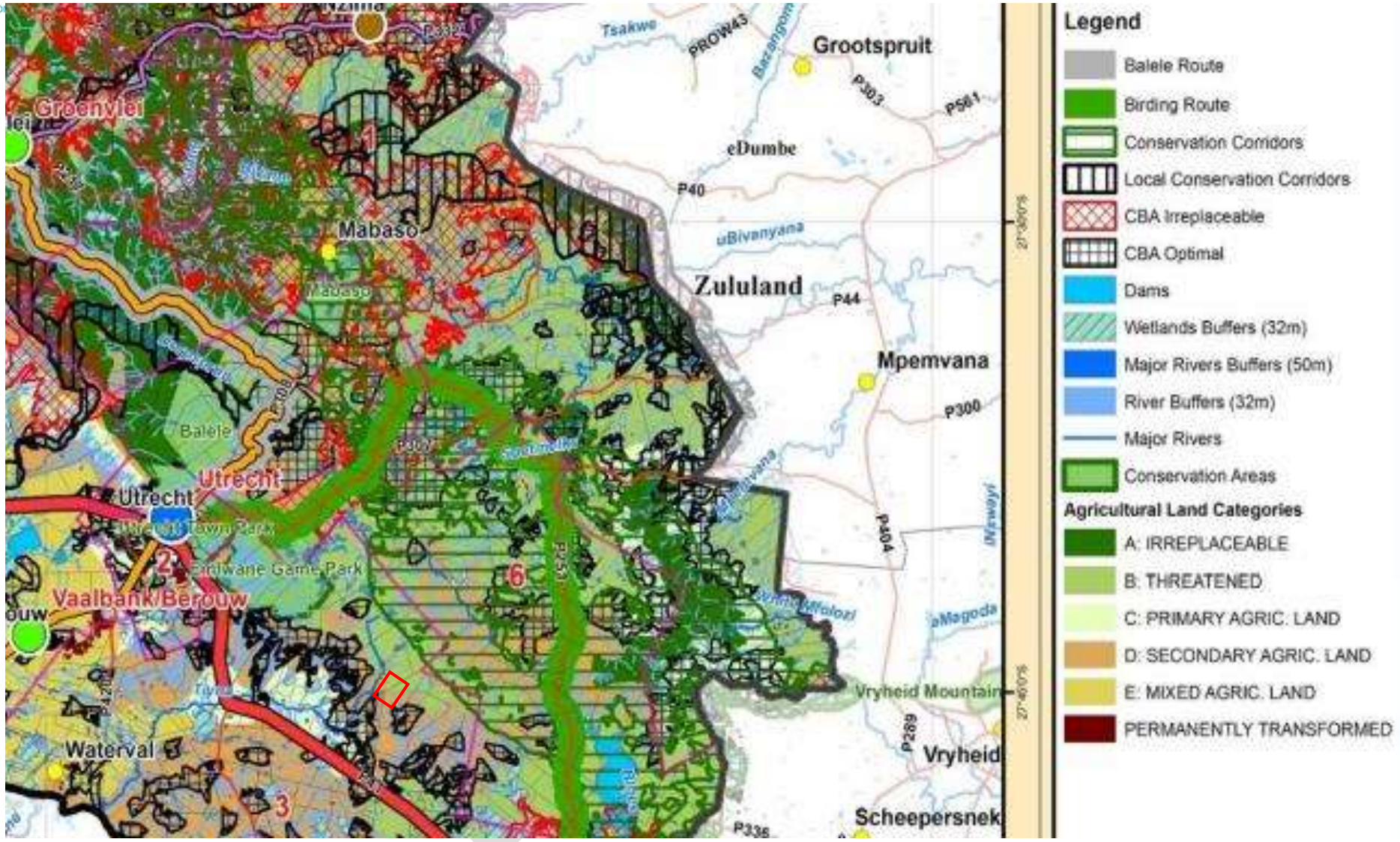

Figure 3-3: ELM consolidated SDF showing (project area outlined in red).

3.4 APPLICABLE LISTED ACTIVITIES

Table 3-2 below provides the relevant listed activities, in terms of the NEMA EIA Regulations (2014, as amended), which are likely to be triggered by the activities associated with the proposed Waaihoek BESS and reservoir.

The NEMA EIA Regulations (2014, as amended) allows for a Basic Assessment process for activities with limited environmental impact (GN R. 327 and 324, 2017) and a more rigorous two (2) tiered approach to activities with potentially greater environmental impact (GN R. 325, 2017). This two (2) tiered approach includes both a Scoping and EIA process.

The proposed Waaihoek BESS and reservoir triggers the **Basic Assessment (BA) process**, due to the Listing Notice 1 and Listing Notice 3 activities, which will require an EA from the National DEFF.

Table 3-2: Listed Activities triggered by the proposed Waaihoek BESS and reservoir

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.
12 (ii) (c)	The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	- Infrastructure associated with the BESS and reservoir will be located within 32m of a watercourse.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic meters or more but not exceeding 500 cubic meters.	- The proposed WEF development will require an on-site storage facility for the temporary storage of fuel for the duration of construction. The combined storage capacity will be larger than 80 cubic meters but will not exceed 500 cubic meters. This infrastructure would be placed within the footprint of either the BESS/ Substation, pending detailed design. - This activity is applicable for Redox Flow Battery technology (or similar) which consists of electrolyte storage tanks contained within a bunded area to prevents leakage of the electrolyte chemical into the surrounding environment. Electrolyte storage tanks will need to be refilled during operation as well.
27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	- The proposed BESS, reservoir and associated infrastructure, associated with the authorised WEF, will involve the clearance of 2-3ha of indigenous vegetation.
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 proposed BESS and reservoir development site is currently zoned as for agriculture, and the area to be developed will be larger 2-3ha in extent.

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.
2 d (xii) (aa)	The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres. d. KwaZulu-Natal xii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;	- The construction of a 400m^3 reservoir on site for water supply during construction of the WEF, which will be located within 5km of a protected area.
4 d (xii) (aa)	The development of a road wider than 4 metres with a reserve less than 13,5 metres. d. KwaZulu-Natal xii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.	- The proposed BESS and reservoir will include the development of roads wider than 4 metres in extent. While existing roads will be used where feasible, additional new sections may be required. Roads will occur in the KZN, outside of urban areas, within 5km of a protected area.
10 d (xiii) (aa) (cc)	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good. d. KwaZulu-Natal: xiii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve; (cc) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland.	- This activity will be applicable for Redox Flow Battery technology (or similar) which consists of electrolyte storage tanks contained within a bunded area to prevents leakage of the electrolyte chemical into the surrounding environment, to be located within 5km of a protected area and possibly within 100m from a wetland.
18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. d. KwaZulu-Natal xii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.	- The proposed BESS and water reservoir, associated with the authorised Waaihoek WEF, will require the widening or lengthening of existing roads which will be located within 5km of a protected area.

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4 PROJECT NEED AND DESIRABILITY

Increasing pressure is being placed on countries internationally to reduce their reliance on fossil fuels, such as oil and coal, which contribute towards Greenhouse Gases (GHG) being emitted into the atmosphere and therefore contributing to climate change. Renewable energy resources, such as Wind Energy Facilities (WEFs) and Solar PV farms, are being implemented as alternative sources of energy at both a global and national scale.

South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA). The draft South African Integrated Resource Plan (IRP, 2018) was released for public comment in August 2018, setting out a new direction in energy sector planning. The plan includes a shift away from coal, increased adoption of renewables and gas, and an end to the expansion of nuclear power. The South African Government has not yet communicated a timeline for the final adoption of the plan. The previous two (2) proposed IRP updates (in 2013 and 2016) were not adopted by Cabinet.

The revised plan, if adopted, would mark a major shift in energy policy. The policy aims to decommission a total of 35 GW (of 42 GW currently operating) of coal generation capacity from Eskom by 2050, starting with 12 GW by 2030, 16 GW by 2040 and a further 7 GW by 2050. The draft IRP (2018) also proposes a significant increase in renewables-based generation from wind and solar as well as gas-based generation capacity by 2030 and beyond, with no further new nuclear capacity being procured. Implementing the IRP update (2018) could bring South Africa close to meeting the upper range of its 2030 Nationally Determined Contribution (NDC) target. The implementation of the IRP (2018) would constitute significant progress in the transformation of the South African energy sector. To be in line with the Paris Agreement goals for mitigation, South Africa would still need to adopt more ambitious actions by 2050, such as expanding renewable energy capacity beyond 2030, fully phasing out coal by mid-century, and substantially limiting unabated natural gas use.

Eskom currently has a net output of 47 201 MWp, and it produces 85% of South Africa's electricity, which is equivalent to 40% of Africa's electricity. Renewable energy contributes to 5% of South Africa's electricity. This is mainly due to the targets set in the IRP (2010-2030) which aimed to change the electricity landscape from high coal (91.7%) to medium coal (48%) using electricity produced by the Independent Power Producers (IPP), with the utility company, Eskom, as the single buyer of the electricity.

The Renewable Energy Independent Power Producers (REIPPP) programme procured over 6.3 GW by 2017 and of this, 3.8 GW was already feeding into the grid. A further 2.4 GW was procured in 2018, which included twenty-seven (27) projects signed by the minister. The REIPPP attracted $14.4 billion investment by December 2017. The concept is based on the public-private partnership model to increase new generation capacity. It also encourages industrialisation as it requires that at least 40% of the technologies involved should have local content. This results in job creation for the local communities, where manufacturing takes place.

The proposed Waaihoek BESS is required to temporarily store energy generated by the Waaihoek WEF. This will result in the ability to store energy as it is generated and then redistribute it when needed, rather than as it is produced. This ability reduces the need to curtail renewable generation and allows the energy to be deployed during periods of high electricity demand. Therefore, the project need and desirability also relates to the need and desirability of renewable energy on a local, district, provincial, national and international level.

4.1 LOCAL & DISTRICT LEVEL

The proposed Waaihoek BESS (and water reservoir), as supplementary infrastructure to the authorised Waaihoek WEF, aim to promote local economic growth and development through the creation of direct and indirect employment opportunities.

4.1.1 ADM IDP (2018-2019)

The proposed Waaihoek BESS and reservoir is in line with the ADM IDP (2018-2019) as it will contribute to the creation of employment opportunities, which is a key issue as per the ADM IDP. In addition, the ADM IDP (2018-2019) aims to ensure that "*the vision, mission, strategic objectives and strategies are in sync with the national developmental objectives as enshrined in the National Development Plan (NDP), the KwaZulu Natal Growth and Provincial Development Strategy (PGDS), Spatial Planning and Land Use Management Act (SPLUMA) and other national and provincial legislative and developmental imperatives*".

While the Waaihoek WEF will contribute to national energy supply, it is important to note that there is a deficit in electricity service delivery on a local scale, which will need to be rectified, as per the ADM IDP (2018-2019). In addition, the national current power supply challenges have had a negative impact on the national and local economy as production has to be stopped to accommodate the electricity shortage. The ADM has felt the effects of the challenges faced by ESKOM, and therefore, the proposed Waaihoek BESS will allow for ability to store energy as it is generated and then redistribute during periods of high electricity demand.

4.1.2 eMadlangeni Local Municipality Integrated Development Plan (IDP), 2020 - 2021

The municipal development goal of "Energy Services and Infrastructure" and "Waste Management and Infrastructure" recognises the need to improve the reliability of the electricity network, and to conduct and implement new alternative energy generating methods respectively. The Waaihoek BESS (and WEF) is therefore an important investment in improving and meeting the local electricity supply requirements.

4.2 PROVINCIAL LEVEL

4.2.1 KZN Provincial Growth and Development Plan 2035 (2019)

The proposed Waaihoek BESS and reservoir includes the development of infrastructure associated with the Waaihoek WEF. This is in line with the KZN 2035 Provincial Growth and Development Plan, and particularly "*Strategic Objective 4.5: Ensure access to affordable, reliable, sustainable and modern energy for all"* as it will contribute to the electricity transmission and distribution networks which will accommodate the generation capacity and strengthen the grid capacity.

The PGDP (2019) states "*the Province must prioritise alternative energy projects and or programs to determine their feasibility as a reliable supply of energy. Alternative energy supply or the green economy must become measurable in the PGDP with an institutional structure accountable to ensure targets are met*."

4.3 NATIONAL LEVEL

4.3.1 National Energy Act (Act No. 34 of 2008)

The Act enables the Minister to make regulations regarding the minimum contributions to national energy supply from renewable energy sources, the nature of the sources that may be used for renewable energy contributions to the national energy supply, and measures and incentives designed to promote the production, consumption, investment, research and development of renewable energy.

4.3.2 Integrated Resource Plan 2019

The IRP 2019 (gazetted in October 2019) is essentially a plan for South Africa's future energy needs but also attempts to balance a number of objectives, including: security of supply, at minimal cost, with minimal environmental impacts (including CO2 emission reduction targets) and minimal water usage.

In line with the planned capacity in the promulgated IRP 2010–2030 and in accordance with Section 34 of the Electricity Regulation Act No. 4 of 2006, the Minister of Energy has, to date, determined that **39 730 MW** of new generation capacity must be developed. Of the 39 730 MW determined, about 18 000 MW has been committed to date. This new capacity is made up of 6 422 MW under the REIPPP with a total of 3 876 MW operational on the grid. Under the committed Eskom build, the following capacity has been commissioned: 1 332 MW of Ingula pumped storage, 2 382 MW of Medupi (out of the 4 800 MW planned), 800 MW of Kusile (out of the 4 800 MW planned) and 100 MW of Sere Wind Farm. 1 005 MW from OCGT for peaking has also been commissioned.

Drawing from the conclusions of the scenarios analysed, the scenario of RE without annual build limits provides the least-cost path up to 2050. The significant change in the energy mix post 2030 and the sensitivity of the energy mix to the assumptions are key points to note.

For the period ending 2030, a number of policy adjustments are proposed to ensure a practical plan that will be flexible to accommodate new, innovative technologies that are not currently cost competitive, the minimization of the impact of decommissioning of coal power plants and the changing demand profile. Applied policy adjustment and considerations in the final proposed plan includes a least-cost plan with the retention of annual build limits (1 000MW for PV and 1 600MW for wind) from 2025 for the period up to 2030. This provides for smooth roll out of RE, which will help sustain the industry.

4.3.3 National Development Plan (NDP): Vision 2030, 2012

The National Development Plan (NDP) aims to promote sustainable and inclusive development in South Africa to reduce and ultimately eliminate poverty. The NDP envisages that by 2030 South Africa will have an energy sector that promotes economic growth and development through adequate investment in energy infrastructure Of the twelve (12) key focus areas of the NDP, the proposed Waaihoek BESS will contribute to (1) an economy which will create more jobs, (2) improving infrastructure, and (3) transition to a low carbon economy.

The NDP prioritises *"procuring at least 20 000MW of renewable electricity by 2030, importing electricity from the region, decommissioning 11 000MW of ageing coal-fired power stations and stepping up investments in energy-efficiency."*

4.3.4 National Climate Change Response White Paper, 2012

Climate change has been identified as one (1) of the greatest threats to sustainable development in South Africa. The National Climate Change Response White Paper obligates the country to make a fair contribution to the global effort to achieve the stabilisation of GHG concentrations in the atmosphere. The proposed Waaihoek BESS, required for the Waaihoek WEF, is in accordance with the National Climate Change Response White Paper as it will provide an alternative source of electricity, to fossil fuel-derived electricity, which will contribute to climate change mitigation.

4.3.5 The White Paper on Renewable Energy Policy (Renewable Energy White Paper)

The White Paper on the Renewable Energy Policy (Renewable Energy White Paper) complements the White Paper on Energy Policy discussed in section 3.2.8 above, by pledging "*Government Support for the development, demonstration and implementation of renewable energy sources for both small- and large-scale applications*". It sets out the policy principles, goals and objectives to achieve, "*An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation*".

4.3.6 Industrial Policy Action Plan (IPAP)

In February 2010, the government released the 2010/11 – 2012/13 Industrial Policy Action Plan, with a review done in 2018/19 – 2020/21. The IPAP aims to promote among others:

- A serious first step towards the systematic promotion of Green and energy-efficient goods and services.
- A substantial contribution to the creation of decent jobs, both directly and indirectly.

With regard to "Green" and energy-saving industries, the IPAP notes the following (p41): *"Increasing concerns in relation to carbon emissions and climate change will have a profound impact on our economic landscape, introducing both threats and opportunities. Increasing energy costs pose a major threat to manufacturing and render our historical capital and energy-intensive resource processing based industrial path unviable in the future. However, there are significant opportunities to develop new 'green' and energy efficient industries and related services."*

4.4 INTERNATIONAL LEVEL

4.4.1 United Nations Framework Convention on Climate Change (UNFCCC), 1994

The UNFCCC is a framework convention which was adopted at the 1992 Rio Earth Summit. South Africa signed the UNFCCC in 1993 and ratified it in August 1997. The stated purpose of the UNFCCC is to *"…achieve… stabilisation of greenhouse gas concentrations in the atmosphere at concentrations at a level that would prevent dangerous anthropogenic interference with the climate system",* and to thereby prevent human-induced climate change by reducing the production of greenhouse gases defined as*, "those gaseous constituents of the atmosphere both natural and anthropogenic, that absorb and re-emit infrared radiation."*

The proposed Waaihoek BESS (and reservoir), required for the Waaihoek WEF, is in line with the UNFCCC as the developments will contribute to the reduction in the production of GHG by providing an alternative energy source to fossil fuel-derived electricity in South Africa.

4.4.2 The Kyoto Protocol, 2002

The Kyoto Protocol, which was adopted in Kyoto (Japan) in 1997 and enforced in 2005, is an international agreement which is linked to the UNFCCC. The Protocol contains internationally binding emission reduction targets, as an instrument to reduce climate change. *"Under the Protocol, countries' actual emissions have to be monitored and precise records have to be kept of the trades carried out."* The proposed Waaihoek BESS (and reservoir), associated with the Waaihoek WEF, is in line with the Kyoto Protocol as the infrastructure provides an alternative energy source to fossil fuels.

5 PUBLIC PARTICIPATION PROCESS

A Public Participation Plan was submitted to DEFF prior to the pre-application meeting held on the 13th October 2020 and approved on the 15th October 2020. Please refer to Appendix C for the approved plan.

5.1 OBJECTIVES OF THE PUBLIC PARTICIPATION PROCESS

In accordance with Section 40 (1), stipulated in Chapter 6 of the NEMA EIA Regulations (2014 and subsequent 2017 amendments), the purpose of public participation is to provide all potential or registered Interested and/or Affected Parties (I&APs), including the Competent Authority (DEFF), with the opportunity to access the relevant documents and information which could reasonably or potentially influence any decision with regards to the proposed Waaihoek BESS (and associated infrastructure) and reservoir EA application. The process aims to:

- Disclose activities planned by the Applicant and steps in the BA process by the environmental team;
- Identify concerns and grievances raised by the I&APs;
- Respond to all the I&APs grievances and enquiries;
- Identify local expertise, needs and knowledge from the I&APs;
- Identify additional or new stakeholders and people affected by, or interested in, the proposed project;
- Gather perceptions and comments on the specialist studies;
- Ensure that all issues raised by I&APs have been adequately addressed and/or assessed; and
- Share the findings of the BA process, such as significant impacts, mitigation measures, management actions, and monitoring programmes.

The PPP must include consultation with the following key members:

- The Competent Authority (DEFF);
- All state departments which have laws relating to the proposed activity or the proposed location of the activity;
- All organs of the state which have jurisdiction relating to the proposed activity or the proposed location of the activity; and
- The registered and potential I&APs.

5.2 ACTIVITY ON LAND OWNED BY PERSON OTHER THAN THE APPLICANT

In accordance with Section 39 (1), stipulated in Chapter 6 of the NEMA EIA Regulations (2014 and subsequent 2017 amendments), which states that: *"If the proponent [Applicant] 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."*

Waaihoek Wind Farm Pty Ltd. has engaged with the landowners and received written consent, to undertake the proposed activities on the proposed properties, from the affected landowners. Refer to Appendix E2.

5.3 LEGISLATIVE REQUIREMENTS

Public consultation is a legal requirement and developers are required to conduct public consultation throughout the Basic Assessment process. The following is required:

5.3.1 Site Notice

According to Regulation 41(2) of the NEMA EIA Regulations 2014 (as amended) "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.

Refer to Appendix E4 for proof of placement and the content of the site notice.

5.3.2 Newspaper Advertisement

(c) placing an advertisement in:
  (i) one local newspaper; or
  (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);

A newspaper advertisement was placed in the Natal Witness (provincial newspaper) on 2nd November 2020, in order to notify the general public of the proposed development and of the availability of the Draft BAR for public review. Refer to Appendix E3 for proof of placement.

5.3.3 I&AP and Stakeholder Notifications

(b) giving written notice, in any of the manners provided for in section 47 D 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 and to any alternative site where the activity is to be undertaken;
  (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
  (iii) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (iv) the municipality which has jurisdiction in the area;
  (v) any organ of state having jurisdiction in respect of any aspect of the activity; and
  (vi) any other party as required by the competent authority;

Contact details of all stakeholders identified (I&AP list) are provided in Appendix E7. Letters of notification and Background Information Documents (BIDs) were distributed via email to all stakeholders on the 2nd November 2020. Refer to Appendix E6 for proof of notifications.

All I&APs were notified of the commencement of the Draft BAR public review period (and how to access the report), on the 13th November 2020, by means of sms, email and social media (CES Facebook page). An advertisement was also placed in the Natal Witness newspaper on the 2 November 2020 notifying the public of the proposed development.

The Draft BAR has been made available for public review for a period of thirty (30) days, from the 13th November 2020 until the 13th December 2020. The Draft BAR and associated documents have been made available online at http://www.cesnet.co.za/publicdocuments. In addition, soft copies have been sent directly to the following stakeholders/authorities: (a) National DEFF, (b) DEFF: Biodiversity and Conservation, (c) KZN Department of Economic Development, Environmental Affairs and Tourism, (d) KZN Department of Water and Sanitation (DWS), (e) Ezemvelo KZN Wildlife and (f) KZN Amafa and Research Institute (Provincial Heritage Authority). Refer to Appendix E6 for all notification proofs.

Similarly, all I&APs will be notified of the submission of the Final BAR to the competent authority (DEFF).

5.3.4 Stakeholder Identification and Registered I&APS

A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of:

(a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;

(b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and

(c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

An I&AP database, including all identified and registered I&APs, has been included in Appendix E7 of this report. All individuals who registered on the original Waaihoek WEF I&AP Databases were automatically registered on the Waaihoek BESS and reservoir I&AP Database due to the proximity of the developments to each other and linkages between the developments.

5.3.5 Issues Raised by I&APS

A Comments and Response Report (CCR), included in Appendix F, provides a summary of all I&AP comments received and CES's responses to date. Any comments received during the 30-day public review of the Draft BAR will be included in CCR and submitted with the Final BAR.

6 ALTERNATIVES

One (1) of the requirements of a Basic Assessment is to investigate alternatives associated with a proposed project activity.

6.1 REASONABLE & FEASIBLE ALTERNATIVES

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. In all cases, the no-go alternative must be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

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

- The property on which or location where it is proposed to undertake the activity;
- The type of activity to be undertaken;
- The design or layout of the activity;
- The technology to be used in the activity;
- The operational aspects of the activity; and/or
- The option of not implementing the activity.

6.2 FUNDAMENTAL INCREMENTAL & NO-GO ALTERNATIVES

6.2.1 Fundamental Alternatives

Fundamental alternatives are developments which are completely different to the proposed project description and usually include the following:

- Alternative property or location where it is proposed to undertake the activity;
- Alternative type of activity to be undertaken; and
- Alternative technology to be used in the activity.

6.2.2 Incremental Alternatives

Incremental alternatives relate to modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. Incremental alternatives which can be considered, include:

- Alternative design or layout of the activity; and
- Alternative operational aspects of the activity.

6.2.3 No-go Alternative

It is mandatory to consider the "no-go" option in the Basic Assessment Process. The "no-go" alternative refers to the current status quo and the risks and impacts associated with it. Some existing activities may carry risks and may be undesirable (e.g. an existing contaminated site earmarked for a development). The no-go is the continuation of the existing land use, i.e. to maintain the status quo.

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6.3 ANALYSIS OF ALTERNATIVES

Table 6-1 illustrates the methodology used to assess the identified alternatives. The table includes the assessment of the advantages and disadvantages and provides further comments on the selected alternatives.

Table 6-1: Alternatives which were Considered for the proposed Waaihoek BESS and reservoir.

ALTERNATIVE TYPE	ALTERNATIVE	ADVANTAGES	DISADVANTAGES	FURTHER CONSIDERATION/ ASSESSMENT?	COMMENT
FUNDAMENTAL ALTERNATIVES					
BESS LOCATION ALTERNATIVES	**Alternative 1 (preferred): current proposed site** Located on Farms 152/1 and 17068/5. Coordinates: 27°44'47.98"S; 30°26'47.49"E Location alternatives are limited to the proposed project study area as the proposed Waaihoek BESS will connect to the approved (but not existing) Waaihoek substation (to be located within the blue shaded area below) situated within the larger Waaihoek WEF development area. Micro-siting of the 2 ha BESS within the 130 ha BESS assessment area (green shaded area below) will take place in accordance to the outcome of the site sensitivity assessment detailed in Chapter 9 of this report. 	• Outside urban edge, and not close to residential areas. • Existing access road to the site. • No sensitive heritage features identified within the site. • Livestock grazing will be able to continue around the BESS development footprint. • Suitable topography, gentle slope. • Located adjacent to the approved Waaihoek substation area.	• Clearance of natural vegetation. • Within 500m from seep wetlands. • No existing infrastructure and services. • Sensitivities as identified by the National Screening Tool	YES	The main determining factor for selecting the proposed location was because the proposed BESS needs to be adjacent to the authorised (but not existing) Waaihoek substation.

ALTERNATIVE TYPE	ALTERNATIVE	ADVANTAGES	DISADVANTAGES	FURTHER CONSIDERATION/ ASSESSMENT?	COMMENT
	Alternative location 2: No alternative site locations have been identified.	• N/A	• N/A	N/A	No alternative site locations have been identified because the preferred alternative, which allows for micro-siting within the 130ha study area, has been identified as a suitable location alternative for the Waaihoek BESS.
RESERVOIR LOCATION ALTERNATIVES	**Alternative 1 (preferred): within the BESS assessment area** Located on Farms 152/1 and 17068/5. Coordinates: 27°44'47.98"S; 30°26'47.49"E The proposed Waaihoek reservoir is proposed to be located within the general BESS assessment area. Micro-siting of the placement of the reservoir within the 130 ha BESS assessment area will take place in accordance to the outcome of the site sensitivity assessment detailed in Chapter 9 of this report.	• As above	• As above	YES	The proposed reservoir is to be placed in close proximity to the substation or BESS, which minimises the construction footprint in terms of access roads, etc.
	Alternative 2: within substation assessment area Located on Farms 152/1. Coordinates: 27°44'53.67"S; 30°26'52.09"E	• As above	• As above	YES	
TYPE OF ACTIVITY This refers to the fundamental activity options	**Alternative activity 1:** The development of the proposed Waaihoek BESS within the proposed location.	• The Waaihoek BESS will supplement the authorised Waaihoek WEF and allow electricity which is produced by the Waaihoek WEF while	• The loss of 2-3 ha of indigenous vegetation, specifically Wakkerstroom Montane Grassland (Gm14), as well as a contribution to the	YES	The No-Go Option has been assessed as an alternative to the development of the

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ALTERNATIVE TYPE	ALTERNATIVE	ADVANTAGES	DISADVANTAGES	FURTHER CONSIDERATION/ ASSESSMENT?	COMMENT
within the proposed location.		the wind is blowing to store energy for the peak demand period. • The Waaihoek BESS will allow the Waaihoek WEF to operate more efficiently and enable the WEF to provide a more reliable and constant electricity supply. • The construction and operation of the Waaihoek BESS will create employment opportunities.	cumulative loss of this vegetation type. • The loss of 2 ha of faunal habitat. • The loss of 2 ha of grazing land.		proposed Waaihoek BESS.
	Alternative activity 2: The "no-go" option, which entails no development within the proposed location.	• The site will remain largely undeveloped/in a natural state and will continue to be used as grazing land. • Most of the adverse impacts associated with the Waaihoek BESS and associated infrastructure are unlikely to occur in the absence of the development.	• The benefits associated with the proposed Waaihoek BESS, such as supplementing the Waaihoek WEF development and ensuring a more reliable and constant electricity supply, will be lost. • The benefits associated with the proposed Waaihoek BESS, such as the creation of employment opportunities during the construction and operation of the BESS, will be lost	YES	
INCREMENTAL (DESIGN/LAYOUT/TECHNOLOGY) ALTERNATIVES					
BESS DESIGN & LAYOUT	**Alternative layout 1**: Current proposed layout to be determined based on the assessment of the sensitivity (refer to Chapter 9) within the 130-ha study area (Preferred alternative).	• The preferred layout alternative will consider the environmental sensitivities of the 130-ha study area, including all sensitivities identified by the National	• Clearance of natural vegetation. • Within 500m from seep wetlands. • No existing infrastructure and services.	YES	The layout alternatives consist of the siting of the proposed BESS and associated infrastructure with a 2-ha development

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ALTERNATIVE TYPE	ALTERNATIVE	ADVANTAGES	DISADVANTAGES	FURTHER CONSIDERATION/ ASSESSMENT?	COMMENT
		Screening Tool and specialist assessments, to determine the suitable site for the 2 ha BESS, associated infrastructure and reservoir development footprint.	• Sensitivities as identified by the National Screening Tool.		footprint, within the assessed 130 ha study area.
	Alternative layout 2: The layout alternatives consist of different possible locations within the 130-ha study area.	• As above	• As above	N/A	
BATTERY TECHNOLOGY ALTERNATIVES - A high-level risk assessment will be done for all battery technologies considered for the proposed BESS	**Alternative technology 1:** Li-ion (lithium ion) Battery Technology	• High level of energy efficiency. • Relatively high energy density. • Fast response to unpredictable variations in demand and generation. • Low maintenance. • Relatively long lifecycle (approximately 10 to 15 years' service life). • Ability to offset grid fluctuations. • Currently the most widely used BESS technology.	• Fire risk due to thermal runaway. • High cost due to limited abundance in lithium. • Risk of annual degradation. • Battery protection is required. • Power and energy capacity directly coupled (expensive to scale).	YES	YES - The technology alternatives which have been considered for the battery storage include Li-ion and Vanadium Redox Flow and Zinc-Hybrid technologies. All technologies will be assessed to not limited the developer in the future should the technology of certain battery types advance. The Li-ion technology is currently the most widely used and assessed battery storage technology available.
	Alternative 2: Vanadium Redox Flow Battery Technology Refer to section 2.2 above for a detail description of each battery technology type considered.	• Fast response to unpredictable variations in demand and generation. • Long life cycle (approximately 20 years' service life). • Almost unlimited energy capacity. • No capacity degradation over time. • Electrolyte is inherently safe and non-flammable. • Independently tuneable power rating and energy capacity.	• Scarce and expensive components (vanadium pentoxide). • Lower level of energy efficiency. • Lower energy density than solid state batteries (such as li-ion). • Require the storage of electrolyte chemicals in tanks for which a Major Hazards Risk Assessment may be required	Dependent of future technology advances	

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ALTERNATIVE TYPE	ALTERNATIVE	ADVANTAGES	DISADVANTAGES	FURTHER CONSIDERATION/ ASSESSMENT?	COMMENT
			due to storage of hazardous goods. • Requires a larger development footprint (unless the containers are stacked). • Currently not market competitive.		
	Alternative 3: Zinc-hybrid (Zinc-Bromine (ZNBR)) Flow Battery Technology	• Relatively low cost. • Among the latest advanced chemistries.	• Currently an emerging technology with limited deployment and a lack of available technical information. • Currently not market competitive.	Dependent of future technology advances	
OPERATIONAL ASPECTS This relates mostly to alternative ways in which the development or activity can operate in order to reduce environmental risks or impacts	**Alternative operational activities:** Careful implementation of the EMPr (with updates to the working document) to inform the operational aspects of the BESS.	• The operational aspects of the Waaihoek BESS and associated infrastructure will be informed by the EMPr, which will be updated include the recommendations, mitigation measures and conditions of the BA Process (including Stakeholder and I&AP input), Specialist Assessments, and the Environmental Authorisation.	• Unanticipated environmental and/or social impacts could still occur during the operation of the Waaihoek BESS which will require the EMPr to be updated with additional recommendations and mitigation measures, as frequently as required, during both the construction and the operation of the Waaihoek BESS.	YES	The EMPr will inform the operational activities of the Waaihoek BESS and associated infrastructure and should be updated with additional recommendations and/or mitigation measures when required. The implementation of the recommendations and mitigation measure in the EMPr will significantly reduce the environmental and social risks associated with the Waaihoek BESS.

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6.4 RISK MATRIX ASSOCIATED WITH THE BESS TECHNOLOGY ALTERNATIVES

The BESS battery alternative technologies considered for the proposed Waaihoek BESS are as follows:

1. Li-ion (lithium ion) Battery Technology
2. Vanadium Redox Flow Battery Technology
3. Zinc-hybrid (Zinc-Bromine (ZNBR)) Flow Battery Technology

Although Li-ion technology is currently the most widely used and assessed battery storage technology available, all three battery technologies will be assessed to not limited the developer in the future should the technology of certain battery types advance.

Each battery technology has potential risks associated with the battery technology type. Table 6-2 below outlines each battery technology's "mitigatability" of each risk, based on practical and applicable technology solutions.

Table 6-2: Risks and Design Mitigation Measures associated with each Battery Technology

Risk	Mitigation
LI-ION BATTERY TECHNOLOGY	
TEMPERATURE FLUCTUATIONS Temperature fluctuations in the Waaihoek area (minimum temperatures of under 3°C and maximum temperatures of over 30°C) mean that the batteries may be at risk of being damaged due to instability of temperatures. Resultant impacts could include fire, or permanent structural damage to the batteries.	The design of the Li-ion system includes: → Insulated containers → High powered HVAC (Heating, Ventilation and Air-Conditioning) System, monitored centrally → Multiple temperature sensors for both the cells and air temperature → Automated shut down mechanism if temperatures get too high → Containers sealed and douse in case of fire to prevent the spread → Battery management system to prevent overuse and maintain good battery condition
FIRE AND DANGEROUS CHEMICALS The volatility of the battery system, prior to any mitigation, could result in significant fire danger. In addition to this, there is a risk associated with the chemicals contained within the actual battery storage system itself.	The design of the Li-ion system includes: → Fire detection and suppressant systems → Gas level monitoring for several different gases (related to degradation of the batteries that increases risk of fire) → Heat sensors → Battery condition monitoring → Dousing mechanism for emergency cooling and fire suppression → Density limits in the containers → Spacing limits between containers
VANADIUM REDOX FLOW BATTERY TECHNOLOGY	
DANGEROUS CHEMICALS AND GASES Due to the use of aqueous electrolytes, the fire risk of VRFB systems is much lower than with other technologies. Overcharging the battery does not lead to fire but to a reduction in battery performance and aging of the stacks. Thermal runaway as with lithium-ion batteries is excluded. In addition to its corrosive character, the vanadium electrolyte solution is	The design of the VRFBs includes: → Battery condition monitoring → Fire detection and suppressant systems → Leak detection and monitoring system → A secondary containment to prevent the escape of vanadium solution into the environment during operation (storage and refilling when required). The VRFBs will be placed within a 2.5 m high berm wall. → Hydrogen gas is discharged from the negative tank into the environment through a simple pipe and the battery room or

classified as toxic and hazardous to groundwater. The electrolyte is used in a closed system and vanadium can escape solely through electrolyte leaks. In spite of the measures described above, there will always be a small amount of hydrogen produced during charging at high states of charge, which is a safety risk due to the possible explosive reaction with atmospheric oxygen. The amount is extremely small, but must be taken into account when installing the battery.	container is well ventilated and flushed with fresh air to prevent any build-up of hydrogen gas. → A Major Hazards Risk Assessment must be undertaken prior to construction (should VRFBs be used), and the recommendations of the assessment implemented.
ZINC-HYBRID (ZINC-BROMINE (ZNBR)) FLOW BATTERY TECHNOLOGY	
Bromine is a highly toxic material through inhalation and absorption. Maintaining a stable amine complex with the bromine is key to system safety. In addition, repeated plating of metals in general is difficult due to the formation of “rough” surfaces (dendrite formation) that can puncture the separator.	The design of the ZNBRs includes: → Active cooling systems are provided by system manufacturers to maintain stability of the bromine-amine complex when ambient temperatures may exceed 95°F. → Special cell design and operating modes (pulsed discharge during charge) are required to achieve uniform plating and reliable operation.

Based on the appropriate design mitigation measures outlined above, the risks associated with each Battery technology can be adequately mitigated.

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7 DESCRIPTION OF THE ENVIRONMENT

The criteria used to assess the sensitivity of the proposed Waaihoek BESS and reservoir project area included climate, geology and soils, topography, vegetation, surface water, the KZN Biodiversity Sector Plan, land use and specialist findings.

7.1 CLIMATE

Utrecht usually receives about 615mm of rain per year, with most rainfall occurring during mid-summer. Utrecht receives the lowest rainfall (3 mm) in July and the highest (114mm) in January. Average midday temperatures range from 18.7 ºC in June to 26.1 ºC in January. The region is the coldest during July with average temperatures of 2.9 ºC during the night.

7.2 TOPOGRAPHY

The Waaihoek BESS and reservoir assessment area is located on top of a plateau forming the upper catchment for the Bloedrivier. The elevation of the project site ranges from 1580 - 1500 masl (Figure 7-1) with an average gradient of <4.5% (Figure 7-2 and Figure 7-3).

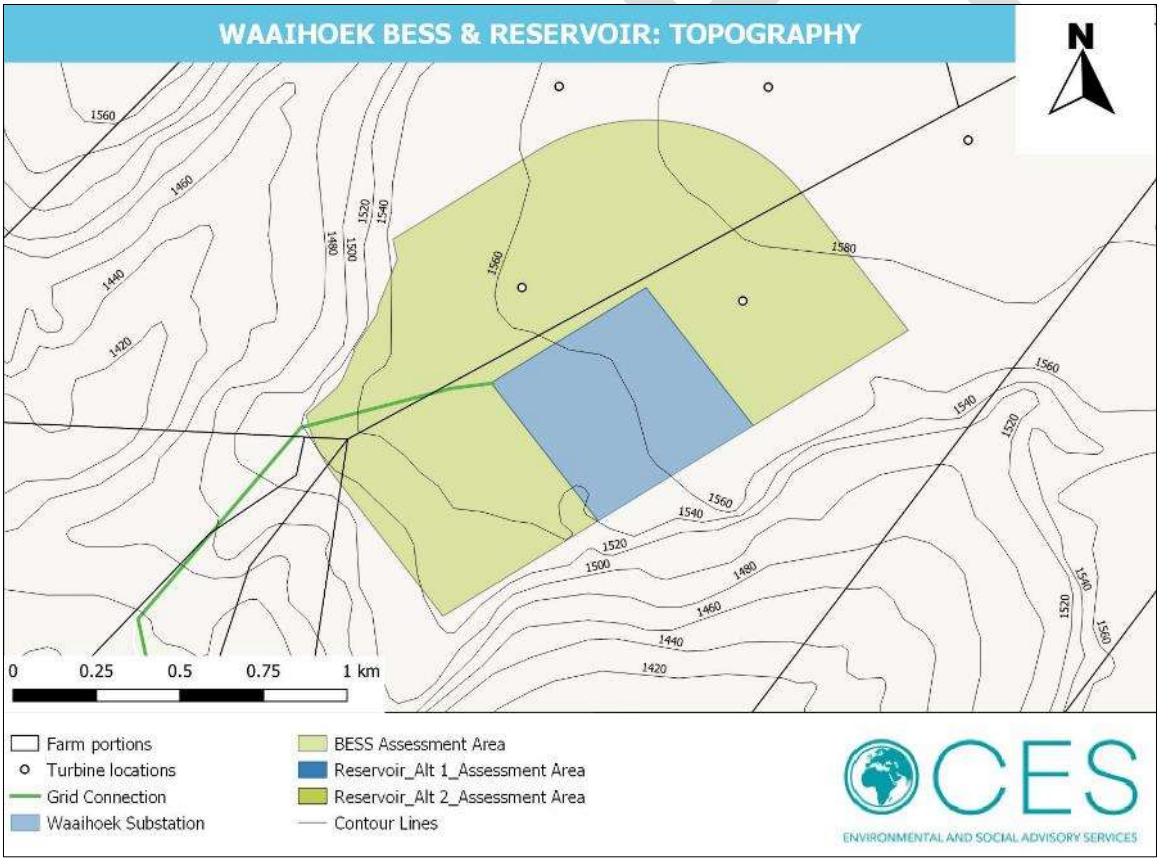


Figure 7-1: Topography Map of the study area.

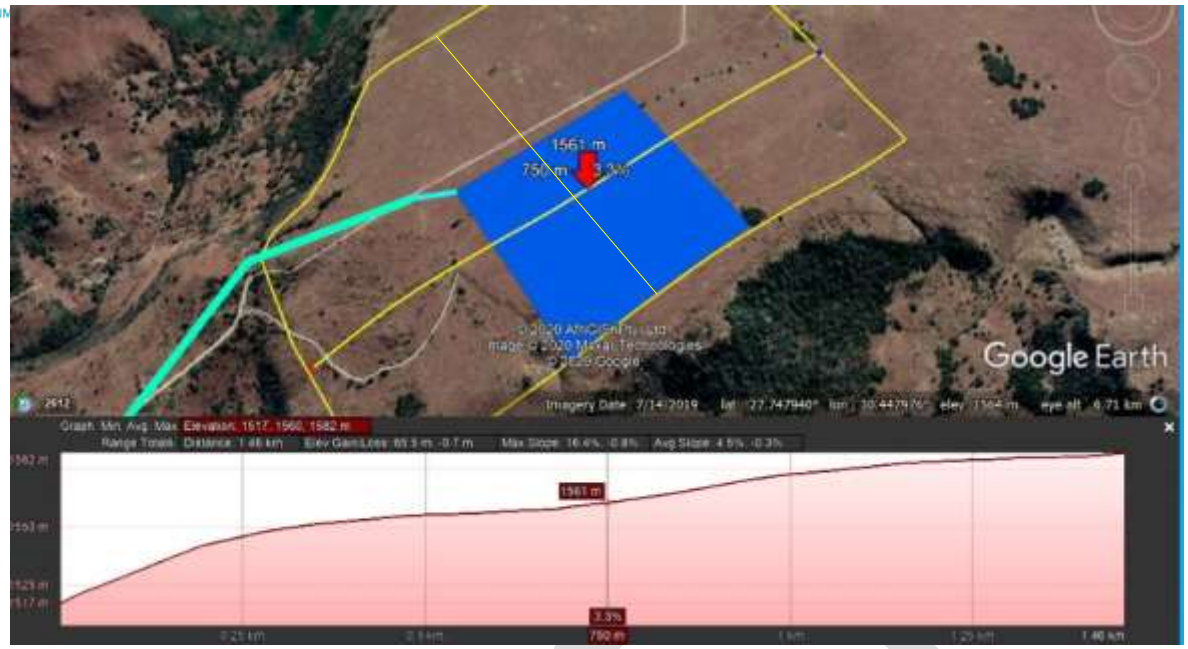


Figure 7-2: Elevation of profile of the study site from south-west to north-east (Google Earth Pro, 2020).

Figure 7-3: Elevation of profile of the study site from north-west to south-east (Google Earth Pro, 2020).

7.3 GEOLOGY

About two thirds of South Africa is covered by sedimentary and volcanic rocks of the Karoo Supergroup which is made up of Volcanics (basalt and rhyolite); Sediments (sandstone, shale, siltstone); and dolerite. According to Figure 7-4 below, the geology underlaying the proposed Waaihoek BESS and reservoir project area consists of the Dwyka Group, Karoo Dolerite. Karoo Dolerite is apparent in the form of dykes and sills intruding into the surrounding rock. The Dwyka Group forms the base of the sequence and consists of diamictite (Figure 7-4).

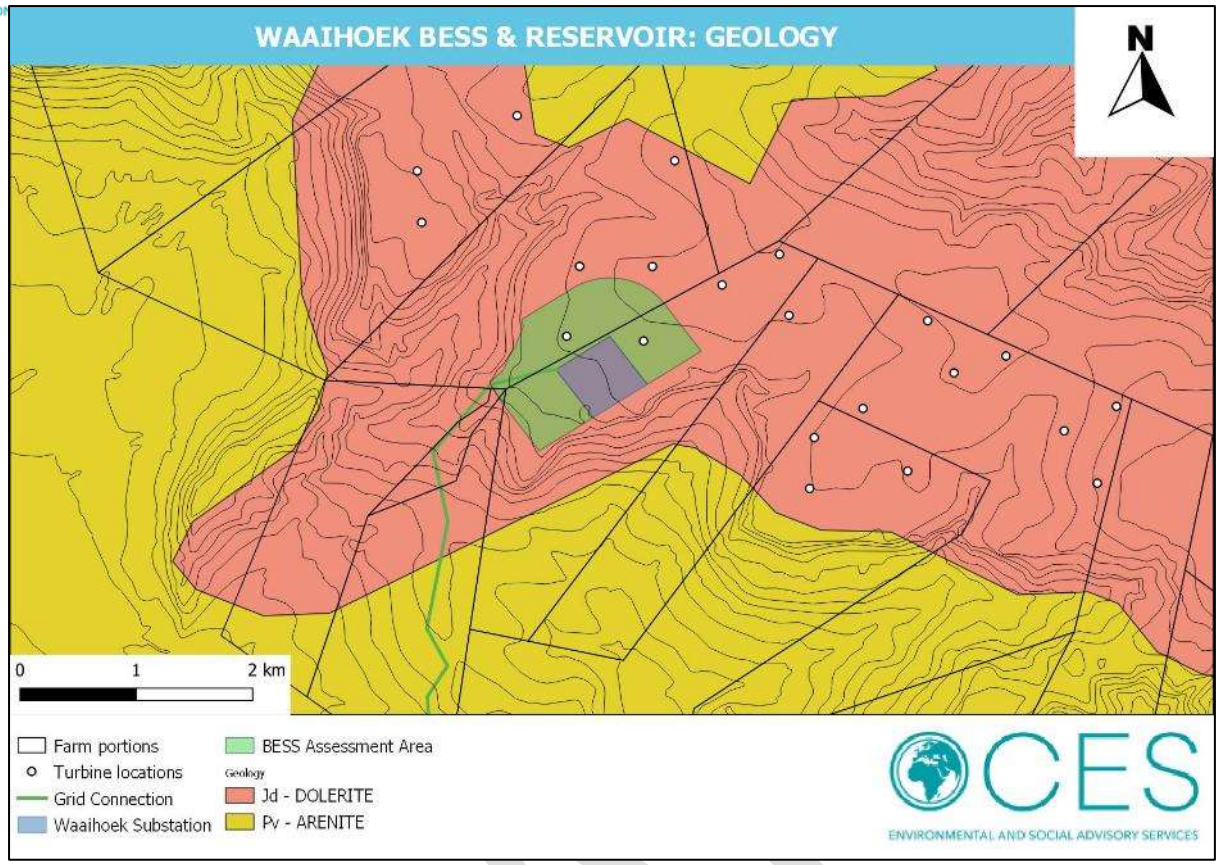


Figure 7-4: South African Geology II Map of the study area.

7.4 SOILS

The desktop information on soils and agricultural potential has been obtained from the AGIS online database, produced by the institute of Soil, Climate and Water. The Waaihoek BESS and reservoir project area consists of the following soil pattern (refer to Figure 7-5 below):

CODE	GROUP	DESCRIPTION
AC: Acrisols	Red-yellow well drained soils generally lacking a strong texture contrast	Red and yellow, massive or weakly structured soils with low to medium base status

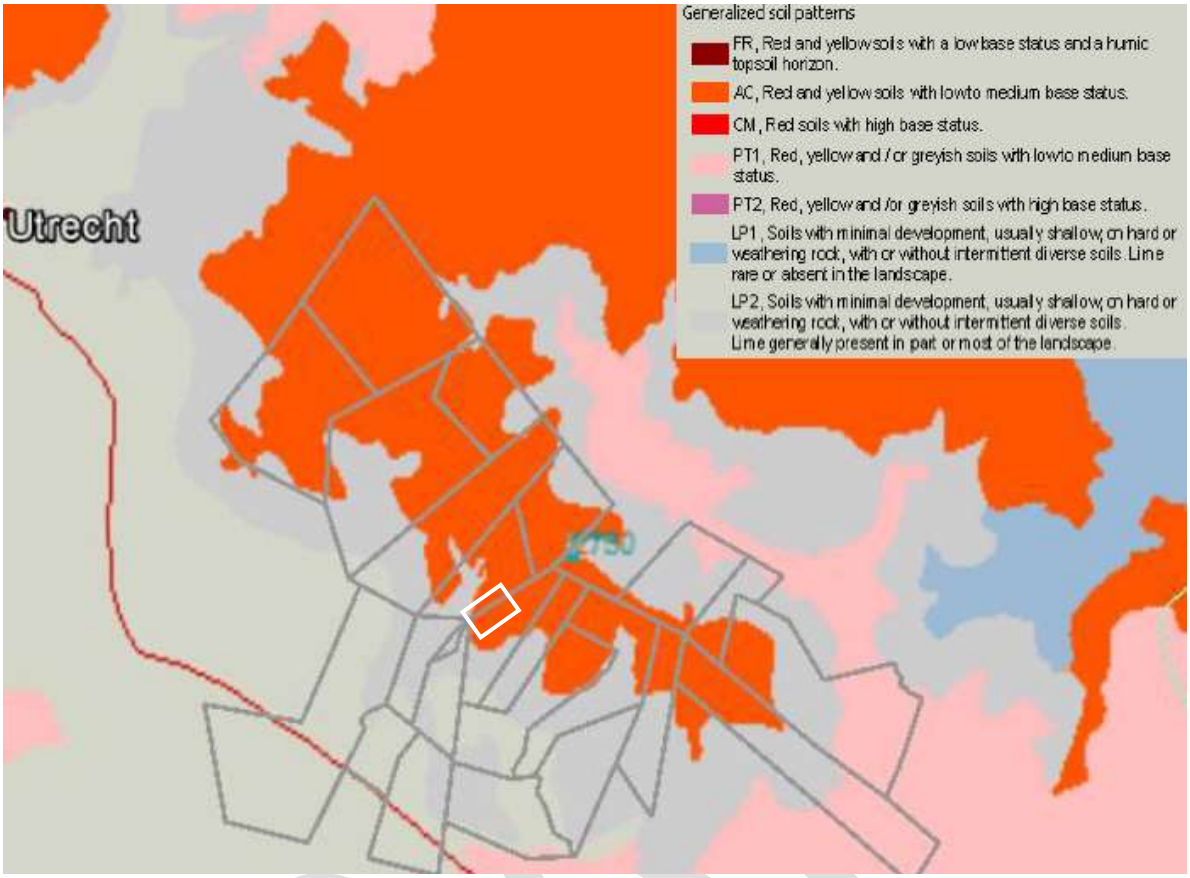


Figure 7-5: Generalised soil patterns of the broader study area.

7.5 LAND COVER AND CURRENT LAND USE

The ELM covers an area of approximately 353 931ha, with 85.2% of the area remaining in a natural state and 14.8 % of the area having no natural habitat remaining.

The region concerned with the associated Waaihoek WEF is mountainous with open grassland and sparse vegetation. A large proportion of the surrounding project area is used for agriculture as a mixture of subsistence, commercial livestock and game farming (Figure 7-6).

Land-uses in the landscape adjacent to the proposed Waaihoek BESS and reservoir include:

- Waaihoek WEF, substation and powerline (authorised, but not existing);
- Provincial roads (R33/34) to the west and south of the project area;
- Protected area 5km north currently operated as a private game park (Emlwane Game Park Private Nature Reserve). The Utrecht Town Park and Balele Valley Game Park is located further north-west, around the town of Utrecht.

According to the DAFF online interactive database (http://daffarcgis.nda.agric.za/portal/home/), the land cover of the study site has been classified as 'Unimproved Grasslands" (Figure 7-6 below). The project area is currently used as grazing land.

Figure 7-6: Landcover of the project area and surrounds.

7.6 VEGETATION AND FLORISTICS

The following National and Provincial Plans are used to describe vegetation floristics that may potentially occur within the development footprint:

- SANBI classification (Mucina and Rutherford, 2018); and
- DAFF Forestry classification.

7.6.1 SANBI Classification (Mucina et al., 2018)

As per SANBI's National Vegetation Map (2018), majority of the BESS (and all of the reservoir) assessment area falls on vegetation classified as Wakkerstroom Montane Grassland (Gm14), with the eastern portion of the BESS assessment area classified as Northern KZN Moist Grassland (Gs 4) (SANBI, 2018).

Wakkerstroom Montane Grassland (Gm14):

A significant portion of the proposed Waaihoek BESS and reservoir will be located within Wakkerstroom Montane Grassland (Gm14), which is located along the top of the plateau. This vegetation unit is associated with the Escarpment that links the southern and northern Drakensburg escarpments. The vegetation comprises of short montane grasslands on the relatively flat plateaus, with short forest and *Leucosidea* thickets occurring along steep, east-facing slopes and drainage areas. *L. sericea* is the dominant woody pioneer species that invades areas as a result of grazing mismanagement.

According to the National Biodiversity Assessment (NBA, 2018), the Wakkerstroom Montane Grassland (Gm14) has an ecosystem threat status of **LEAST CONCERN** with a conservation target of 27%. Only 1% of the unit is statutorily conserved in the Paardeplaats Nature Reserve. Land use pressure from agriculture is deemed low (5% cultivated).

Northern KZN Moist Grassland (Gs 4):

A very small portion of site occurs within the Northern Kwa-Zulu Natal Moist Grassland vegetation type. The Northern KZN Moist Grassland (Gs 4) can be found in the northern and north western regions of the province and lies between the drier KZN Highland Thornveld (Gs 6) and the moist upland vegetation. It can be found within hilly and rolling landscapes which support tall tussock grassland usually dominated by *Themeda triandra* and *Hyparrhenia hirta*. Open *Acacia sieberiana var. woodii* savannoid woodlands encroach up the valleys, usually on disturbed (strongly eroded) sites.

According to the National Biodiversity Assessment (NBA, 2018), the Northern KZN Moist Grassland (Gs 4) has an ecosystem threat status of **LEAST CONCERN** with a conservation target of 23%. Less than 1% of the unit is statutorily conserved and 3% has undergone transformation due to cultivation.

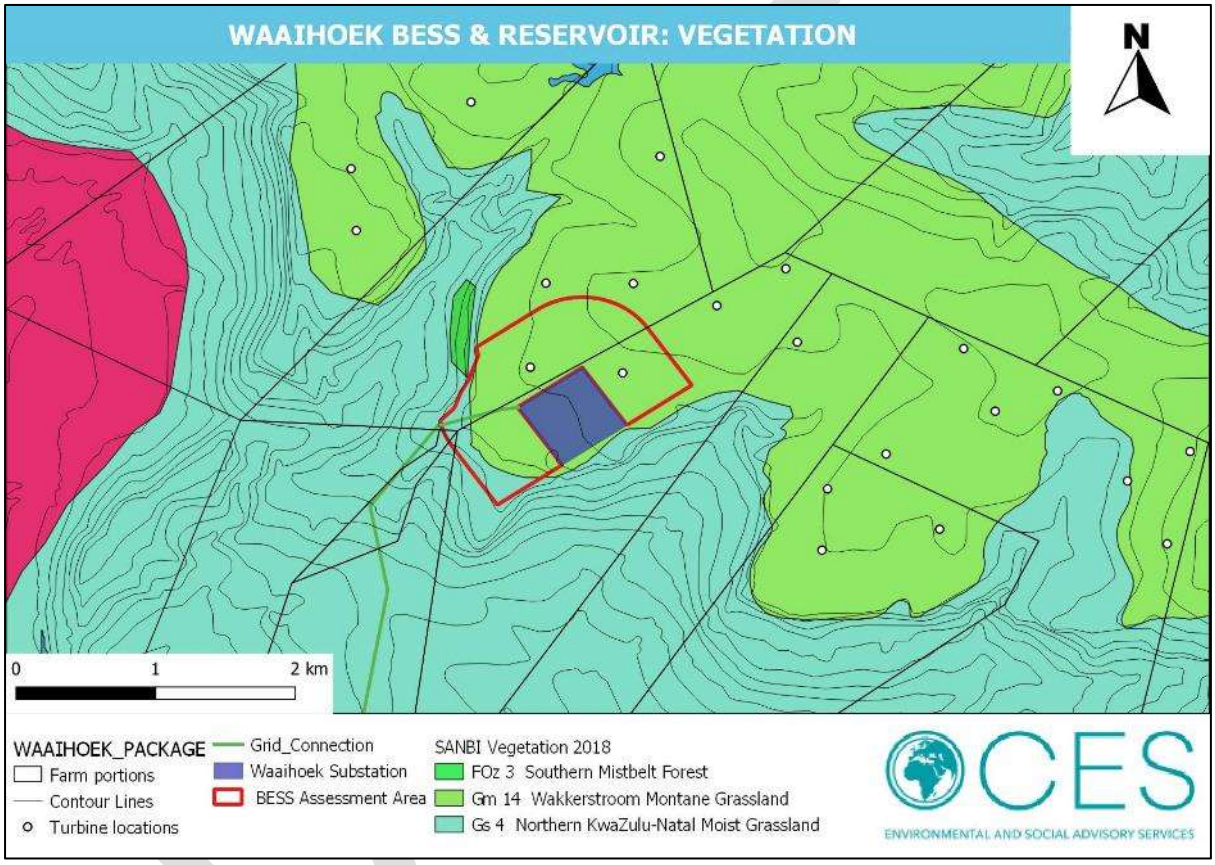


Figure 7-7: SANBI (2018) vegetation types within and surrounding the project area.

7.6.2 KZN Vegetation Types

The KZN Vegetation Types (VT) map was created to provide an accurate representation of the historical extent of the vegetation types present in KZN with the most current available information. The KZN VT map has undergone several changes since the publication of the Mucina and Rutherford (2006) national vegetation types.

Ezemvelo KZN Wildlife has, in association with various government departments, NGOs, Working Groups and Forums, municipalities and parastatals, refined the KZN VT map to develop an accurate representation of the extent of the vegetation types present. As a result of the finer scale mapping and classification, KZN VT map has in some cases identified new vegetation types and or subtypes within the vegetation types identified at national level. These changes have been peer reviewed and adopted by the National Vegetation Committee and have been incorporated into the revised SANBI's National Vegetation Map (2018). The only difference noted for the project area is the naming of the

Southern Mistbelt Forest in terms of SANBI (2018), but rather referred to as Eastern Mistbelt Forest in terms of the KZN VT map (refer to Figure 7-8 below).

The conservation status for KZN VT was derived using the national list of ecosystems that are threatened and in need of protection as per section 52(1)(a) of the National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)). The difference in conservation status between national and KZN VT map is driven mainly by:

1. The fine scale mapping of the historical extent and distribution of VTs
2. Amalgamation, removal and addition of new KZN VTs
3. The use of a provincial transformation dataset, which is of higher resolution, more accurate and temporally relevant as compared to the national transformation dataset used to determine the national VT conservation status.

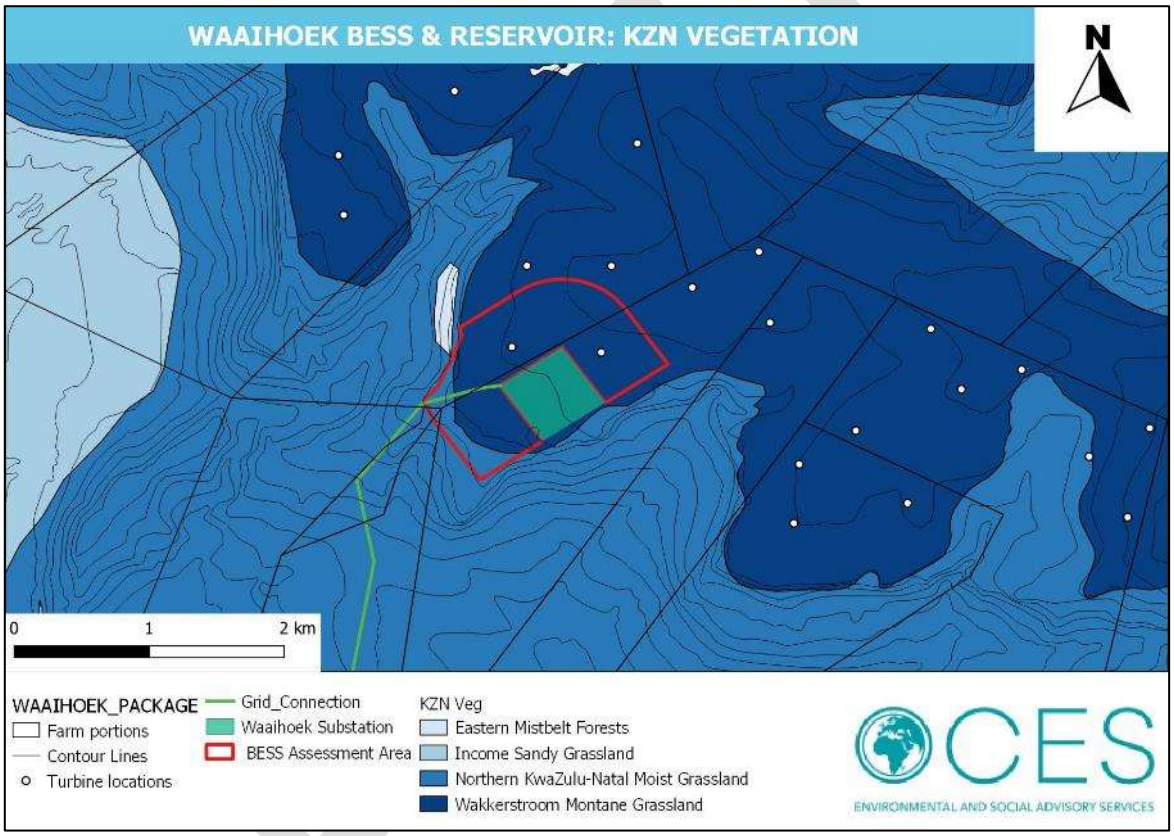


Figure 7-8: KZN vegetation types.

7.6.3 Forest Classification (NFA)

No natural forest will be impacted by the proposed Waaihoek BESS and reservoir. The nearest forest patch, classified as Southern Mistbelt Forest in terms of SANBI (2018) (or Eastern Mistbelt Forests in terms of KZN VT Map), is located outside of the north-western boundary of the project site and will not be affected by the development.

7.7 FAUNA

This following sub-sections reference the Terrestrial Biodiversity (Ecological) Impact Assessment (2020) and the original Ecological and Avifaunal Impact Assessment Reports (2014) (Appendix C) undertaken for the associated Waaihoek WEF.

South Africa is a diverse country, with approximately 1,663 terrestrial vertebrate faunal species of which 850 species are birds, 343 species are mammals, 350 species are reptiles and 120 species are amphibians spread across seven biomes and 122 million km². The Kwazulu-Natal (KZN) Province is home to approximately 87 reptile species, 72 amphibian species, 217 mammal species and 741 bird species (IUCN, 2020; Avibase, 2020).

7.7.1 Amphibians

Of the 72 species of amphibians known to occur in the KZN, 33 of these species have a distribution which coincides with the project area (Appendix 2 of Terrestrial Biodiversity (Ecological) Impact Assessment)) (Du Preez & Carruthers, 2017; IUCN, 2020).

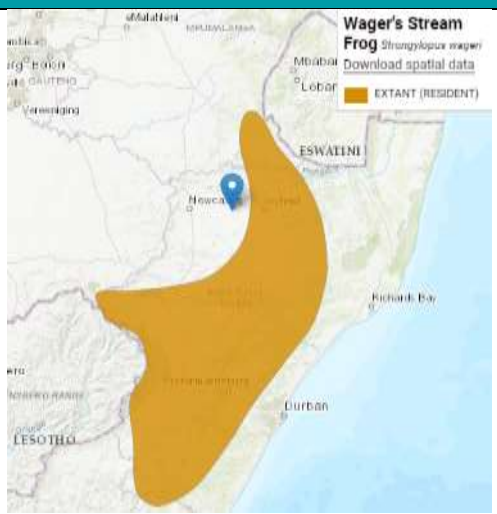
Of these 17 species have been recorded within a 30km^2 radius of the project area (ADU, 2020):

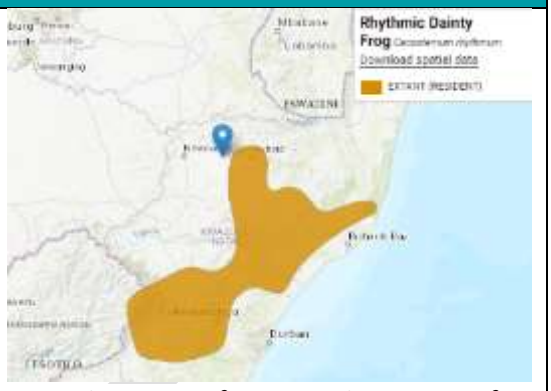
- Bushveld Rain Frog
- Mozambique Rain Frog
- Raucous Toad
- Guttural Toad
- Painted Reed Frog
- Yellow Striped Reed Frog
- Common Platanna
- Striped Grass Frog
- Delalande's River Frog
- Cape River Frog
- Common Caco
- Bubbling Kassina
- Bronze Caco
- Clicking Stream Frog
- Tremelo Sand Frog
- Natal Sand Frog
- Rattling Frog

The KZN supports seven known threatened and near-threatened species (IUCN, 2020). None of these have a distribution that includes the study area.

In total, 8 amphibian species are endemic to the KZN (IUCN, 2020) and one endemic and one near endemic species have a distribution range near enough to the study area.

Table 7-1: Amphibians Endemic and Near-Endemic to the KZN (IUCN, 2020).

SPECIES NAME	STATUS	HABITAT	DISTRIBUTION
Wager's Stream Frog *Strongylopus wageri*	LC	Forest, grassland and wetland habitat. This species appears to be quite sensitive to habitat degradation. It breeds in quiet pools in clear streams. (IUCN SSC ASG, 2013)	 EOO +/- 6,800 km^2 AOO 10% of EOO

SPECIES NAME	STATUS	HABITAT	DISTRIBUTION
Rhythmic Caco *Cacosternum rhythmum*	LC	Grassland and wetland	 EOO: +/- 40,268 km^2 AOO: +/- 418 558 km^2

7.7.2 Reptiles

Of the 87 reptile species that occur in KZN, 33 species have a distribution that coincides with the project area (Appendix 3 of Terrestrial Biodiversity (Ecological) Impact Assessment)) (IUCN, 2020; Branch, 1998; Bates et al. 2014).

Of these 9 species have been recorded in databases within a 30km^2 radius of the project area (ADU, 2020):

- Southern Tree Agama
- Distant's Ground Agama
- Common Girdled Lizard
- Common Crag Lizard
- Speckled Rock Skink
- Rhombic Night Adder
- South African Slug-eater
- Western Natal Green Snake
- Mole Snake

A Rinkhals was seen in the study area in the previous study (CES, 2015).

The following were recorded as present by Mr R Stannard in the previous Ecological Assessment (CES, 2015): Bibron's Blind Snake, Common Brown Water Snake, Dusky bellied Water Snake, Brown House Snake, Mole Snake, Rhombic Skaapsteker, Spotted Bush Snake, Green Water Snake, Rinkhals, Puff Adder and Rhombic Night Adder. In addition, both Rock Monitor and Water Monitor have also been observed.

An Olive Grass Snake (*Psammophis mossambicus*) was recorded during the site visit on the 16 October 2020.

The KZN supports 12 threatened or near threatened reptile species (IUCN, 2020). None of these have a distribution that includes the study area.

In total, 17 endemic reptile species occur in the KZN (IUCN, 2020) and one endemic and one near endemic species have a distribution range near to the study area.

7.7.3 Mammals

The KZN is home to 212 mammal species, 72 of which have a distribution which includes the study area (IUCN, 2020) (Appendix 4 of Terrestrial Biodiversity (Ecological) Impact Assessment).

Of these 9 species have been recorded in databases within a 30km^2 radius of the project area (ADU, 2020):

- Caracal
- Black-footed Cat
- Serval
- Leopard
- Aardwolf
- Nyala
- Common Wildebeest
- Natal Mastomys
- Chacma Baboon

Cape Porcupine, Yellow Mongoose and Meerkat have all been recorded in the Utrecht area (iNaturalist, 2020).

The following were recorded as present by Mr R Stannard in the previous Ecological Assessment (CES, 2015) in the northern most farm of the WEF. It is unlikely that the full list of species mentioned below inhabit the BESS site due to the absence of associated habitat, however, they are worth mentioning.

- Savanna (Chacma) Baboon and Vervet Monkey,
- Scrub Hare, Natal Red Rock Rabbit and Smith's Red Rock Rabbit,
- Porcupine, Four-striped Grass Mouse, House Mouse, House Rat, Angoni Vlei Rat and Vlei Rat
- Cape Clawless Otter, Spotted-necked Otter,
- Aardvark, Dassie, Bushbig,
- Large Spotted Genet,
- Slender Mongoose, Water Mongoose, White-tailed Mongoose and Yellow Mongoose,
- Cape Fox, Black-backed Jackal, Aardwolf, Serval, Leopard, and Honey Badger,
- Mountain Reedbuck, Eland, Blesbok, Impala, Hartebeest, Black wildebeest, Zebra, Springbok and Common Reedbuck.

The site is currently used for livestock farming and horses and cows are present in the study area.

The KZN supports 21 threatened and 15 near-threatened mammal species (IUCN, 2020; Child *et al*., 2016). Six (6) threatened species and eleven near-threatened species have a distribution that includes the study area. No large game occurs on the property i.e. Rhino and Buffalo.

Black-footed Cat (VU), Leopard (VU) and Serval (NT) were recorded within 30km^2 of the study area (ADU, 2020) and are expected to occur within the study area. Based on habitat availability the Mountain Reedbuck (VU) and Temminck's Pangolin (VU) may occur in the study area. Mountain Reedbuck are grazers that inhabit rocky ridges and hillsides in high-altitude grasslands (1,500-5,000m) near water (IUCN SCC, 2017) and appropriate habitat occurs onsite. Temminck's Pangolin occurs in floodplain grassland, rocky slopes savannas, woodlands and sandveld habitat with dense or above-ground debris for shelter and require sufficient ant and termite population to feed on (Pietersen, et al., 2019). White tailed mice occur in shrubland grassland areas and one of their major requirements is black loam with good vegetation cover (Coetzee and Monadjem, 2008).

Table 7-2: Threatened Mammal Species with a distribution that includes the project area

COMMON NAME	SPECIES NAME	CONSERVATION STATUS (EWT, 2016)	RECORDED WITHIN 30KM^2 OF THE STUDY AREA	LIKELIHOOD OF OCCURRING ONSITE
Threatened				

COMMON NAME	SPECIES NAME	CONSERVATION STATUS (EWT, 2016)	RECORDED WITHIN 30KM^2 OF THE STUDY AREA	LIKELIHOOD OF OCCURRING ONSITE
Black Rhino	*Diceros bicornis*	CR		None
Mountain Reedbuck	*Redunca fulvorufula*	EN		Probable
Black-footed Cat	*Felis nigripes*	VU	X	Probable
Leopard	*Panthera pardus*	VU	X	Probable
Temminck's Pangolin	*Smutsia temminckii*	VU		Unlikely – unsuitable habitat
White Tailed Mouse	*Mystromys albicaudatus*	VU		Unlikely – unsuitable habitat
Near Threatened				
Plains Zebra	*Equus quagga*	NT		None
Grey Rhebok	*Pelea capreolus*	NT		Probable
African Buffalo	*Syncerus caffer*	NT		None
African Clawless Otter	*Aonyx capensis*	NT		Unlikely – unsuitable habitat
Spotted-necked Otter	*Hydrictis maculicollis*	NT		Unlikely – unsuitable habitat
Serval	*Leptailurus serval*	NT	X	Probable
Brown Hyaena	*Parahyaena brunnea*	NT		Possible
African Straw-coloured Fruit-bat	*Eidolon helvum*	NT		Probable
Large-eared Free-tailed Bat	*Otomops martiensseni*	NT		Probable
Laminate Vlei Rat	*Otomys laminatus*	NT		Probable
White Rhino	*Ceratotherium simum*	NT		None

Five (5) endemic mammal species occur in the KZN of which one has a distribution which includes the study area, namely the Cape Mole Rat (Due to unsuitable soil conditions (shallow soils with exposed rock), this species is unlikely to occur at the BESS site.

Table 7-3). Due to unsuitable soil conditions (shallow soils with exposed rock), this species is unlikely to occur at the BESS site.

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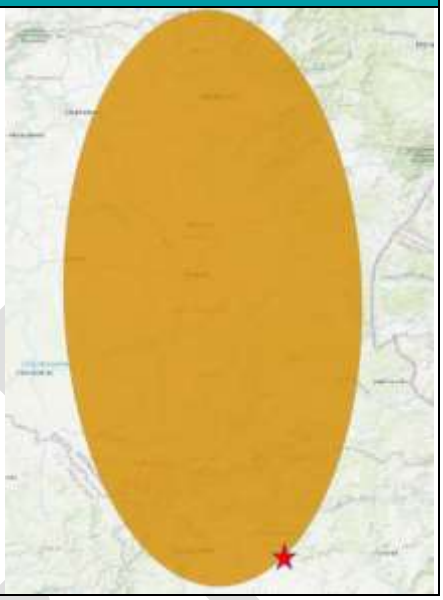
Table 7-3: Endemic Mammals with a distribution that includes the study area

COMMON NAME	STATUS	HABITAT	DISTRIBUTION
Cape Mole Rat (*Georychus capensis*)	LC	*"The subpopulation in KwaZulu-Natal Province occurs within mesic grasslands on sandy or clay soils, particularly in the midlands (for example, Impendle and Nottingham Road). Overall, the most commonly preferred soil types are derived from sandstone, limestone, shale and quartzite which comprise the sandy loam, cay and alluvium soils that are inhabited."* Maree, et al., 2017.	

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7.7.4 Birds

Approximately 415 bird species have a distribution range that includes the project area and the Utrecht Magisterial District, KZN Province (IUCN, 2020; Lepage, 2020).

The bird monitoring conducted for the Waaihoek Wind Energy Facility (Rooyen & Froneman, 2014) recorded 87 bird species in the study area. The species list is presented in Appendix 5 Terrestrial Biodiversity (Ecological) Impact Assessment.

The project area falls within the distribution ranges of 25 threatened and 16 near-threatened species. Of the threatened species two are critically endangered, eight are endangered and 12 are vulnerable. Two endangered, nine vulnerable and three near-threatened species were recorded in the study area (Rooyen & Froneman, 2014).

The White-winged Flufftail is listed as critically endangered and has a distribution that includes the study area. This species only has approximately 50-249 individuals and is considered nomadic, inhabiting SA from November to March. It inhabits moist to flooded peat-based habitats (1,100-1,900 masl) where vegetation is dense and dominated by sedges (BirdLife International, 2018). This habitat is absent from the site.

Approximately 197 South African endemic bird species have a distribution which includes the study area. Of these one is of note, namely Rudd's Lark (EN) (Table 7-4). Approximately 1700-3300 individuals remain. This bird species inhabits grasslands with short to medium grass cover and tolerates grazing.

Table 7-4: Bird SCC with a distribution range that includes the project area

COMMON NAME	SCIENTIFIC NAME	STATUS	ENDEMIC	RECORDED IN THE STUDY AREA (ROOYEN & FRONEMAN, 2014)
Threatened				
White-backed Vulture	*Gyps africanus*	Critically Endangered		
White-winged Flufftail	*Sarothrura ayresi*	Critically Endangered	Endemic	
Egyptian Vulture	*Neophron percnopterus*	Endangered		
Black Harrier	*Circus maurus*	Endangered		
Botha's Lark	*Spizocorys fringillaris*	Endangered	Endemic	
Cape Griffon	*Gyps coprotheres*	Endangered		
Grey Crowned-Crane	*Balearica regulorum*	Endangered		
Lappet-faced Vulture	*Torgos tracheliotos*	Endangered		
Rudd's Lark	*Heteromirafra ruddi*	Endangered		
Steppe Eagle	*Aquila nipalensis*	Endangered		
Blue Crane	*Anthropoides paradiseus*	Vulnerable		x
Bush Blackcap	*Sylvia nigricapillus*	Vulnerable		
Maccoa Duck	*Oxyura maccoa*	Vulnerable		
Martial Eagle	*Polemaetus bellicosus*	Vulnerable		
Montane Blue Swallow	*Hirundo atrocaerulea*	Vulnerable		
Secretarybird	*Sagittarius serpentarius*	Vulnerable		x
Slaty Egret	*Egretta vinaceigula*	Vulnerable		
Southern Bald Ibis	*Geronticus calvus*	Vulnerable	Endemic	x
Southern Ground-Hornbill	*Bucorvus leadbeateri*	Vulnerable		
Tawny Eagle	*Aquila rapax*	Vulnerable		

COMMON NAME	SCIENTIFIC NAME	STATUS	ENDEMIC	RECORDED IN THE STUDY AREA (ROOYEN & FRONEMAN, 2014)
Wattled Crane	*Bugeranus carunculatus*	Vulnerable		
Yellow-breasted Pipit	*Hemimacronyx chloris*	Vulnerable	Endemic	
Near Threatened				
Bearded Vulture	*Gypaetus barbatus*	Near-threatened		
Blue Bustard	*Eupodotis caerulescens*	Near-threatened	Endemic	
Crowned Eagle	*Stephanoaetus coronatus*	Near-threatened		
Curlew Sandpiper	*Calidris ferruginea*	Near-threatened		
Denham's Bustard	*Neotis denhami*	Near-threatened		x
Eurasian Curlew	*Numenius arquata*	Near-threatened		
Forest Buzzard	*Buteo trizonatus*	Near-threatened	Endemic	
Ground Woodpecker	*Geocolaptes olivaceus*	Near-threatened	Endemic	
Red Knot	*Calidris canutus*	Near-threatened		
Red-footed Falcon	*Falco vespertinus*	Near-threatened		x
Sentinel Rock-Thrush	*Monticola explorator*	Near-threatened		
Yellow-tufted Pipit	*Anthus crenatus*	Near-threatened	Endemic	
African Pied Starling	*Lamprotornis bicolor*	Least Concern	Endemic	
Cape Rock-Thrush	*Monticola rupestris*	Least Concern	Endemic	
Forest Canary	*Crithagra scotops*	Least Concern	Endemic	
Grey-winged Francolin	*Scleroptila afra*	Least Concern	Endemic	x

7.8 SURFACE WATER

This section largely references the Wetland Impact Assessment undertaken by EcoPulse (2020). Refer to the Wetland Impact Assessment attached in Appendix 3 for a detailed overview of surface water features on the study area.

7.8.1 Catchment Area

The project area is located close to the catchment divide between DWS Quaternary Catchment V32C and V32G, in the uMzimkulu - uMvoti Water Management Area (WMA), and drained by a number of larger perennial rivers including the Tiyna, Mbabane, Buffels (V32C) and Bloed (U30G) Rivers. The wetlands identified on the site and in the southern portion of the assessment area (catchment V32G) are narrow hillslope seeps that feed into the tributaries, which eventually drains into the larger Bloed River some distance downstream to the south-east of the site.

7.8.2 Rivers

No rivers are located within the project area. A series of natural drainage channels extend from the seep wetlands present on site towards the south and west of the site (refer to **Error! Reference source not found.** below).

7.8.3 Wetlands

Two hillslope seepage wetlands (W01 and W02) were found to be located in a valley-head setting and fed primarily by lateral subsurface water inputs controlled by generally low permeability shale bedrock at shallow depths (refer to Figure 7-9 and Figure 7-10 below). Water naturally moves through these wetlands as

subsurface flow with some diffuse overland flow particularly after significant rainfall events (the 'white' arrow markers in Figure 7-10 below indicate the direction of surface flow paths). Soils and vegetation sampled reflect both seasonal and permanent zones of water saturation.

Figure 7-9: Seep wetlands present on site

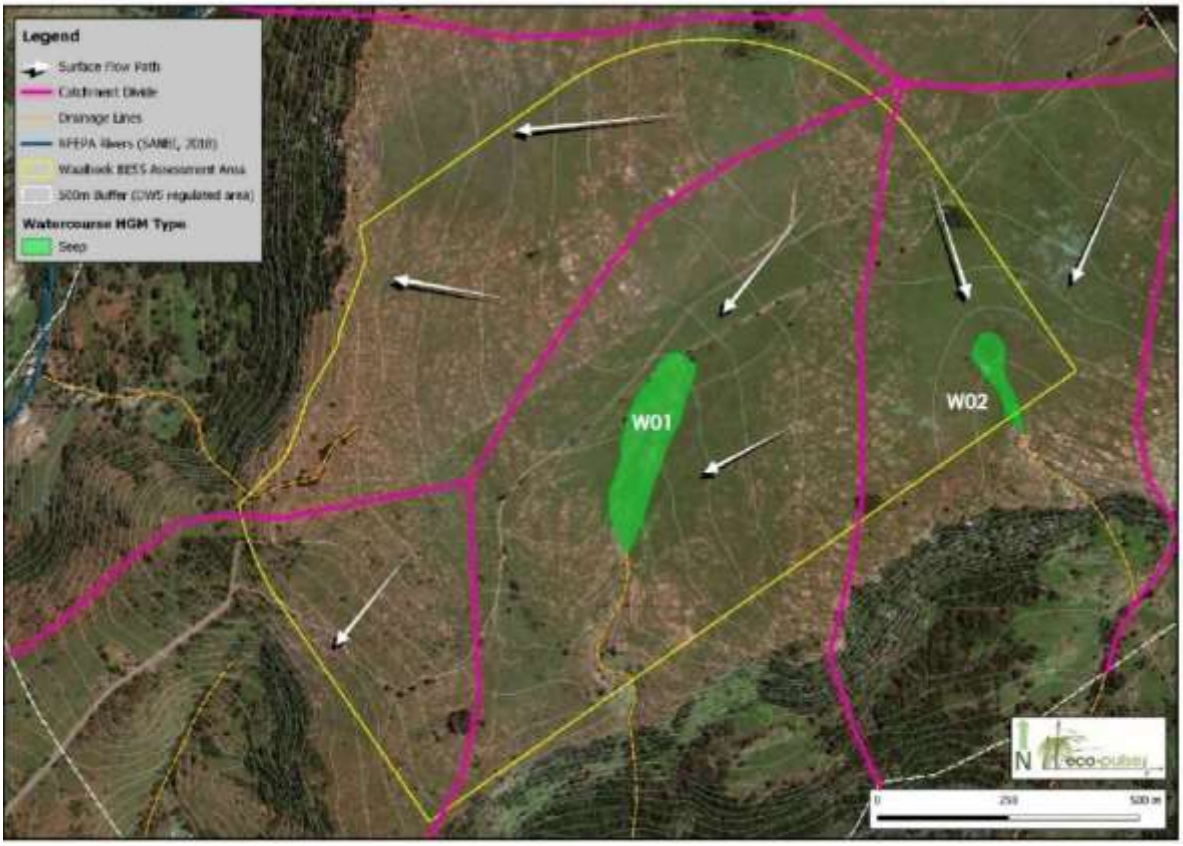

Figure 7-10: Surface water features present on site (EcoPulse, 2020).

Of particular importance from an aquatic (wetland) biodiversity perspective, is the conservation / threat status assigned to the seep wetlands belonging to the 'Mesic Highveld Grassland Bioregion', which are considered to be Critically Endangered and Poorly Protected according to the National Wetland Map V5 and outputs of the National Biodiversity Assessment (2018). The wetlands identified on site are not considered to be FEPAs (Freshwater Ecosystem Priority Areas).

Both wetlands are considered to be in a '**Largely Natural' state ('B' PES Category)** characterised by few existing impacts and were roughly 87% -89% intact at the time of the field survey based on the WET-Health condition (PES) assessment undertaken. The recommended ecological category (REC) for both wetland HGM units W01 and W02 is a 'B' Ecological Condition Category with the Resource Management Objectives (RMO) being to 'maintain' the current PES and functioning of the wetlands.

The maintenance of the current PES condition for the assessed wetlands can be achieved through careful management of catchment sediment, flow and water quality impacts/risks and by avoiding direct impacts to the watercourses.

7.9 BIODIVERSITY INDICATORS

7.9.2 KZN Systematic Conservation Plan (KZNSCP) (2012)

The KZN Systematic Conservation Plan (KZNSCP) (2012) is the technical, often computer-based, identification of priority areas for conservation. This assessment informs conservation planning and decision-making. Two fundamental inputs for the KZNSCP are landcover and vegetation type. In addition, the KZNSCP addresses the need to identify and map Critical Biodiversity Areas (CBA) and priorities for conservation in KZN.

The process of conservation planning involves extensive mapping of vegetation types, transformation, species data, ecological processes and threats. This information is then used to identify Critical Biodiversity Areas (CBAs) and Critical Ecological Support Areas (CESAs). A CBA is considered significant and that needs to be kept in a near natural state to ensure the continued functioning of ecosystems. A CBA represents the best choice for achieving biodiversity targets. CESAs are not essential for achieving targets, but they play a vital role in the continued functioning of ecosystems.

Ezemvelo KZN Wildlife developed three conservation plans for the province, of which two are relevant to the project area:

- KZN Freshwater Systematic Conservation Plan 2007
- KZN Terrestrial Systematic Conservation Plan 2010

The KZNSCP (2012) provides the following subcategories of CBA and ESAs:

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Critical Biodiversity Areas (CBAs) - Crucial for supporting biodiversity features and ecosystem functioning and are required to meet biodiversity and/or process targets	
• Critical Biodiversity Areas: Irreplaceable	Areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems.
• Critical Biodiversity Areas: Optimal	Areas that represent an optimised solution to meet the required biodiversity conservation targets while avoiding high cost areas as much as possible (Category driven primarily by process, but is informed by expert input).
Ecological Support Areas (ESAs) - Functional but not necessarily entirely natural areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within Critical Biodiversity Areas	
• Ecological Support Areas	Functional but not necessarily entirely natural terrestrial or aquatic areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within the Critical Biodiversity Areas. The area also contributes significantly to the maintenance of Ecosystem Services.
• Ecological Support Areas: Species Specific	Terrestrial modified areas that provide a critical support function to a threatened or protected species, for example agricultural land or dams associated with nesting/roosting sites.
• Ecological Support Areas: Buffers	Terrestrial areas identified as requiring land-use management guidance not necessarily due to biodiversity prioritisation, but in order to address other legislation / agreements which the biodiversity sector is mandated to address, e.g. WHS Convention, Triggers Listing Notice criteria, etc.

In addition to CBAs and ESAs detailed above, a series of bio-geographic landscape corridors were created in KZN to facilitate evolutionary, ecological and climate change processes to create a linked landscape for the conservation of species in a fragmented landscape. Local corridors were developed at a district scale to create fine scale links within the landscape that facilitate ecological processes and ensure persistence of critical biodiversity features.

The proposed Waaihoek BESS and reservoir are not located in any CBA areas (Figure 7-11). An Ecological Support Area (ESA) is located to the east of the project site, and CBA 2 areas located to the north, west and south.

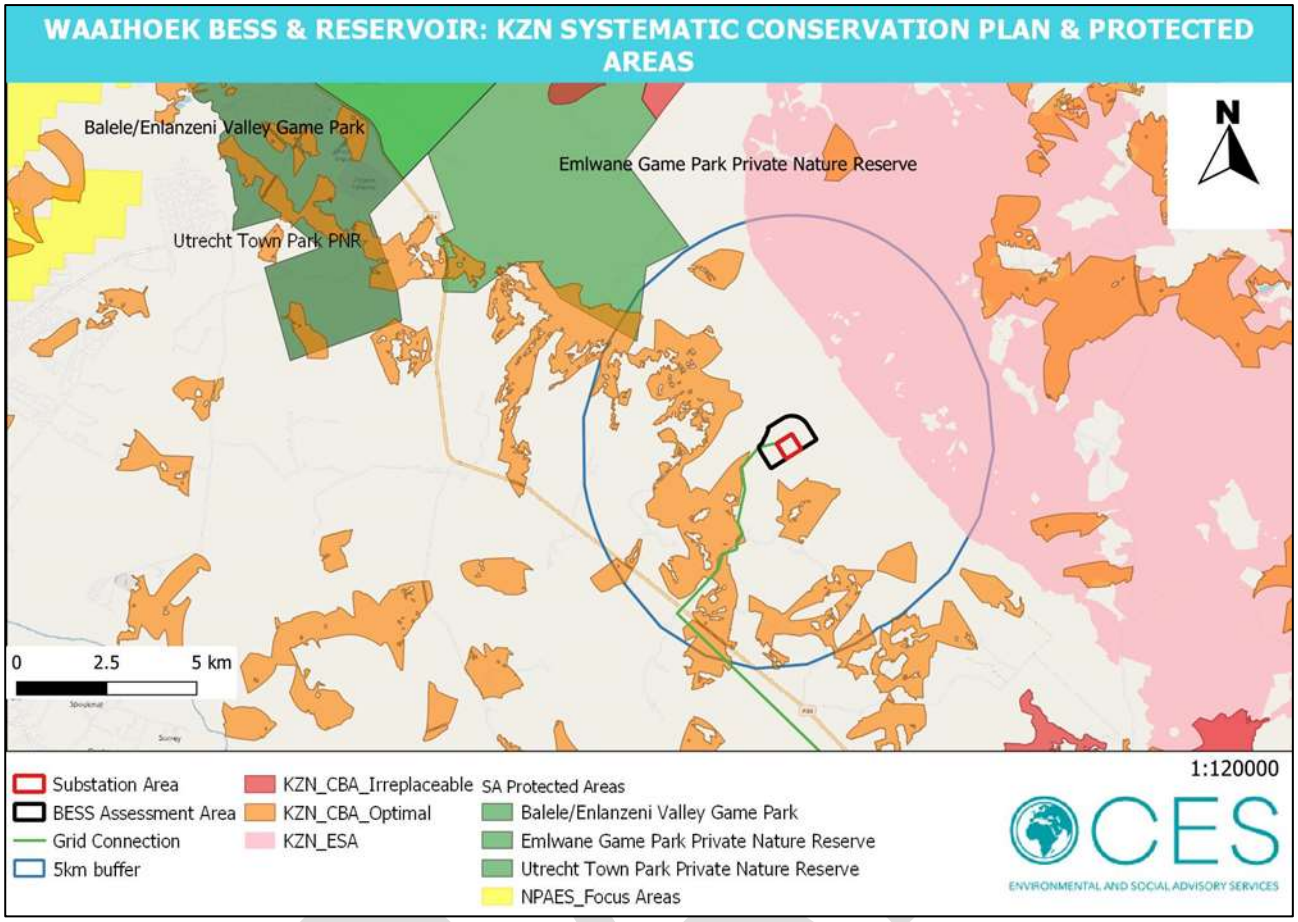

Figure 7-11: KZN Terrestrial CBA map of the project area.

7.9.3 Threatened Ecosystems

The National Environmental Management: Biodiversity Act, (Act No. 10 OF 2004) (NEM:BA) provides a National List of Ecosystems that are threatened and in need of protection – GN 1002 of 2011. There are no threatened ecosystems within the project area, with the 'Low Escarpment Mistbelt Forest' classified as Vulnerable in terms of GN 1002 (2011) and is located outside of the north-western boundary of the project site. A 50m buffer has been recommended is designated as a no-go area around the Mistbelt Forest.

7.9.4 Protected areas

The National Protected Areas Expansion Strategy (NPAES, 2008) was developed to "*achieve cost-effective protected area expansion for ecological sustainability and increased resilience to climate change*." The NPAES originated as Government recognised the importance of protected areas in maintaining biodiversity and critical ecological process. The NPAES sets targets for expanding South Africa's protected area network, placing emphasis on those ecosystems that are least protected.

The project area is not located within any NPAES Focus Area or protected area (Figure 7-11 above). A list of the nearest NPAES focus areas and protected areas surrounding the project area is tabulated in Table 7-5 below.

Table 7-5: Distance from site to the nearest NPAES Focus Areas and Protected Areas.

NAME OF PROTECTED AREA	DISTANCE FROM SITE
Emlwane Game Park Private Nature Reserve	5 km north

NAME OF PROTECTED AREA	DISTANCE FROM SITE
Utrecht Town Park Private Nature Reserve	12 km north west
Balele Valley Game Park	10 km north west
Moist Escarpment Grasslands NPAES	18 km north west

7.9.5 Species of Conservation Concern

Approximately eight species of special concern were recorded during the field survey in October 2020 (Table 7-6). A full list of species likely to be found within the BESS site has been included in Appendix 1 of the Terrestrial Biodiversity (Ecological) Impact Assessment (Appendix 3).

Table 7-6: Species of Conservation Concern that may occur within the proposed development footprint.

Family	*Genus /Species*	Species of special concern
AMARYLLIDACEAE	*Brunsvigia radulosa*	Least Concern, Schedule 12 (PNCO)
	Scadoxus puniceus	Least Concern
AMARYLLIDACEAE	*Cyrtanthus tuckii*	Least Concern, Schedule 12 (PNCO)
AMARYLLIDACEAE	*Scadoxus multiflorus subs multiflorus*	Least Concern, Schedule 12 (PNCO)
ASPHODOLACEAE	*Aloe marlothii*	Least Concern, Schedule 12 (PNCO)
IRIDACEAE	*Undetermined sp. 1*	Schedule 12 (PNCO)
	Undetermined sp. 2	Schedule 12 (PNCO)
	Moraea elliotii	Schedule 12 (PNCO)

7.9.6 Alien Invasive Vegetation

According to the Conservation of Agricultural Resources Act (No. 43 of 1983 - Regulation 15, 30 March 2001) (CARA), for agricultural land, and the National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEMBA), for natural areas, invasive alien plant species should be controlled and eradicated with an emphasis on urgent action in biodiversity priority areas. NEMBA published a list of Alien and Invasive Species (No 599) in 2014 which regulates the management of alien and invasive plants in natural environments.

Large areas of the broader region are covered with the alien invasive tree *Acacia mearnsii* (black wattle). There were small patches and individual trees observed within the site itself. It is currently being harvested on what appears to be a low-scale commercial level for wood fuel by farm inhabitants.

Acacia mearnsii is listed as a Category 1b species. The law requires that this species is removed from site and that their spread is prevented.

7.10 SOCIAL SETTING

The project area falls within the ambit of ELM within the ADM. The ADM is considered one of the most fertile regions in KZN. The local agricultural sector plays a critical role in the district's and province's economies, especially in terms of production value and employment. Agricultural activities include subsistence farming, forestry, game, cattle, sheep, wheat, soya and, maize. The district is the most important wool producing area in KwaZulu-Natal. ADM offers significant opportunities for tourism investment, including several joint ventures with surrounding districts. The region is close to the Drakensberg Mountains and is an integral part of the internationally renowned Battlefields Route, which focuses on the battles that have sculptured the history of South Africa.

ELM, previously known as Utrecht Local Municipality, is located some 52 km east of Newcastle and 68 km west of Vryheid on the R34. Predominantly rural, only 26% of the population live in the urban towns of Utrecht, Berouw, Waterval and Kingstown.

There is a dire need for economic development in the ELM. Limited mining occurs while sectors making a notable contribution to the economy of the area include trade, finance and government services, while agriculture is considered to be the most important economic sector. The ADM as a whole has been well developed, with emphasis on commercial stock farming and the region is the most important wool producing area in KwaZulu-Natal. Dry land crop production occurs on a small scale, and just 1 000ha is under irrigation.

7.10.1 Demographics

According to StatsSA 2011 census, ELM has a total population of approximately 34 442 people with 6 252 households and a population growth rate of 0.65% per year. The average household size is 5.2 people and 38.8% of households are female headed. There has been a population growth of 6% (2 165 people) over the last ten years. This low growth could be attributed to a high mortality rate as well as work migration as the area does not offer much in terms of employment and economic activity.

The surrounding project area (within the authorised Waaihoek WEF project area) is characterised by a low density, rural farming community consisting of private farmers and farm managers and the Waaihoek Community Trust. The Waaihoek Community Trust occupies the land through a Regional land Claims Commission that was registered in 1998. In total, 261households and 400 beneficiaries are currently associated with the Waaihoek Community Trust.

7.10.2 Employment

According to StatsSA 2011, only 29% of the labour force is employed in the ELM. This represents a 24% decrease in employment from 2001 which was 53%. Of those who are employed, over 99% earn less than R1600. This indicates that almost the entire population falls within the indigent bracket and there is a dire need for economic and infrastructure development which have the capacity to create jobs and enrich the area economically. Currently, the largest industry where males are employed is the agriculture sector followed by manufacturing, and wholesale and retail. Females are mainly employed in community sectors followed by transport, storage and communication, and wholesale and retail.

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8 KEY FINDINGS OF THE SPECIALIST STUDIES

The table below lists the specialist studies undertaken for the Waaihoek BESS, associated infrastructure and reservoir application area (as per Appendix G: DEFF Screening Tool Report for the application area). The table also details the associated original specialist studies completed as part of the original EIA (2014) for the authorised Waaihoek WEF.

Please refer to Appendix C for copies of the 2020 specialist reports or compliance statements and the associated original specialist reports (2014) for site verifications and compliance statements.

Specialist studies undertaken as per the DEFF Screening Tool	2020 Specialist studies	Original specialist studies undertaken for the Waaihoek WEF (2013-2014).
Agricultural Impact Assessment as per the Gazetted General Agriculture Assessment Protocol.	Agricultural Agro-Ecosystem Specialist Assessment: Mr Johann Lanz (Agricultural and Soil Specialist) (refer to Appendix C1)	• Not included as 2020 assessment has been completed.
Terrestrial Biodiversity Impact Assessment as per the Gazetted Terrestrial Biodiversity Assessment Protocol	Terrestrial Biodiversity (Ecological) Impact Assessment (including Flora and Fauna): Ms Tarryn Martin and Ms Amber Johnson from CES (Botanical and Faunal Specialists)	• Not included as 2020 assessment has been completed.
Plant and Animal Species Assessment as per the Gazetted General Requirement Assessment Protocol (at the time of commissioning).	(refer to Appendix C2)	• Not included as 2020 assessment has been completed.
Aquatic Biodiversity Impact Assessment as per the Gazetted Aquatic Biodiversity Assessment Protocol.	Wetland Impact Assessment: EcoPulse (Aquatic and Wetland Specialist) (refer to Appendix C3)	• Not included as 2020 assessment has been completed.
Palaeontology Impact Assessment as per the Gazetted General Requirement Assessment Protocol.	Site Sensitivity Verification Report: Mr Gavin Anderson from Umlando (Heritage Specialist)	• Paleontological Impact Assessment: Dr Gideon Groenewald
Archaeological and Cultural Heritage Impact Assessment as per the Gazetted General Requirement Assessment Protocol.	(refer to Appendix C4)	• Heritage Impact Assessment: Mr Gavin Anderson from Umlando
Socio-Economic Assessment as per the Gazetted General Requirement Assessment Protocol.	Site Sensitivity Verification Report: Mr Neville Bews (Socio-Economic Specialist) (refer to Appendix C5)	• Socio-economic Impact Assessment: Mr Anton Hough from CES
Noise Impact Assessment as per the Gazetted Noise Impact Assessment Protocol.	Noise Compliance Statement: Morne de Jager of EARES (Noise Specialist) (refer to Appendix C6)	• Noise Impact Assessment: Dr Brett Williams from SafeTech
Hydrology Assessment	Hydrogeological Assessment: Tsunami Resources	• N/A

	(refer to Appendix C7)	
Traffic Impact Assessment	N/A – refer to section 8.9 below	• Traffic Plan: BVi Consulting Engineers Western Cape (Pty) Ltd (refer to Appendix C8)
Geotechnical Assessment	Addendum Geotechnical Assessment to the original 2014 report: SMEC South Africa (Pty) Ltd (refer to Appendix C9)	• Preliminary Geotechnical Assessment: BVi Consulting Engineers Western Cape (Pty) Ltd

The following sub-sections below provides summaries of the key findings of the current site verifications assessments and specialist studies conducted.

8.1 AGRICULTURAL AGRO-ECOSYSTEM ASSESSMENT

Johann Lanz was appointed as an independent agricultural specialist to provide the Agricultural Assessment. The objective and focus of an Agricultural Agro-Ecosystem Specialist Assessment is to assess whether or not the proposed development will have an unacceptable agricultural impact or not, and based on this, to make a recommendation on whether it should be approved or not.

The proposed site is identified by the DEFF screening tool (refer to Appendix G) as being of predominantly high and very high sensitivity for agricultural resources, as a result of its relatively high land capability values. The high land capability is a result of the deep soils and high rainfall. However, despite this, other factors prevent the land from being viable arable land and limit its agricultural land use to grazing only.

What is of most importance for agricultural impact is that, despite the high sensitivity rating, the land is actually of limited agricultural value. Because it is not viable arable land, it is not considered particularly preservation worthy as agricultural production land.

Two potential negative agricultural impacts were identified, loss of agricultural land use and land degradation, but neither is of high significance.

The recommended mitigation measures are implementation of an effective system of storm water run-off control, maintenance of vegetation cover, and stripping, stockpiling and re-spreading of topsoil.

The conclusion of the agricultural assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of limited agricultural potential and that the actual amount of agricultural land loss is small.

From an agricultural impact point of view, the specialist recommended that the development be approved.

Refer to the attached Agricultural Agro-Ecosystem Assessment Report (2020) (Appendix C1).

8.2 TERRESTRIAL BIODIVERSITY (ECOLOGICAL) IMPACT ASSESSMENT

A Terrestrial Biodiversity (Ecological) Impact Assessment, which also assessed animal and plant species, was undertaken by CES for the proposed Waaihoek BESS and reservoir. A site visit was undertaken on the 16th October 2020 to assess the site-specific ecological state, current land-use, identify potential sensitive ecosystems and identify plant species associated with the proposed project activities. The site visits also served to identify potential impacts of the proposed development, and its impact on the surrounding ecological environment. The findings from this site visit were supplemented with data from two previous site

assessments that were conducted for the authorised Waaihoek WEF and substation. These assessments were undertaken in September 2013 and February 2014.

In terms of the site sensitivity, the Ecological specialist indicated that the two wetland seeps located within the proposed site are classified as areas of high sensitivity due to the ecological processes these systems provide (Figure 8-1). As far as practical possible, rocky outcrops and exposed rock at the edge of the plateau should also be avoided as these areas provide niche habitats for plant and animal species.

The patch of Southern Mistbelt Forest, located adjacent (northwest) to the project site, was also been assigned a high sensitivity. A 50m buffer should be placed around the forest patch and a 20m buffer around the seeps and these should be considered no-go areas (also assigned a high sensitivity).

Other areas of high sensitivity illustrated in Figure 8-1 below include areas with a high number of protected species associated with deeper soils and an area on the south-west slope where there are a high number of Aloes. These areas must be avoided, and no infrastructure should occur here. The remainder of the site is considered Moderate Sensitivity.

Where the destruction of SCC cannot be avoided, plant permits must be obtained, and an in-situ search and rescue program implemented for species that can successfully be relocated. The search and rescue must include both fauna and flora.

Furthermore, the development footprint of the proposed BESS and reservoir must be demarcated to prevent any encroachment of construction or operational activities into surrounding natural areas, particularly the patch of Low Escarpment Mistbelt Forest. Minor location deviations from the proposed works is deemed acceptable but the footprint may not be made larger.

The specialist concluded that the proposed Waaihoek BESS and reservoir is not considered to be fatally flawed, provided that the recommendations contained within the report are implemented. It was concluded that the following three BESS and reservoir location alternatives (blue shaded areas below, each approximately 5ha in extent) is preferred from an ecological perspective.

Figure 8-1: Terrestrial Biodiversity Sensitivity Map

Refer to the attached Terrestrial Biodiversity (Ecological) Impact Assessment Report (2020) (Appendix C2).

8.3 AQUATIC BIODIVERSITY IMPACT ASSESSMENT

A Wetland (Aquatic Biodiversity) Impact Assessment was undertaken by EcoPulse in October 2020 for the proposed development.

The study area is located close to the catchment divide between DWS Quaternary Catchment V32C and V32G, in the uMzimkulu - uMvoti Water Management Area (WMA), and drained by a number of larger perennial rivers including the Tiyna, Mbabane, Buffels (V32C) and Bloed (U30G) Rivers. The wetlands identified on the site and located in the southern portion of the assessment area (catchment V32G) are narrow hillslope seeps that feed into the tributaries, which eventually drains into the larger Bloed River some distance downstream to the south-east of the site.

An impact potential screening assessment was undertaken and identified two (2) individual wetlands (W01 & W02) on the site that are at risk of being potentially measurably impacted during the construction and operational phases of the BESS and water reservoir. NO RIVERS stand to be impacted either directly or indirectly, therefore only wetlands have been assessed and reported on. The baseline assessment focused on the two wetlands (seeps), with the results summarised below:

Watercourse Units	PES Class	EIS Rating	REC	RMO	Proposed Action
Wetland W01	B	Moderately Low	B	Maintain PES & EIS	Manage risk of potential ecological degradation
Wetland W02	B	Moderately Low	B		

Based on the consideration of the PES, EIS and realistic opportunities to improve the PES, the minimum recommended management objective for the assessed wetlands should be to '*maintain the current status quo of wetlands without any further loss of integrity/condition or functioning'* which can be achieved through careful management of catchment sediment, erosion, flow and water quality impacts/risks and by avoiding direct impacts to the wetlands.

The development will take place on a privately owned property, which is untransformed and undeveloped 'greenfields', used primarily as grazing land at present. The most significant ecological risks and impacts associated with the project are linked with the potential for erosion and sedimentation of adjacent and downstream wetlands during the construction phase, and long-term storm water (erosion) related risks and impacts during operation, as well as the potential risk of water quality impacts through the leakage of battery units. These impacts can be mitigated with best management practices such that under a 'good' mitigation scenario, impact significance can be maintained at a 'low' level, which can be considered to be environmentally acceptable.

According to the aquatic sensitivities flagged in DEFF Screening Tool Report (refer to Appendix G), the proposed development site falls within a freshwater ecosystem priority area (FEPA) quinary catchment. Due the nature and extent of the project (BESS and reservoir), the associated aquatic ecological risks and impacts have been assessed to be of 'low' ecological significance and are considered to be environmentally acceptable. Mitigation measures have been provided to reduce the risk of negatively impacting downstream watercourses (wetlands) which support downstream river FEPAs in the catchment, and with these implemented to specification, the risk of impacting on any river FEPAs will be negligible.

In terms of Strategic Water Source Areas (SWSAs), the DEFF screening tool also identified a 'Very High Sensitivity' in this regard. This is associated with the eastern portion of the site which is located within the

'Phongola-Drakensberg' area which has been identified as a SWSA. According to Nel et al. (2013), appropriate management of these areas should include:

- Maintaining healthy functioning riparian zones and wetlands;
- Ensuring good agricultural management leads to soil conservation that supports the water cycle;
- Avoiding activities that reduce stream flow (e.g. irrigated agriculture and forestry plantations) and where this is not possible ensuring careful regulation of these activities;
- Minimizing ground water abstraction;
- Clearing invasive alien plants; and
- Restoring the hydrological functioning of degraded landscapes.

Given the location of the eastern wetland (W02) within a SWSA, the wetland ecologists have placed a particular emphasis in terms of managing and mitigating impacts through strict avoidance of direct impacts to wetlands, the provision of a rehabilitation strategy for wetlands should any accidental impacts take place and encouraging an approach to storm water management that reduced hydro-geomorphological risks through appropriate ecological guidance and best practice in storm water management.

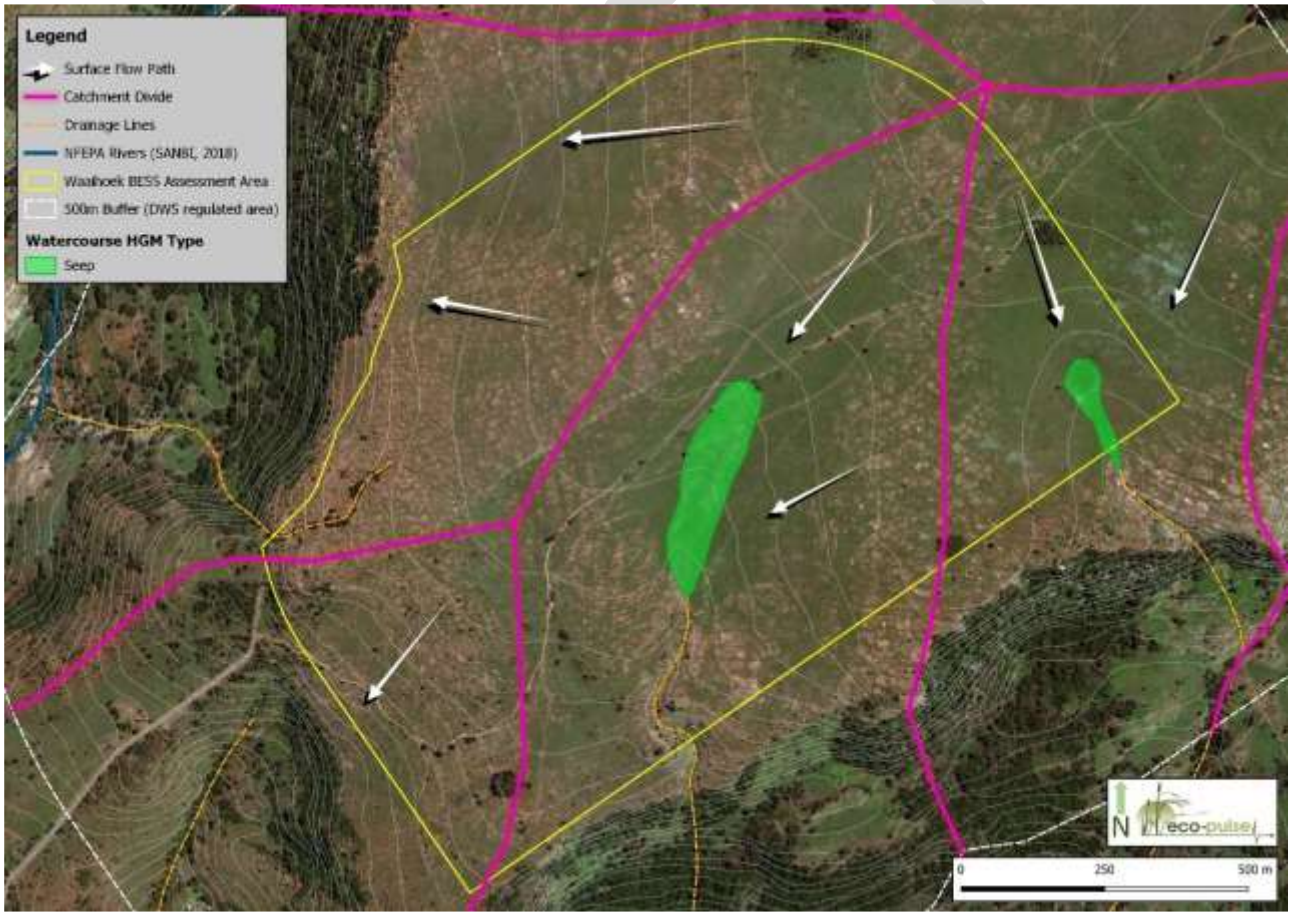

Figure 8-2: Map showing the two delineated 'seep' wetlands in relation to the broader BESS assessment area.

It is recommended that all mitigation and management measure are adhered to, as per Chapter 7 of the Wetland Assessment Report (Appendix C3). Key mitigation recommendations include development layout recommendations to avoid wetlands and recommended buffer zones (20m), best-practice management measures and controls to minimise impacts and reduce impact intensity where impacts cannot be avoided entirely and a rehabilitation strategy to rehabilitate any residual impacts to wetland habitat as a result of the proposed development.

Refer to the attached Wetland Impact Assessment Report (2020) (Appendix C3).

8.4 NOISE COMPLIANCE STATEMENT

Enviro Acoustic Research cc was commissioned to compile a Noise Compliance Statement for a proposed Waaihoek BESS associated with the authorized Waaihoek WEF.

The specialist report assessed, using administrative means, whether the proposed development could have any significant acoustical implications considering a questionnaire as proposed by SANS 10328:2008. Considering section 6.3.3 (g), the proposed BESS is likely to be developed closer than 500 m from a Noise-Sensitive Developments/receptors (NSD) (410 m) and this may have acoustical implications.

However, it is the opinion of the noise specialist that there is no risk of a potential noise impact from the BESS and further acoustical investigations would not be required when considering:

- The low projected noise levels from the proposed BESS;
- Section 5.4 (a) of SANS 10328:2008, that states that there may be acoustical implications "if a proposed plant is to be developed on a site that is situated within 200 m of a NSD"; and,
- The future noise levels in the area as predicted by the original Noise Impact Assessment undertaken by Williams (2014) for the authorised Waaihoek WEF.

No specific conditions or mitigation measures regarding noise or additional noise measurements have been recommended for inclusion in the EMPr by the specialist.

It is therefore recommended that the Waaihoek BESS project be approved from a noise perspective.

Refer to the attached Noise Compliance Statement (2020) and the original Noise specialist report (2014) (Appendix C6).

8.5 HERITAGE & ARCHAEOLOGICAL SITE VERIFICATION ASSESSMENT

Umlando undertook the Heritage Impact Assessment (HIA) for the original Waaihoek Windfarm in 2014 and were appointed in October 2020 to undertake site verification assessment for the proposed development.

No recorded heritage/archaeological sites were recorded within the proposed BESS and reservoir application area according to the original survey (2014), which was verified through a site visit (conducted on the 16 October 2020) and the use of recent aerial imagery as part of the site sensitivity verification process. As Heritage/Archaeology sensitivity is unlikely to change within the short-term, Umlando concluded that the site is of low sensitivity, and no further assessment is required. The recommendations provided in the original HIA (2014) will be referenced and recommended as mitigation measures during construction, where relevant.

Refer to Figure 8-3 below for a map of the identified heritage features identified in relation to the proposed BESS and reservoir assessment area.

Refer to the attached Heritage/Archaeological Site Sensitivity Verification Letter and the original HIA specialist report (Appendix C4).

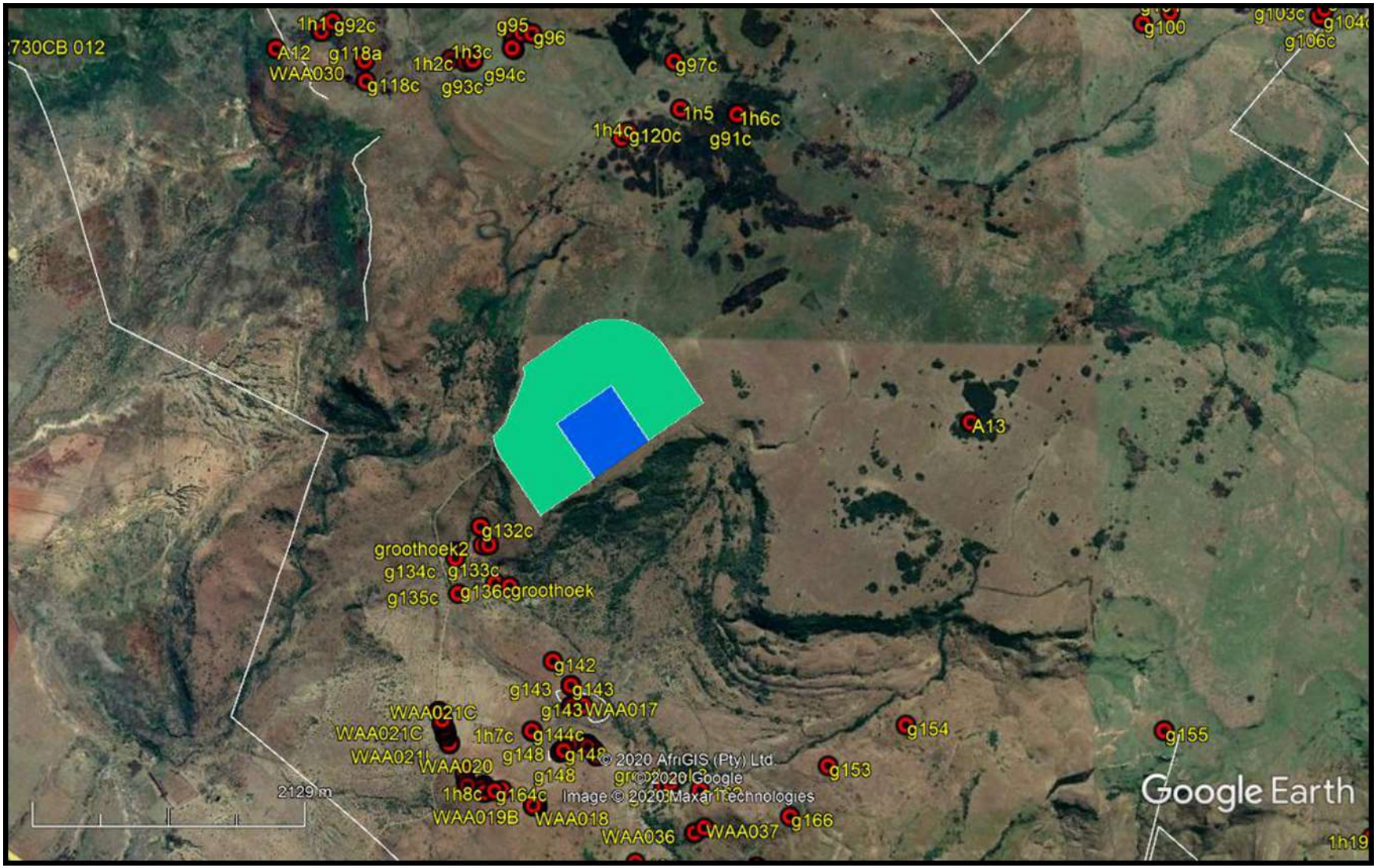

Figure 8-3: Locations of the heritage sites in the study area

8.6 PALAEONTOLOGICAL SITE VERIFICATION ASSESSMENT

The BESS and reservoir is located on dolerite, which has no fossil sensitivity (due to the igneous nature), as stated in the original Paleontological Impact Assessment (PIA) report undertaken by Dr Gideon Groenewald (2014). As part of the site verification process, a review of the geology underlying the BESS and reservoir assessment was also undertaken. As the paleontological sensitivity (geology) is unlikely to change, it can be concluded that the site is of low sensitivity, and no further assessment is required. The recommendations provided in the original PIA (2014) will be referenced and recommended as mitigation measures during construction, where relevant.

Refer to Figure 8-4 below for the paleontological sensitivity map of the broader assessment area.

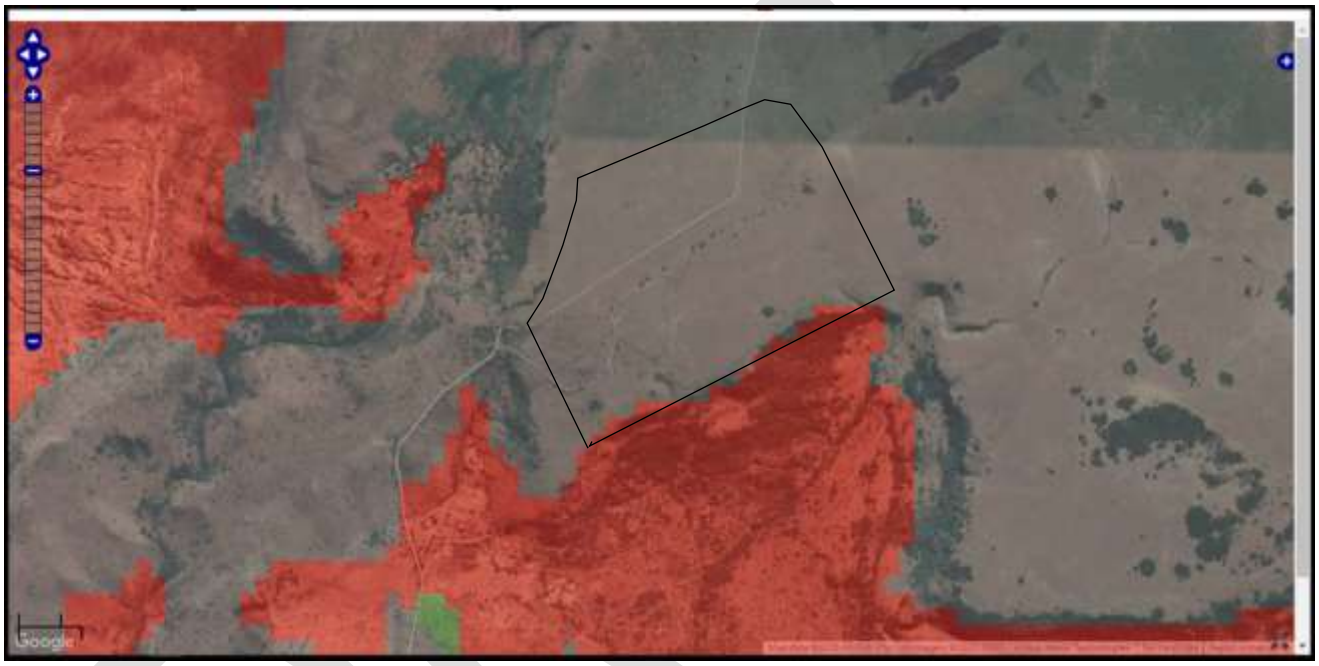

Figure 8-4: Paleontological sensitivity map of the broader assessment area

Refer to the attached Heritage/Archaeological Site Sensitivity Verification Letter and the original PIA specialist report (Appendix 3.4).

8.7 SOCIAL COMPLIANCE STATEMENT

Dr Neville Bews & Associates was appointed to undertake a social compliance statement for the proposed Waaihoek BESS and reservoir (2020). After consideration of the previous Socio-Economic Impact Assessment conducted by CES (2014), the social specialist concluded that the proposed construction and operation of the BESS, associated infrastructure and reservoir is unlikely to result in any increased severity and/or additional impacts. Considering the above, it is most unlikely the proposed BESS will add any additional social risk to the Waaihoek WEF.

It was, however, agreed that the addition of the BESS will make the facility more efficient and reliable, and electricity supply more constant. This will, in turn, have positive social consequences as better security of electricity supply will have both positive economic affects and health benefits. Security of energy supply helps to increase business confidence and reduce health risks associated with disrupted medical procedures and

traffic control. Consequently, the project is supported on a social basis and should proceed. No additional mitigation measures or conditions were recommended to be included in the EMPr.

Refer to the attached Social Compliance Statement (2020) and the original Socio-Economic specialist report (2014) (Appendix 3.5).

8.8 GEOTECHNICAL ASSESSMENT

A preliminary geotechnical investigation was conducted by SMEC South Africa (Pty) Ltd. in 2015 and 2020 on behalf of Mainstream Renewable Power South Africa (Pty) Ltd. for the authorized Waaihoek WEF. Geotechnical investigations comprised trial pitting and field mapping within the supplied buildable area designations as well as at supporting infrastructure (Waaihoek substation). All fieldwork data was substantiated further by off-site laboratory testing. The 2015 geotechnical investigation concluded that geotechnical conditions were found to be favourable over the site, however, it was recommended that further, more detailed investigations were undertaken to confirm the assumed ground conditions at depth and at intermediate positions not covered by the 2015 investigations.

Further investigations were conducted in 2020 showed, from the trial pits excavated at the proposed location of the authorized Waaihoek substation, that the area comprised of clayey sand/sandy clay overlying very soft to medium hard rock dolerite at depths of between 1.0 m and 1.5 m. The overlying soils tested as “Low” to “Medium” potential expansiveness, making them unsuitable for founding on. Therefore, the following foundation recommendations were made, which can be applied to the proposed Waaihoek BESS:

- Excavation of existing soils to approximately 1 m below founding level and 1 m beyond building perimeter;
- Backfill using engineered granular fill (G5 or better) and compact in 250 mm thick compacted layers at 93% Modified AASTHO and ± 2% of optimum moisture content;
- Placement of a 1.0 m wide impermeable layer around structure perimeter at a minimum 5% grade to prevent surface water penetration into foundation works, and
- Nominally reinforced shallow foundation footings to design engineer specifications and sizing, utilising allowable bearing pressure of 50 kPa.

A suitably qualified geotechnical expert must inspect the excavations and compaction prior to construction to ensure that suitable founding conditions have been achieved.

Refer to the attached Geotechnical Reports (Appendix C9).

8.9 TRAFFIC SITE VERIFICATION ASSESSMENT

A preliminary traffic assessment was undertaken for the associated Waaihoek WEF in 2014 (refer to Appendix C8 of the BAR). The traffic assessment concluded that the existing traffic is currently operating at free flow conditions. The analysis, which involved calculating the construction traffic and then adding it to the existing traffic, indicated an insignificant decrease in traffic conditions.

As the construction and operation of the BESS and reservoir is unlikely to significantly increase construction or operation traffic in relation to that already assessed for the Waaihoek WEF, it is the EAP’s opinion that a full Traffic Impact Assessment is not necessary for the BESS and reservoir, as the potential traffic impacts can be assessed within the Basic Assessment Report itself, and potential impacts adequately addressed by providing mitigation measures to promote road safety during the construction phase (as per the National Road Traffic Act (1996) and the Occupational Health and Safety Act (OHSA, 1993)). As a mitigation measure,

the BAR will recommend that a traffic management plan is compiled prior to the commencement of construction, which takes into consideration all associated components of the Waaihoek WEF, including the BESS and reservoir.

Refer to the original Traffic Plan attached (Appendix C8).

8.10 HYDROGEOLOGICAL ASSESSMENT

Tsunami Resources was appointed by Mainstream Renewable Power South Africa Pty Ltd to conduct a hydrogeological study of the groundwater supply potential for the authorized Waaihoek WEF, which was conducted between December 2019 – January 2020. It should be noted that potential impacts of the proposed BESS relating to water quality has been assessed as part of the Aquatic Biodiversity (Wetland) Impact Assessment (refer to section 8.3 above).

The aquifers formed by the clastic Karoo rocks can be described as a combination of Intergranular and Fractured Type aquifers. Unweathered dolerite dykes and sills are expected to create impervious boundaries, or aquicludes. The aquifer underlying the plateau at elevation is regarded as a perched aquifer, with the aquifers underlying the surrounding plain as unconfined or semi-confined aquifers.

Registered water use data from the WARMS database obtained from the DWS revealed that surface water forms an important resource in the region, but many data points plot some distance from the nearest river. Water is either collected or piped from these sources assuming the coordinates plot correctly. Most water use is for the household sector, followed by forms of agriculture, mining and other industries.

The hydrocensus revealed surprisingly little boreholes located on top of the plateau, which might be attributed to the scarce population density and limited agricultural activities, or the prevalence of surface water sources like springs and (man-made) dams from which water is sourced.

Although there is no apparent shortage of water, the villages in the Waaihoek and Groothoek community trust area does experience some difficulty due to apparent poor infrastructure development. The Amajuba District Municipality decided some years ago to install plastic water tanks along the road and at strategic places near villages, to be filled with a water tanker on a regular basis. This service is unreliable and, in our opinion, the proper siting, drilling and testing of boreholes would be a permanent solution to their water supply problems.

The quality of the water appears to be of a good quality (first estimate), although two boreholes were surveyed with warning signs indicating that the water is only fit for animal consumption.

The following recommendations were made:

- From a water availability perspective, there appears to be enough water to support the project, although exact water demand figures are not yet available.
- For construction purposes it is recommended to make use of several larger dams located on top of the plateau, with the proper approval of the relevant land owners.
- It is recommended to test any groundwater for long-term domestic use during the operational phase since some chemical parameters rendered two surveyed boreholes unfit for human consumption.

Refer to the Hydrogeological Assessment attached (Appendix C7).

9 SENSITIVITY ASSESSMENT

The following section provides a preliminary assessment of the sensitivity of the study area.

9.1 CONSERVATION AND SPATIAL PLANNING TOOLS

Several conservation planning tools are available for the study area. These tools allow for the potential identification of any sensitive and important areas from an ecological perspective at the early stage of a development and allow for the fine-tuning of plans and infrastructure layouts.

The following tools identified as relevant to the project are summarised below:

- SANBI Vegetation Threat Status;
- NEMBA Threatened Ecosystems and TOPS list;
- KZNSCP Critical Biodiversity Areas (Terrestrial and Aquatic); and
- Provincial Nature and Environmental Conservation Ordinance No. 19 of 1974.
- The National Biodiversity Assessment (NBA, 2018); and
- The National Freshwater Ecosystem Priority Areas (NFEPA) project.

9.2 SANBI VEGETATION THREAT STATUS

The study area is classified as Least Threatened for both the Wakkerstroom Montane Grassland (Gm14) and Northern KZN Moist Grassland (Gs 4).

There are no threatened ecosystems in terms of GN 1002 (2011) within the project area, with the 'Low Escarpment Mistbelt Forest' classified as Vulnerable and is located outside of the north-western boundary of the project site. A 50m no-go buffer has been recommended to be implemented around the Mistbelt Forest.

9.3 LAND COVER

According to the DAFF online interactive database (http://daffarcgis.nda.agric.za/portal/home/), the land cover of the study site has been classified as 'Unimproved Grasslands" (Figure 7-6 above). The project area is currently used as grazing land and is not viable arable land.

9.4 RIVERS AND WETLANDS

Water is considered as a scarce resource in South Africa. All waterbodies including drainages, wetlands (artificial and natural) are protected by legislation and requires licencing from DWS to impact on them. The wetland specialist identified two seep wetlands within the project area. These seep wetlands and their 20m buffers are considered highly sensitive and must be avoided.

9.5 ECBCP CBA'S

The proposed Waaihoek BESS and reservoir are not located in any CBA areas. An Ecological Support Area (ESA) is located to the east of the project site, and CBA 2 areas located to the north, west and south.

9.6 SENSITIVITY ALLOCATION

The sensitivity map was developed based on the methodology presented in Table 9-1 below, for the study area. The allocation of criteria was based on both the desktop biophysical description of the site, specialist findings as well as observations made during site visits.

Table 9-1: Sensitivity criteria

CRITERIA		LOW SENSITIVITY	MODERATE SENSITIVITY	HIGH SENSITIVITY
1	**Topography**	Level or even	Undulating; fairly steep slopes	Complex and uneven with steep slopes
2	**Vegetation** - Extent or habitat type in the region	Extensive throughout the region	Restricted to a particular region / zone	Restricted to a specific locality / site
3	**Conservation status** of fauna / flora or habitats	Well conserved/ independent of conservation value	Not well conserved, moderate conservation value	Not conserved - has a high conservation value
4	**Species of conservation concern** - Presence and number	None, although occasional regional endemics	No Species of Conservation Concern, some indeterminate or rare endemics	One or more Species of Conservation Concern, or more than 2 endemics or rare species
5	**Habitat fragmentation** leading to loss of viable populations	Extensive areas of preferred habitat present elsewhere in region not susceptible to fragmentation	Reasonably extensive areas of preferred habitat elsewhere and habitat susceptible to fragmentation	Limited areas of this habitat, susceptible to fragmentation
6	**Biodiversity** contribution	Low diversity or species richness	Moderate diversity, and moderately high species richness	High diversity and species richness
7	**Erosion potential** or instability of the region	Very stable and an area not subjected to erosion	Some possibility of erosion or change due to episodic events	Large possibility of erosion change to the site or destruction due to climatic or other factors
8	**Rehabilitation** potential of the area or region	Site is easily rehabilitated	There is some degree of difficulty in rehabilitation of the site	Site is difficult to rehabilitate due to the terrain, type of habitat or species required to reintroduce
9	**Disturbance** due to human habitation or other influences (alien invasive species)	Site is very disturbed or degraded	There is some degree of disturbance of the site	The site is hardly or very slightly impacted upon by human disturbance
10	**Ecological function**	Habitat widely represented in the landscape not specifically	Intermediate role in ecological function	Key habitat involved in ecological processes (ecological corridors and

CRITERIA		LOW SENSITIVITY	MODERATE SENSITIVITY	HIGH SENSITIVITY
		harbouring any unique habitat features, etc.		network areas or key niche habitats)
11	**Ecological Services**	Little to no ecological services	Some ecological services.	Various ecological services. Areas should be conserved.
12	**Aquatic environment**	Outside of the 32m watercourse buffer. Outside of the 500m wetland buffer	Within 500m of a natural wetland, but placement of infrastructure located more than 50m from any wetlands or watercourses.	Development within the watercourse.

In addition, the findings of the various specialist assessments, where relevant, have been incorporated into the overall sensitivity rating of the proposed project site (refer to Chapter 8 above).

The proposed Waaihoek BESS and reservoir study areas falls within areas of **HIGH** to **MODERATE** sensitivity, as explained in Table 9-2 below and Figure 9-1 below. The placement of the proposed infrastructure has taken into consideration areas of high sensitivity, as shown in Figure 9-1.

Table 9-2: Sensitivity assessment of the study area.

SENSITIVE ENVIRONMENT	DESCRIPTION	RISK
Aquatic Biodiversity	• Watercourses and wetlands • 20m 'no-go' buffers	**HIGH**
Terrestrial Biodiversity	• Misbelt Forest (located outside of study area) and 50m buffer • Areas with plant SCCs • Riparian Vegetation – 20m buffers of seep wetlands	**HIGH**
	• Wakkerstroom Montane Grassland (Gm14) and Northern KZN Moist Grassland (Gs 4).	**MODERATE**
Agricultural	• Despite the high sensitivity rating from the DEFF Screening Tool Report, the land is actually of limited agricultural value. Because it is not viable arable land, it is not considered particularly preservation worthy as agricultural production land. However, it does have a good grazing capacity.	**MODERATE**
Heritage & Palaeontology	• No identified heritage features within the project site • No Paleontological sensitivity	**N/A**
Noise	• Noise Sensitive Development – closest NSD is 410m away, however, the proposed BESS poses no risk to this NSD.	**N/A**

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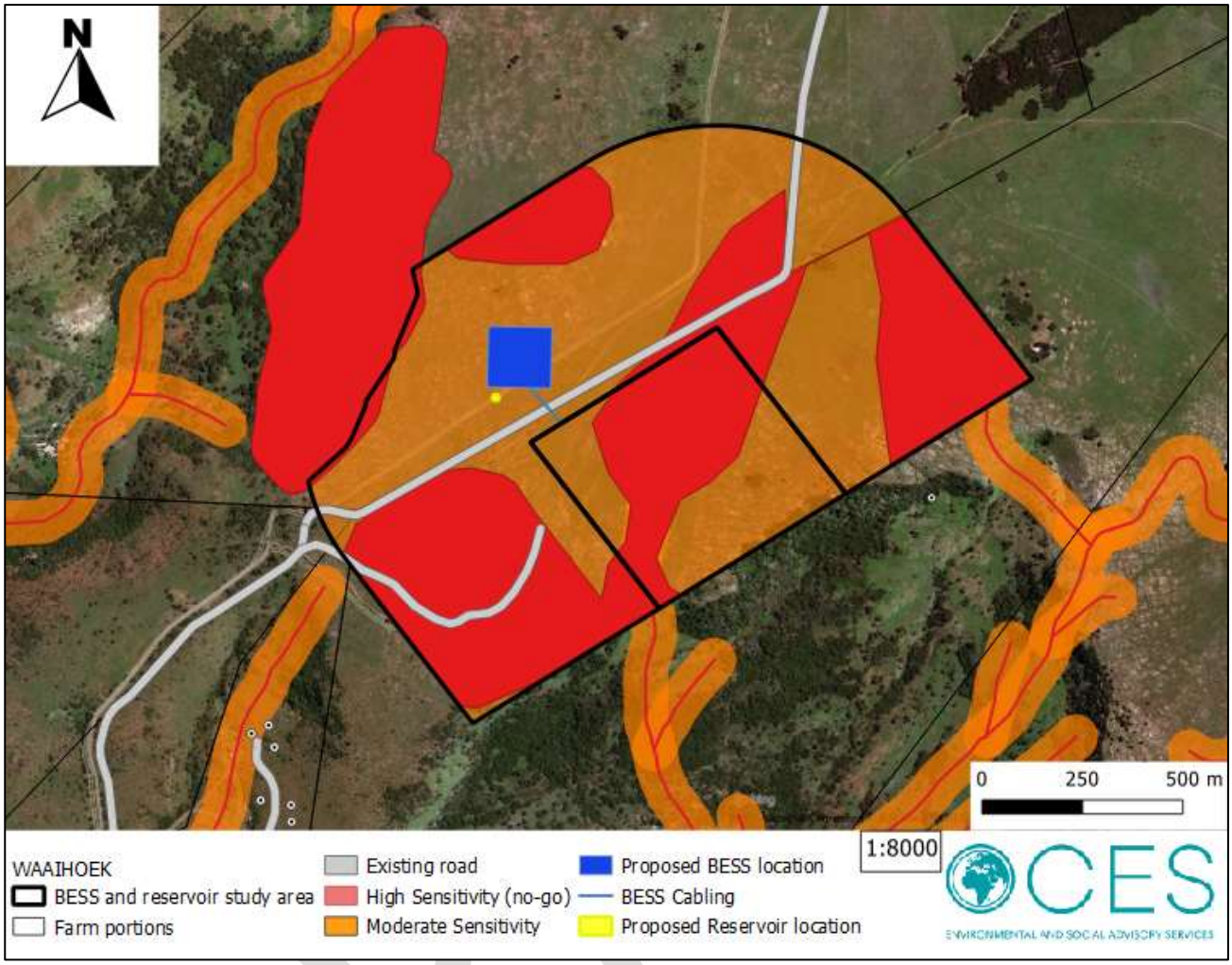

Figure 9-1: Sensitivity Map

10 IMPACT ASSESSMENT

10.1 CES ASSESSMENT METHODOLOGY

To ensure a balanced and objective approach to assessing the significance of potential impacts, a standardised rating scale was adopted which allows for the direct comparison of specialist studies. This rating scale has been developed in accordance with the requirements outlined in Appendix 2 and 3 of the EIA Regulations (2014, as amended).

Impact significance pre-mitigation

This rating scale adopts six key factors to determine the overall significance of the impact prior to mitigation:

1. **Nature of impact:** Defines whether the impact has a negative or positive effect on the receiving environment.
2. **Type of impact:** Defines whether the impact has a direct, indirect or cumulative effect on the environment.
3. **Duration:** defines the relationship of the impact to temporal scales. The temporal scale defines the significance of the impact at various time scales as an indication of the duration of the impact. This may extend from the short-term (less than 5 years, equivalent to the construction phase) to permanent. Generally, the longer the impact occurs the greater the significance of any given impact.
4. **Extent:** describes the relationship of the impact to spatial scales i.e. the physical extent of the impact. This may extend from the local area to an impact that crosses international boundaries. The wider the spatial scale the impact extends, the more significant the impact is considered to be.
5. **Probability:** refers to the likelihood (risk or chance) of the impact occurring. While many impacts generally do occur, there is considerable uncertainty in terms of others. The scale varies from unlikely to definite, with the overall impact significance increasing as the likelihood increases.
6. **Severity or benefits:** the severity/beneficial scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on the receiving environment. The severity of an impact can be evaluated prior and post mitigation to demonstrate the seriousness of the impact if it is not mitigated, as well as the effectiveness of the mitigation measures. The word 'mitigation' does not only refer to 'compensation', but also includes concepts of containment and remedy. For beneficial impacts, optimization refers to any measure that can enhance the benefits. Mitigation or optimisation should be practical, technically feasible and economically viable.

For each impact, the duration, extent and probability are ranked and assigned a score. These scores are combined and used to determine the overall impact significance prior to mitigation. They must then be considered against the severity rating to determine the overall significance of an activity. This is because the severity of the impact is far more important than the other three criteria. The overall significance is either negative or positive (Criterion 1) and direct, indirect or cumulative (Criterion 2).

Table 10-1: Evaluation Criteria.

Duration (Temporal Scale)	
Short term	*Less than 5 years*
Medium term	*Between 5-20 years*
Long term	*Between 20 and 40 years (a generation) and from a human perspective also permanent*
Permanent	*Over 40 years and resulting in a permanent and lasting change that will always be there*
Extent (Spatial Scale)	
Localised	*At localised scale and a few hectares in extent*
Study Area	*The proposed site and its immediate environs*

Regional	*District and Provincial level*	
National	*Country*	
International	*Internationally*	
Probability (Likelihood)		
Unlikely	*The likelihood of these impacts occurring is slight*	
May Occur	*The likelihood of these impacts occurring is possible*	
Probable	*The likelihood of these impacts occurring is probable*	
Definite	*The likelihood is that this impact will definitely occur*	
Severity Scale	*Severity*	*Benefit*
Very Severe/ Beneficial	An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated.	A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit.
Severe/ Beneficial	Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming, or some combination of these.	A long-term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these.
Moderately severe/Beneficial	Medium to long term impacts on the affected system(s) or party (ies), which could be mitigated.	A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way.
Slight	Medium- or short-term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary.	A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.
No effect/don't or can't know	The system(s) or party(ies) is not affected by the proposed development.	In certain cases, it may not be possible to determine the severity of an impact.

** In certain cases, it may not be possible to determine the severity of an impact thus it may be determined: Don't know/Can't know.*

Table 10-2: Description of Overall Significance Rating.

Significance Rate		***Description***
Don't Know		*In certain cases, it may not be possible to determine the significance of an impact. For example, the primary or secondary impacts on the social or natural environment given the available information.*
NO SIGNIFICANCE		*There are no primary or secondary effects at all that are important to scientists or the public.*
LOW NEGATIVE	**LOW POSITIVE**	*Impacts of low significance are typically acceptable impacts for which mitigation is desirable but not essential. The impact by itself is insufficient, even in combination with other low impacts, to prevent the development being approved. These impacts will result in negative medium to short term effects on the natural environment or on social systems.*
MODERATE NEGATIVE	**MODERATE POSITIVE**	*Impacts of moderate significance are impacts that require mitigation. The impact is insufficient by itself to prevent the implementation of the project but in conjunction with other impacts may prevent its implementation. These impacts will usually result in a negative medium to long-term effect on the natural environment or on social systems.*

Significance Rate		Description
HIGH NEGATIVE	HIGH POSITIVE	*Impacts that are rated as being high are serious impacts and may prevent the implementation of the project if no mitigation measures are implemented, or the impact is very difficult to mitigate. These impacts would be considered by society as constituting a major and usually long-term change to the environment or social systems and result in severe effects.*
VERY HIGH NEGATIVE	VERY HIGH POSITIVE	*Impacts that are rated as very high are very serious impact which may be sufficient by itself to prevent the implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigable and usually result in very severe effects or very beneficial effects.*

Impact significance post-mitigation

Once mitigation measures are proposed, the following three factors are then considered to determine the overall significance of the impact after mitigation.

1. **Reversibility Scale**: This scale defines the degree to which an environment can be returned to its original/partially original state.
2. **Irreplaceable loss Scale:** This scale defines the degree of loss which an impact may cause.
3. **Mitigation potential Scale:** This scale defines the degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

Table 10-3: Post-mitigation Evaluation Criteria

Reversibility	
Reversible	*The activity will lead to an impact that can be reversed provided appropriate mitigation measures are implemented.*
Irreversible	*The activity will lead to an impact that is permanent regardless of the implementation of mitigation measures.*
Irreplaceable loss	
Resource will not be lost	*The resource will not be lost/destroyed provided mitigation measures are implemented.*
Resource will be partly lost	*The resource will be partially destroyed even though mitigation measures are implemented.*
Resource will be lost	*The resource will be lost despite the implementation of mitigation measures.*
Mitigation potential	
Easily achievable	*The impact can be easily, effectively and cost effectively mitigated/reversed.*
Achievable	*The impact can be effectively mitigated/reversed without much difficulty or cost.*
Difficult	*The impact could be mitigated/reversed but there will be some difficultly in ensuring effectiveness and/or implementation, and significant costs.*
Very Difficult	*The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly.*

The following assumptions and limitations are inherent in the rating methodology:

- **Value Judgements:** Although this scale attempts to provide a balance and rigor to assessing the significance of impacts, the evaluation relies heavily on the values of the person making the judgment.
- **Cumulative Impacts**: These affect the significance ranking of an impact because it considers the impact in terms of both on-site and off-site sources. This is particularly problematic in terms of impacts beyond the scope of the proposed development. For this reason, it is important to consider impacts in terms of their cumulative nature.

- **Seasonality**: Certain impacts will vary in significance based on seasonal change. Thus, it is difficult to provide a static assessment. Seasonality will need to be implicit in the temporal scale, with management measures being imposed accordingly (e.g. dust suppression measures being implemented during the dry season).

10.2 IMPACT ASSESSMENT

The overall impacts associated with the current layout of the proposed Waaihoek BESS, associated infrastructure and water reservoir as well as the “no-go alternative” will be assessed to evaluate the significance of the “as predicted” impacts (prior to mitigation) and the “residual” impacts (that remain after mitigation measures have been implemented).

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10.2.1 GENERAL IMPACTS AND ASSESSMENT

IMPACTS RESULTING FROM THE PLANNING & DESIGN PHASE

IMPACT 1: COMPLIANCE WITH RELEVANT LEGISLATION

Cause and Comment: *Preferred Alternative:* During the Planning and Design Phase, failure to obtain the necessary authorisations and/or permits, as well as failure to adhere to existing policies and legal obligations, could lead to the project conflicting with local, provincial and national policies and legislation. This could result in a lack of institutional support for the project, overall project failure and undue social and environmental impacts.

No-Go Alternative: The no-go alternative will not require authorisation or permitting.

Mitigation Measures:

- → Activities, which trigger listed activities in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent 2017 amendments), must not commence prior to receipt of an Environmental Authorisation (EA) from the national Department of Environment, Forestry and Fisheries (DEFF).
- → All identified water uses in terms of Section 21 of the NWA must not commence prior to receipt of the necessary water use authorisation(s) from the Department of Water and Sanitation (DWS).
- → All additional permitting and authorisation requirements, including plant removal permits, must be obtained prior to the commencement of any vegetation clearance and/or construction activities.
- → A suitably qualified Environmental Control Officer (ECO) must be appointed prior to the commencement of the construction phase to monitor the Applicant's compliance with the conditions of all the relevant permits and authorisations.
- → All phases of the Waaihoek BESS development must comply with the relevant municipal by-laws and should consider the available best practice guidelines.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Regional/ National	Severe	May Occur	**HIGH NEGATIVE (-)**	Reversible	Resource could be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 2: INFRASTRUCTURE DESIGN AND LAYOUT

Cause and Comment: *Preferred Alternative:* During the Planning and Design Phase, failure to consider site sensitivities and 'no-go' areas identified on site when finalising the design and layout of the proposed BESS, associated infrastructure and reservoir can result in sensitive areas on site being encroached upon, impacted and/or degraded.

No-Go Alternative: The no-go alternative will not have any impacts associated with it in this regard.

IMPACT 2: INFRASTRUCTURE DESIGN AND LAYOUT

Mitigation Measures:

→ Ensure the layout and design of the proposed Waaihoek BESS, associated infrastructure and reservoir avoids all 'no-go' areas as identified within this BAR and associated specialist reports.

→ The development footprint must be surveyed and demarcated prior to construction commencing to ensure that there is no encroachment into 'no-go' or sensitive areas. 'No-go' areas, as per Section 9 of this BAR, must be clearly demarcated to ensure these areas are clearly visible and avoidable.

→ The routing of associated infrastructure, such as underground cabling, overhead powerlines and new access roads, must avoid traversing identified 'no-go' areas.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Localised	Severe	May Occur	**HIGH NEGATIVE (-)**	Reversible	Resource could be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

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IMPACTS RESULTING FROM THE CONSTRUCTION PHASE

IMPACT 3: INCREASE IN AIR EMISSIONS (DUST)

Cause and Comment: *Preferred Alternative:* Dust created as a result of the construction activities, such as vegetation clearance, grading and levelling of the exposed land and the transport of construction materials could be a nuisance during the construction phase.

No-Go Alternative: The no-go alternative will not result in an increase in air emissions in the form of dust.

Mitigation Measures:

- → Exhaust emissions from construction vehicles must be minimised by ensuring that all vehicles are properly equipped and serviced.
- → Vegetation clearance must be limited to the approved and demarcated development footprint.
- → If fine building materials, such as sand, are to be transported on the back of trucks, they must be adequately covered.
- → A "complaints register", consisting of all public complaints and actions in response to these complaints, must be maintained during the construction phase.
- → A speed limit of 40km/h must not be exceeded on gravel roads.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Localised	Moderate	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 4: INCREASE IN NOISE LEVELS

Cause and Comment: *Preferred Alternative:* Noise will be created on the site during the construction phase due to the operation of construction equipment, noise generated by construction vehicles both on-site and during travel to and from the site as well as noise generated by the construction workers which are all likely to result in an increase in noise levels and potentially be a nuisance to individuals in proximity to the site.

No-Go Alternative: The no-go alternative will not result in an increase in noise levels.

Mitigation Measures:

- → All construction vehicles must be in sound working order and meet the necessary noise level requirements.
- → All relevant municipal by-laws, with regards to noise control, must apply.
- → A "complaints register", consisting of all public complaints and actions in response to these complaints, must be maintained during the construction phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation

IMPACT 4: INCREASE IN NOISE LEVELS										
All Alternatives	Direct	Short-Term	Localised	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 5: SEDIMENTATION AND STORMWATER MANAGEMENT
Cause and Comment: *Preferred Alternative:* Sediment is likely to be created during the construction phase of the Waaihoek BESS development. These sediments could be carried into nearby watercourses during rainfall events due to runoff. In addition, inadequate stormwater management could result in increased soil erosion within the proposed site and surrounds. *No-Go Alternative:* The no-go alternative will not result in an increase in sedimentation.
Mitigation Measures: → A Stormwater Management Plan must be compiled and implemented throughout the construction phase. → Where possible, vegetation must be retained to avoid soil erosion. → Construction activities must be demarcated and vegetation clearing and topsoil removal (if required) limited to these areas. → Stockpiled materials must not be stored within 100 m of watercourses and should not exceed 1.5 m in height. → Stockpiles should be covered during windy periods.
Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Short-Term	Localised	Moderate	May Occur	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 6: SOIL AND WATER CONTAMINATION DUE TO HAZARDOUS SUBSTANCES
Cause and Comment: *Preferred Alternative:* Accidental spillages of chemicals and other potentially hazardous substances during the construction phase could result in the pollution of the soils as well as surface- and groundwater pollution. *No-Go Alternative:* The no-go alternative will not require the use of hazardous substances.
Mitigation Measures: → All stationary machinery must be equipped with a drip tray to retain any oil leaks. → Chemicals used during the construction phase must be stored safely on bunded surfaces in the site camp. → Cement mixing must take place on a contained and impermeable surface, should it be undertaken on site.

IMPACT 6: SOIL AND WATER CONTAMINATION DUE TO HAZARDOUS SUBSTANCES

- → Emergency plans, and spill kits, must be in place in case of accidental spillages on site.
- → Chemical toilets must be maintained and serviced regularly to reduce the risk of surface- and groundwater contamination.
- → Any hazardous substances and waste must be stored in impermeable bunded areas or in secondary containers with 110% of the volume of the contents within it.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Short-Term	Localised	Severe	May Occur	**HIGH NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**MODERATE NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 7: INCREASE IN EROSION

Cause and Comment: *Preferred Alternative:* The clearance of 2-3 ha of vegetation for the development of the Waaihoek BESS, associated infrastructure and water reservoir will result in increased soil exposure, which could lead to an increase in erosion.

No-Go Alternative: The no-go alternative will not result in an increase in erosion.

Mitigation Measures:

- → An Erosion Management Plan or method statement must be compiled (pre-construction) indicating what measures will be implemented during the construction phase.
- → Vegetation clearance must be kept to a minimum and retained, where possible, to avoid soil erosion.
- → Temporary disturbed areas must be rehabilitated as soon as practically possible.
- → The site must be monitored regularly for signs of erosion. Remedial action must be taken at the first signs of erosion.
- → Erosion controls and sediment trapping measures must be put in place, where necessary.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Short-Term	Study Area	Moderate	May Occur	**MODERATE NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 8: FIRE RISK

Cause and Comment: *Preferred Alternative:* The proposed construction of the Waaihoek BESS will increase the risk of fires, which could potentially result in the loss grazing and wildlife habitats, as well as pose a safety risk to livestock, wildlife and construction workers in proximity to the development.

IMPACT 8: FIRE RISK

No-Go Alternative: The risk of fires, particularly during the drier months, exists in the absence of the proposed Waaihoek BESS development.

Mitigation Measures:

- → Open fires must not be permitted on site during the construction phase.
- → Smoking must be restricted to designated smoking areas, which have easy access to fire-fighting equipment.
- → The Contractor, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires.
- → The Contractor and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on site during the construction phase.
- → The Contractor and/or the appointed fire marshal must ensure that all site personnel are aware of the risk of fires, the procedure to be followed in the event of a fire and that all site personnel have access to the relevant contact details of the nearest Fire and Emergency Services.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Short-Term	Study Area	Severe	May Occur	**HIGH NEGATIVE (-)**	Reversible	Resource will be partly lost	Difficult	**MODERATE NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Study Area	Moderate	May Occur	**MODERATE NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

IMPACT 9: SOCIO-ECONOMIC BENEFITS

Cause and Comment: *Preferred Alternative:* The construction of the Waaihoek BESS, associated infrastructure and water reservoir will create short-term employment opportunities. These employment opportunities will contribute to the skills development of individuals and a short-term income which will benefit individuals and their families.

No-Go Alternative: The no-go alternative will not result in the creation of additional socio-economic benefits.

Mitigation Measures:

- → Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site.
- → A Community Liaison Officer (CLO) should be appointed for the duration of the construction phase. This individual should have knowledge of the local communities and assist with the employment processes. The CLO should be available and accessible to the general public, the developer and all individuals employed by the developer during the construction phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Regional	Moderate	Definite	**LOW POSITIVE (+)**	N/A	N/A	Easily Achievable	**MODERATE POSITIVE (+)**
No-Go Alternative	***Not Applicable***									

IMPACT 10: WASTE MANAGEMENT

Cause and Comment: *Preferred Alternative:* The inadequate management of waste which is produced during the construction phase is likely to result in the pollution of the study area and immediate surrounds.

No-Go Alternative: The no-go alternative will not require waste management measures.

Mitigation Measures:

- All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site.
- Waste must not be burned on site.
- Construction workers must be informed that littering is prohibited within the construction site and surrounding areas.
- A Waste Management Plan should be compiled and implemented for the duration of the construction phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Study Area	Severe	Probable	**MODERATE NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 11: VISUAL AND AESTHETIC IMPACTS

Cause and Comment: *Preferred Alternative:* The construction activities associated with the development of the Waaihoek BESS are likely to have an adverse impact on the visual and aesthetic quality of the study area and immediate surrounds. However, the construction site will only be visible to a limited number of individuals due to the location of the development.

No-Go Alternative: The no-go alternative will not impact the visual and aesthetic quality of the area.

Mitigation Measures:

- All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site.
- The clearance of vegetation must be limited to the development footprint.
- Temporary disturbed areas must be rehabilitated as soon as practically possible.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Study Area	Slight	Probable	**LOW NEGATIVE (-)**	Irreversible	Resource will be partly lost	Difficult	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 12: IMPACT ON ARCHAEOLOGICAL, CULTURAL HERITAGE RESOURCES AND PALAEONTOLOGY

Cause and Comment: *Preferred Alternative:* There are no recorded heritage/archaeological sites in the proposed BESS and reservoir application area according to the original survey (conducted by Umlando in 2014), which was verified through a site visit (conducted on the 16 October 2020) and the use of recent aerial imagery as part of the site sensitivity verification process. As Heritage/Archaeology sensitivity is unlikely to change within the short-term, Umlando concluded that the site is of low sensitivity, and no further assessment is required. The recommendations provided in the original HIA (2014) will be referenced and recommended as mitigation measures during construction, where relevant.

The BESS and reservoir are proposed to be located on dolerite, which has no fossil sensitivity (due to the igneous nature), as stated in the original PIA report undertaken by Dr Gideon Groenewald (2014). As part of the site verification process, a review of the geology underlying the BESS and reservoir assessment was also undertaken. As the paleontological sensitivity (geology) is unlikely to change, it can be concluded that the site is of low sensitivity, and no further assessment is required. The recommendations provided in the original PIA (2014) will be referenced and recommended as mitigation measures during construction, where relevant.

No-Go Alternative: The no-go alternative is unlikely to result in impacts on archaeological, cultural heritage resources and palaeontology.

Mitigation Measures:

- → Should any subsurface palaeontological, archaeological or historical material, be exposed during construction activities, all activities should be suspended, and the archaeological specialist should be notified immediately.
- → Should any unmarked human burials/remains be found during the course of construction, work in the immediate vicinity should cease and the find must immediately be reported to the archaeologist, or the SAHRA. Under no circumstances may burials be disturbed or removed until such time as necessary statutory procedures required for grave relocation have been met.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Localised	No effect	Unlikely	**NO SIGNIFICANCE**	N/A	N/A	N/A	**N/A**
No-Go Alternative	***Not Applicable.***									

IMPACT 13: TRAFFIC IMPACTS

Cause and Comment: *Preferred Alternative:* A preliminary traffic assessment was undertaken for the associated Waaihoek WEF in 2014 (refer to Appendix 3 of the BAR). The traffic assessment concluded that the existing traffic is currently operating at free flow conditions. The analysis, which involved calculating the construction traffic and then adding it to the existing traffic, indicated an insignificant decrease in traffic conditions. The construction of the BESS and reservoir is unlikely to significantly increase construction traffic in relation to that already assessed for the Waaihoek WEF.

No-Go Alternative: The no-go alternative will not result in any further traffic impacts, as the status quo will remain.

Mitigation Measures:

- → Road safety measures, as per the National Road Traffic Act (1996) and the Occupational Health and Safety Act (OHSA, 1993), must be adhered to at all times during construction.

IMPACT 13: TRAFFIC IMPACTS

- → A traffic management plan must be complied prior to construction (which can be combined with the Waaihoek WEF), and implemented throughout all phases of the development.
- → A complaints register must be maintained, should any local residents have any concerns. Issues must be dealt with in a timeously manner.
- → The developer must ensure all local farm roads used during the construction phase are maintained to ensure no deterioration of road surfaces for the local residents.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Regional	Slight	Possible	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

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IMPACTS RESULTING FROM THE OPERATIONAL PHASE

IMPACT 14: STORMWATER MANAGEMENT & SOIL EROSION

Cause and Comment: *Preferred Alternative:* The creation of impermeable surfaces during the operation of the Waaihoek BESS and associated infrastructure could contribute to increased runoff during rainfall events. The increased runoff and inadequate stormwater management could lead to increased soil erosion within the proposed site and surrounds.

No-Go Alternative: The no-go alternative will not result in an increase in impermeable surfaces.

Mitigation Measures:

- → The Stormwater Management Plan, compiled and implemented during the construction phase, must include operational phase management measures for implementation throughout the operational phase.
- → The site must be monitored regularly for signs of erosion. Remedial action must be taken at the first signs of erosion.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Long-Term	Study Area	Slight	May Occur	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 15: SOIL AND WATER CONTAMINATION DUE TO HAZARDOUS SUBSTANCES

Cause and Comment: *Preferred Alternative:* Accidental spillages of chemicals and other potentially hazardous substances during the operational phase could result in the pollution of the soils as well as surface- and groundwater pollution.

No-Go Alternative: The no-go alternative will not require the use of hazardous substances.

Mitigation Measures:

- → All stationary machinery, which is used for maintenance purposes, must be equipped with a drip tray to retain any oil leaks.
- → Any chemicals which are stored on site, included those for Redox Flow Batteries, must be stored safely on bunded surfaces in the site camp and any hazardous substances and waste must be stored in secondary containers within impermeable bunded areas with 110% of the volume of the contents within it.
- → Redox Flow Battery Technology requiring storage and/or refilling of electrolyte chemicals on site must comply with the conditions of the Occupational Health and Safety Act (No.85 of 1993).
- → Emergency plans must be in place and spill kits must readily available in case of accidental spillages on site.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation

IMPACT 15: SOIL AND WATER CONTAMINATION DUE TO HAZARDOUS SUBSTANCES										
All Alternatives	Direct & Indirect	Long-Term	Localised	Severe	May Occur	**MODERATE NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 16: FIRE RISK

Cause and Comment: *Preferred Alternative:* The operation of the Li-ion battery technology alternative has fire risks associated with it, such as fire risks due to thermal runaway. This will result in an increased fire risk within the study area due to the existing (see no-go alternative) fire risk which is at its peak during dry periods. Electrolytes used in the VRFB is inherently safe and non-flammable.

No-Go Alternative: The risk of fires, particularly during the drier months, exists in the absence of the operation of the Waaihoek BESS development.

Mitigation Measures:

- → The Waaihoek BESS must be maintained frequently to reduce the risk of annual degradation of the facility.
- → Batteries should be encased in protective covers and/or insulated.
- → The maintenance personnel, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires.
- → The maintenance personnel and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on site during the operational phase.
- → The maintenance personnel must be aware of the risk of fires, the procedure to be followed in the event of a fire and they must have access to the relevant contact details of the nearest Fire and Emergency Services.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
Technology Alternative 1: Li-Ion	Direct & Indirect	Long-Term	Study Area	Severe	May Occur	**HIGH NEGATIVE (-)**	Reversible	Resource will be partly lost	Difficult	**MODERATE NEGATIVE (-)**
Technology Alternatives 2 & 3: VRFB	Direct & Indirect	Long-Term	Study Area	Severe	Unlikely	**LOW NEGATIVE (-)**	Reversible	Resource will be partly lost	Difficult	**LOW NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Study Area	Moderate	May Occur	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

IMPACT 17: MAJOR HAZARDS RISK

Cause and Comment: *Preferred Alternative:* Redox Flow battery technology may be classified as a Major Hazard Installation due to the storage of chemicals and/or use on site, and processes involved, and may have the potential to cause of Major Incident.

No-Go Alternative: The possibility of a Major Incident will not be relevant to the no-go alternative.

IMPACT 17: MAJOR HAZARDS RISK

Mitigation Measures:

→ Should Redox Flow Batteries be used on site, a Major Hazards Risk Assessment must be undertaken, where relevant to the specific battery technology used, prior to storage and operation on site, and the recommendations of the assessment be implemented.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
Technology Alternatives 2 & 3: VRFB	Direct & Indirect	Long-Term	Study Area	Severe	May Occur	**HIGH NEGATIVE (-)**	Reversible	Resource will be partly lost	Difficult	**MODERATE NEGATIVE (-)**
Technology Alternative 1: Li-Ion	Direct & Indirect	Long-Term	Study Area	Severe	Unlikely	**LOW NEGATIVE (-)**	Reversible	Resource will be partly lost	Difficult	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 18: SOCIO-ECONOMIC BENEFITS

Cause and Comment: *Preferred Alternative:* The operation of the Waaihoek BESS will create long-term employment opportunities. These will primarily be employment opportunities involving general maintenance and servicing of the Waaihoek BESS, associated infrastructure and water reservoir. These employment opportunities will contribute to the skills development of individuals and a long-term income which will benefit individuals and their families.

No-Go Alternative: The no-go alternative will not result in the creation of additional socio-economic benefits.

Mitigation Measures:

→ Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Regional	Moderate	Definite	**MODERATE POSITIVE (+)**	N/A	N/A	Easily Achievable	**MODERATE POSITIVE (+)**
No-Go Alternative	***Not Applicable***									

IMPACT 19: WASTE MANAGEMENT

Cause and Comment: *Preferred Alternative:* The inadequate management of waste which is produced during the operational phase is likely to result in the pollution of the study area and immediate surrounds.

IMPACT 19: WASTE MANAGEMENT

No-Go Alternative: The no-go alternative will not require waste management measures.

Mitigation Measures:

→ All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site.
→ Waste must not be burned on site.
→ Maintenance staff must be informed that littering is prohibited within the construction site and surrounding areas.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Study Area	Slight	May Occur	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 20: VISUAL AND AESTHETIC IMPACTS

Cause and Comment: *Preferred Alternative:* The operation of the Waaihoek BESS, associated infrastructure and water reservoir could have an adverse impact on the visual and aesthetic quality of the study area and immediate surrounds. However, the Waaihoek BESS development will only be visible to a limited number of individuals due to the location of the development, the nature of the proposed structures and due to the diminishing distance factor.

No-Go Alternative: The no-go alternative will not impact the visual and aesthetic quality of the area.

Mitigation Measures:

→ All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site.
→ The rehabilitation of disturbed areas must be monitored to ensure successful rehabilitation and the resultant decrease in the visual impact.
→ The Waaihoek BESS must be maintained frequently to reduce the risk of annual degradation of the facility.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Study Area	Slight	May Occur	**LOW NEGATIVE (-)**	Irreversible	Resource will be partly lost	Difficult	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACT 21: SUPPORT OF RENEWABLE ENERGY INFRASTRUCTURE FUNCTIONING

Cause and Comment: *Preferred Alternative:* Combining energy storage with renewable technologies such as wind and solar provides a variety of benefits. One of the most critical is the ability to store energy as it is generated and then redistribute it when needed, rather than as it is produced. This ability reduces the need to curtail renewable generation and allows the energy to be deployed during periods of high electricity demand. The proposed Waaihoek BESS will improve the efficiency and reduce redundancies of the Waaihoek WEF.

No-Go Alternative: The no-go alternative will not support renewable energy infrastructure functioning.

Mitigation Measures:

→ The Waaihoek BESS must be maintained frequently to reduce the risk of annual degradation of the facility.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Study Area	Beneficial	Definite	**HIGH POSITIVE (+)**	N/A	N/A	Achievable	**HIGH POSITIVE (+)**
No-Go Alternative	***Not Applicable***									

IMPACT 22: TRAFFIC IMPACTS

Cause and Comment: *Preferred Alternative:* A preliminary traffic assessment was undertaken for the associated Waaihoek WEF in 2014 (refer to Appendix 3 of the BAR). The traffic assessment concluded that the existing traffic is currently operating at free flow conditions. The analysis, which involved calculating the construction traffic and then adding it to the existing traffic, indicated an insignificant decrease in traffic conditions. The operation of the BESS is unlikely to significantly increase operation traffic in relation to that already assessed for the Waaihoek WEF.

No-Go Alternative: The no-go alternative will not result in any further traffic impacts, as the status quo will remain.

Mitigation Measures:

→ Road safety measures, as per the National Road Traffic Act (1996) and the Occupational Health and Safety Act (OHSA, 1993), must be adhered to at all times during operation.
→ A traffic management plan must be implemented throughout all phases of the development.
→ A complaints register must be maintained, should any local residents have any concerns. Issues must be dealt with in a timeously manner.
→ The developer must ensure all local farm roads used during the operation phase are maintained to ensure no deterioration of road surfaces for the local residents.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Regional	Slight	Possible	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

4. IMPACTS RESULTING FROM THE DECOMMISSIONING PHASE

As per the temporal scales ("long-term") indicated in the significance statement for the operational phase in the section above, the Waaihoek BESS and associated infrastructure is likely to be used over an extensive period of time, and decommissioning is not foreseen in the near future. Should the infrastructure be decommissioned in the long-term, the impacts associated with the decommissioning phase could be similar to those for the construction phase and most of the mitigation measures stipulated for the construction phase will, therefore, be relevant. **However, there is currently little known about the decommissioning of BESS facilities in South Africa and it is therefore recommended that a specific decommissioning phase EMPr is compiled prior to decommissioning the BESS by a suitably qualified EAP. The decommissioning phase EMPr must include additional decommissioning phase recommendations and mitigation measures based on case studies of BESS decommissioning and it must consider the relevant legislation, policies and guidelines at the time of decommissioning.**

10.2.2 SPECIALIST IMPACTS AND ASSESSMENT

IMPACTS RESULTING FROM THE CONSTRUCTION PHASE

AGRICULTURAL ASSESSMENT

SPECIALIST IMPACT 1: LOSS OF AGRICULTURAL LAND USE

Cause and Comment: *Preferred Alternative:* Agricultural land directly occupied by the development infrastructure will become unavailable for agricultural use. This impact is relevant only in the construction phase. No further loss of agricultural land use occurs in subsequent phases. The vegetation clearing required for the construction of the Waaihoek BESS, associated infrastructure and water reservoir will result in the loss of approximately 2 ha of land, which is currently used for livestock grazing. The grazing capacity of the study area is 2.5 ha/LSU, therefore, a loss of 2ha of grazing land equates to a loss of one LSU. The project area is not arable due to the shallow soils.

No-Go Alternative: The no-go alternative will result in the loss of agricultural land in the area due to the development of the authorised Waaihoek WEF and associated infrastructure.

Mitigation Measures:

→ The clearance of vegetation must be limited to the development footprint only.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Cumulative	Long-Term	Localised	Moderate	Definite	**LOW NEGATIVE (-)**	Irreversible	Resource will be partly lost	Achievable	**LOW NEGATIVE (-)**

SPECIALIST IMPACT 1: LOSS OF AGRICULTURAL LAND USE										
No-Go Alternative	Existing	Long-Term	Study Area	Moderate	Definite	**MODERATE NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 2: SOIL DEGRADATION

Cause and Comment: *Preferred Alternative:* Soil can be degraded by impacts in three different ways: erosion; topsoil loss; and contamination. Erosion can occur as a result of the alteration of the land surface run-off characteristics, which can be caused by construction related land surface disturbance, vegetation removal, and the establishment of hard surface areas including roads. Loss of topsoil can result from poor topsoil management during construction related excavations. Hydrocarbon spillages from construction activities can contaminate soil. Soil degradation will reduce the ability of the soil to support vegetation growth. This impact is relevant only during the construction and decommissioning phases.

No-Go Alternative: Soil erosion exists on site, and the implementation of the 'no-go' alternative will result in the continued slow progression of erosion on site.

Mitigation Measures:

Planning and Design Phase:

- → Design an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion.
- → Ensure that the storm water run-off control is included in the engineering design during the planning and design phase.

Construction Phase:

- → Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.
- → The ECO must undertake periodic site inspections, every 2 months, to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.
- → The system must effectively collect and safely disseminate any run-off water from all hardened surfaces and it must prevent any potential down slope erosion.
- → Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.
- → Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion. The ECO must undertake periodic site inspections, every 4 months, to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.
- → If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface, and then stabilized by facilitating vegetation cover. The ECO must record GPS positions of all occurrences of below-surface soil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation

SPECIALIST IMPACT 2: SOIL DEGRADATION										
All Alternatives	Direct & Cumulative	Short-Term	Localised	Slight	May Occur	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Study Area	Moderate	Definite	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

SPECIALIST IMPACT 3: LOSS OF WAKKERSTROOM MONTANE GRASSLAND

Cause and Comment: *Preferred Alternative:* The clearing of land for the construction of the BESS and the reservoir will result in the loss of 2-3ha of Wakkerstroom Montane Grassland. The project will definitely result in the permanent loss of this vegetation type however, given that the loss will be limited to between 2 and 3ha, it is unlikely to impact on the extent and long term conservation of this vegetation type, which is listed as Least Threatened. The overall significance of the project activities at this site, provided the recommended mitigation measures are implemented, would be moderate negative.

No-Go Alternative: Given that this area appears to be used for grazing, if the project were to not go ahead, the site would probably continue to be grazed. If not managed properly the continued grazing could result in the degradation of the site. The overall significance for the no-go alternative would thus be low negative.

Mitigation Measures:

- → No removal of vegetation is to take place within 20m of the wetland seeps or within 50m of Low Escarpment Mistbelt Forest to the north west, except for the control of alien vegetation Construction vehicles and machinery must not encroach into identified 'no-go' areas or areas outside the project footprint.
- → Activities within 500m of a wetland must obtain the necessary Water Use License prior to the commencement of such activities.
- → Topsoil (20 cm, where possible) must be collected and stored in an area of low 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.
- → Lay down areas must not be located within any watercourses or drainage lines.
- → Employees must be prohibited from making open fires during the construction phase.
- → An alien invasive management plan for the site must be created.
- → An in-situ search and rescue plan must be developed and implemented for succulents and geophytes that will be impacted by the construction of the project site.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Localised	Moderate	Definite	**MODERATE NEGATIVE (-)**	Reversible	Resource will be lost	Achievable	**MODERATE NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Localised	Slight	May Occur	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 4: LOSS OF PLANT SPECIES OF SPECIAL CONCERN

Cause and Comment: *Preferred Alternative:* The permanent localised loss of eight or more plant species of special concern may occur. The severity of the impact will be of moderate significance given the wide distribution of the species and because all are listed as Least Concern on the South African Red Data List indicating that their populations are stable. The overall significance of the impact can be reduced to low negative if the infrastructure avoids areas of high sensitivity.

No-Go Alternative: If the project should not go ahead, it is likely that these species will continue growing undisturbed. The overall significance of the impact associated with the no-go alternative is therefore negligible.

Mitigation Measures:

- → Avoid locating infrastructure in areas identified as high sensitivity as this is where the highest number of Species of Special Concern occur;
- → Prohibit all employees and contractors from harvesting plants;
- → Demarcate areas for use during construction and ensure that the construction activities remain within the designated area;
- → Where possible, ensure demarcated construction area avoids populations of SCC;
- → Acquire permits for the removal of all Schedule 4 species;
- → Ensure that no activities occur within areas designated as no-go areas, particularly within drainage lines and watercourses.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Localised	Moderate	May Occur	**MODERATE NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 5: LOSS OF EXTENT OF FAUNAL HABITAT FOR SCC

Cause and Comment: *Preferred Alternative:* The project area intersects the distribution of five mammal and 22 bird SCC. The mammal SCC include the Mountain Reedbuck (EN), Black-footed Cat (VU), Leopard (V), Temminck's Pangolin (VU) and White-Tailed Mouse (VU). Endemic Cape Mole Rat (KC). The bird SCC include 22 threatened (2 CE, 8 EN, 12 VU) and the endemic Rudd's Lark (EN) species. All species are of conservation concern have a broader range than the project site. Although they may occur on site they are not restricted to the site, and unlikely to be directly compromised by the development. The development is small in extent and has a short construction period, thus disruption is considered minimal.

No-Go Alternative: If the project should not go ahead, it is likely that these species will continue undisturbed. The overall significance of the impact associated with the no-go alternative is therefore negligible.

Mitigation Measures:

In addition to the mitigation measures listed for specialist impact 3, the following must be undertaken:

- → Prevent staff from persecuting any faunal species during the construction phase, include clause in all contracts;
- → Demarcate areas for use during construction and ensure that the construction activities remain within the designated area;

SPECIALIST IMPACT 5: LOSS OF EXTENT OF FAUNAL HABITAT FOR SCC

- → Ensure that no activities occur within areas designated as no-go areas.
- → Removal of natural vegetation must be restricted to a minimum.
- → Vegetation must be rehabilitated to its former state where possible after construction.
- → Construction of new roads should only be considered if existing roads cannot be upgraded.
- → Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.
- → No night lighting should be used during construction and operation, if required these must be downlights which must be kept to a minimum in respect to number and wattage.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Localised	Moderate	Definite	**MODERATE NEGATIVE (-)**	Reversible	Resource will be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 6: DISRUPTION OF ECOSYSTEM FUNCTION AND PROCESS

Cause and Comment: *Preferred Alternative:* Fragmentation is one of the most important impacts on vegetation as it creates breaks in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. It also impacts on fauna as it separates habitats and necessitates fauna having to move across exposed areas like roads to get to another section of their habitat or territory. This impact occurs when more and more areas are cleared, resulting in the isolation of functional ecosystems, which reduces biodiversity and reduces movement due to the break in ecological corridors. There is currently limited fragmentation within or around the site although this will increase once construction of the wind turbines begins. Since the footprint associated with the infrastructure is relatively small, the break in habitat caused by the construction of the infrastructure will be of low significance. However, the cumulative impact when the WEF and substation are taken into account will be of moderate significance (refer to cumulative impacts for this assessment).

No-Go Alternative: Under the no-go alternative, there will be no fragmentation and the associated impacts will thus be negligible.

Mitigation Measures:

In addition to the mitigation measures listed for specialist impacts 3 and 4, the following must be undertaken:

- → Rehabilitate laydown areas; and
- → Use existing access roads and upgrade these where necessary.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Localised	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 7: IMPACTS OF INCREASED NOISE ON SURROUNDING FAUNAL POPULATIONS

Cause and Comment: *Preferred Alternative:* During the construction phase, construction activities will lead to the increase in ambient noise levels in the project area. This could disturb surrounding faunal populations causing them to move away from the project area. The impact will be localised and slight with an overall significance of Low Negative.

No-Go Alternative: Under the no-go alternative, there will be no increase in noise levels and therefore the no-go alternative will be negligible.

Mitigation Measures:

In addition to the mitigation measures listed for specialist impacts 3 and 4, the following must be undertaken:

→ Ensure machinery and plant is in good working order. The appropriate silencers should be fitted on equipment if required.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Temporary	Localised	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 8: ESTABLISHMENT OF ALIEN PLANT SPECIES

Cause and Comment: *Preferred Alternative:* During the construction phase the clearing of indigenous vegetation creates 'open' habitats which could favour the establishment of undesirable alien plant species in areas that are typically very difficult to eradicate and could pose a threat to surrounding ecosystems. Consequently, the lack of an effective alien vegetation management plan could lead to a large-scale alien plant invasion.

No-Go Alternative: Under the no-go alternative, the current infestation of the area will continue. The significance of this impact will be Low Negative.

Mitigation Measures:

→ An Alien Vegetation Management Plan must be developed and implemented to prevent the establishment and spread of undesirable alien plant species during all phases of development.

→ Any alien vegetation which establishes during the construction phase must be removed from site and disposed of accordingly.

→ Continuous monitoring for alien plant seedlings must take place throughout the construction phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Study Area	Severe	Definite	**HIGH NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Localised	Slight	May Occur	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 9: DIRECT PHYSICAL LOSS OR MODIFICATION OF WETLAND HABITAT

Cause and Comment: *Preferred Alternative:* It is assumed that the BESS and water reservoir infrastructure will be positioned outside of the delineated wetlands and recommended buffer zones, hence the probability of incurring direct impacts associated with habitat/vegetation destruction and modified wetland soils is highly unlikely. Through impact avoidance (sound environmental planning to avoid wetland areas), impact significance is likely to be 'Low' and environmentally acceptable.
No-Go Alternative: The 'no-go' alternative will not result in additional loss or modification of wetland habitat.

Mitigation Measures:

- → Strict avoidance of the delineated wetlands is to be made a priority and implement and adhere to buffer zones for wetlands, with planned development infrastructure to remain outside of the recommended wetland buffer zones.
- → Demarcate the edge of wetland buffers on the ground to avoid incursions into these areas.
- → Restrict access to wetland areas beyond the development footprint.
- → Should accidental/intentional incursions into or direct disturbance of wetlands occur, rehabilitate wetlands, riparian areas and buffer zones and in accordance with the conceptual 'Wetland Rehabilitation Strategy' provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- → Implement appropriate ecological monitoring during construction and use findings to inform site management.
- → Construction phase method statement(s) to be developed and finalised prior to construction taking place, taking into consideration the wetland impact mitigation measures and requirements of the EMPr to be developed.
- → All construction phases mitigation and management measures recommended in section 7.3 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Indirect	Long-Term	Localised	Slight	Possible	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 10: ALTERATION OF HYDROLOGICAL AND GEOMORPHOLOGICAL PROCESSES (FLOW, EROSION & SEDIMENT REGIME CHANGES)

Cause and Comment: *Preferred Alternative:* Construction activities in the catchment areas of onsite watercourses will result in a temporary reduction in catchment vegetation cover which could be associated with increased runoff and increased sediment supply to downstream wetlands, especially where bare soils are exposed during peak rainfall periods. If runoff and erosion control measures are not effectively implemented by the contractors, erosion rills/headcuts may form along the cleared and exposed slopes within the construction footprint and lead to increased rates of erosion and sedimentation within the wetland habitat downslope of the construction zone. These impacts are likely to be more pronounced during heavy rainfall events. Such impacts could potentially alter the geomorphic structure and hydrological regime of nearby wetlands and could affect freshwater habitat and flora. Should these impacts occur they are however likely to be indirect, temporary and are unlikely to significantly affect long-term ecological processes associated with onsite watercourses. Overall, given the low EIS of the wetlands (limited ecological importance/sensitivity), impact intensity is likely to be relatively low and hydrological and

SPECIALIST IMPACT 10: ALTERATION OF HYDROLOGICAL AND GEOMORPHOLOGICAL PROCESSES (FLOW, EROSION & SEDIMENT REGIME CHANGES)

geomorphological impacts are therefore also likely to be of relatively 'low' ecological significance. Best practical mitigation should be implemented, to maintain the impact at a 'low' and environmentally acceptable level.

No-Go Alternative: The 'no-go' alternative will not result in additional alteration of hydrological and geomorphological processes.

Mitigation Measures:

- → Strict avoidance of the delineated wetlands is to be made a priority and implement and adhere to buffer zones for wetlands, with planned development infrastructure to remain outside of the recommended wetland buffer zones (20m).
- → Limit construction activities to the dry (winter) season where possible, to reduce erosion and sediment risks.
- → Address potential construction-phase erosion and sedimentation risks on site through the implementation of Best Management Practices (BMPs) in erosion and sediment control.
- → Temporary erosion and sediment control measures are to be implemented, with a greater level of need if construction proceeds into the summer (wet/rainy) period. Temporary erosion/sediment control to remain in place until construction has been completed and operational storm water management infrastructure is suitably in place and operating correctly.
- → Rehabilitate any erosion or vegetation clearing impacts as soon as practically possible and in accordance with the conceptual 'Wetland Rehabilitation Strategy'.
- → Implement appropriate ecological monitoring during construction and use findings to inform site management.
- → Construction phase method statement(s) to be developed and finalised prior to construction taking place, taking into consideration the wetland impact mitigation measures and requirements of the EMPr to be developed.
- → All construction phases mitigation and management measures recommended in section 7.3 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Indirect	Long-Term	Study Area	Slight	Probable	**MODERATE NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 11: IMPACTS TO WATER QUALITY

Cause and Comment: *Preferred Alternative:* Water quality impacts during construction will likely be limited to potential increased surface water turbidity due to sediment inputs and / or erosion and physio-chemical pollution related to potential spillages of cement and fuels during construction. Although water pollution impacts can potentially be experienced during the construction phase of the project, the quantity of pollutants is likely to be limited and thus be of low significance for wetlands in the area of study. This is especially relevant given the presence of a 'well-vegetated' buffer zone between the proposed development and the nearest watercourses, such that the intensity and probability of such impacts being sustained by wetlands downstream the BESS development are likely to be low, with impact significance also likely to be relatively 'Low' during the construction phase where well-managed.

SPECIALIST IMPACT 11: IMPACTS TO WATER QUALITY

No-Go Alternative: The 'no-go' alternative will not result in additional impacts to water quality.

Mitigation Measures:

- → Limit construction activities to the dry (winter) season where possible, to reduce erosion and sediment risks.
- → Address potential erosion and sedimentation risks on site through the implementation of Best Management Practices (BMPs) in erosion and sediment control.
- → Sediment controls (e.g. silt fences/berms) should be implemented to reduce sediment inputs to the nearby wetlands.
- → Address potential spill and pollution risks on site through the implementation of Best Management Practices (BMPs) in spill and pollution control and hazardous substances management.
- → Rehabilitate any spill related impacts as soon as practically possible.
- → A suitable spill response and remediation plan is to be developed for the construction phase.
- → Implement appropriate ecological monitoring during construction and use findings to inform site management.
- → Construction phase method statement(s) to be developed and finalised prior to construction taking place, taking into consideration the wetland impact mitigation measures and requirements of the EMPr to be developed.
- → All construction phases mitigation and management measures recommended in section 7.3 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Indirect	Long-Term	Study Area	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 12: IMPACTS TO ECOLOGICAL CONNECTIVITY AND/OR ECOLOGICAL DISTURBANCE IMPACTS

Cause and Comment: *Preferred Alternative:* Since it is assumed that the BESS and water reservoir infrastructure will be positioned outside of the delineated wetlands and recommended buffer zones, the probability of incurring direct impacts to the delineated wetlands is presumed to be unlikely, hence impacts to wetland ecological connectivity are expected to be of 'Low' significance overall and wetland habitat fragmentation is highly unlikely to take place. Maintaining the recommended wetland buffer zones will also discourage edge disturbance and related impacts and maintain some form of ecological connectivity between wetland and adjacent terrestrial grassland habitats.

The presence of workers and machinery during the construction phase may create ecological noise and vibration disturbances that can temporarily disturb amphibians, reptiles, birds and small mammals; however, these will be minor, and fauna will likely move into intact adjacent areas or revisit the site once construction has ceased and the disturbance has halted. Given the limited availability of functional habitat and water for wetland-dependent species provide by the two rather dry temporary/seasonal seep wetlands at the site, faunal impacts are likely to be very limited to negligible, meaning that disturbance-related impacts during the construction phase could be of 'Low' significance. Best practical mitigation should be still implemented to maintain the impact at a an appreciably low and environmentally acceptable level.

SPECIALIST IMPACT 12: IMPACTS TO ECOLOGICAL CONNECTIVITY AND/OR ECOLOGICAL DISTURBANCE IMPACTS

No-Go Alternative: The 'no-go' alternative will not result in further disturbance to ecological connectivity.

Mitigation Measures:

- → Limit construction activities to the dry (winter) season where possible, to reduce erosion and sediment risks.
- → Address potential erosion and sedimentation risks on site through the implementation of Best Management Practices (BMPs) in erosion and sediment control.
- → Sediment controls (e.g. silt fences/berms) should be implemented to reduce sediment inputs to the nearby wetlands.
- → Address potential spill and pollution risks on site through the implementation of Best Management Practices (BMPs) in spill and pollution control and hazardous substances management.
- → Rehabilitate any spill related impacts as soon as practically possible.
- → A suitable spill response and remediation plan is to be developed for the construction phase.
- → Implement appropriate ecological monitoring during construction and use findings to inform site management.
- → Construction phase method statement(s) to be developed and finalised prior to construction taking place, taking into consideration the wetland impact mitigation measures and requirements of the EMPr to be developed.
- → All construction phases mitigation and management measures recommended in section 7.3 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Indirect	Medium-Term	Study Area	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

IMPACTS RESULTING FROM THE OPERATION PHASE

AGRICULTURAL ASSESSMENT

SPECIALIST IMPACT 13: SOIL DEGRADATION

Cause and Comment: *Preferred Alternative:* Soil can be degraded by impacts in three different ways: erosion; topsoil loss; and contamination. Erosion can occur as a result of the alteration of the land surface run-off characteristics, which can be caused by construction related land surface disturbance, vegetation removal, and the establishment of hard surface areas including roads. Loss of topsoil can result from poor topsoil management during construction related excavations. Hydrocarbon spillages from construction activities can contaminate soil. Soil degradation will reduce the ability of the soil to support vegetation growth. This impact is relevant only during the construction and decommissioning phases.

No-Go Alternative: Soil erosion exists on site, and the implementation of the 'no-go' alternative will result in the continued slow progression of erosion on site.

Mitigation Measures:

- → Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring.
- → Undertake a periodic site inspection, bi-annually, to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.
- → Facilitate re-vegetation of denuded areas throughout the site.
- → Undertake periodic site inspections, bi-annually, to record the progress of all areas that require re-vegetation.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	N/A									
No-Go Alternative	Existing	Long-Term	Study Area	Moderate	Definite	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 14: INFESTATION OF ALIEN PLANT SPECIES

Cause and Comment: *Preferred Alternative:* During the operational phase, alien species may continue to spread and become established if an alien invasive management plan was not implemented at the start of the construction phase. The unchecked infestation of undesirable species could result in the displacement of indigenous species and possibly cause local extinctions if mitigation measures are not implemented. The impact is therefore considered as high significance (pre-mitigation).

No-Go Alternative: Under the no-go alternative, the current infestation of the area will continue. The significance of this impact will be Low Negative.

Mitigation Measures:

- → An Alien Vegetation Management Plan must be developed and implemented to prevent the establishment and spread of undesirable alien plant species during all phases of development.
- → Any alien vegetation which establishes during the operation phase must be removed from site and disposed of accordingly.
- → Continuous monitoring for alien plant seedlings must take place throughout the operation phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Study Area	Severe	Definite	**HIGH NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Localised	Slight	May Occur	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 15: THE IMPACT OF THE BESS AND RESERVOIR ON ECOLOGICAL DRIVERS

Cause and Comment: *Preferred Alternative:* Grasslands are dependent on fire to maintain their biodiversity patterns and ecological processes (SANBI, 2013). The benefits of fire within these ecosystems includes stimulating new growth and therefore enhancing productivity, removing dead plant material and letting in more light for new growth, releasing nutrients and organic material back into the soil and limiting the establishment of woody plant species (SANBI, 2013). Understandably, it would not be safe to burn areas directly adjacent to the BESS. This will result in the accumulation of dead and moribund material that will inhibit the growth of some species and may favour the establishment of woody species resulting in a shift in species composition and community structure. However, the footprint of the BESS is fairly small, and it is possible to use alternative management strategies such as grazing or mowing to simulate fire. Without mitigation measures, the impact is likely to be moderate.

No-Go Alternative: Under the no-go alternative, the fire regime is unlikely to be impacted and the associated impacts will thus be negligible.

Mitigation Measures:

- → Design and create firebreaks to protect BESS and reservoir infrastructure.
- → Implement measures that will simulate fire such as mowing the area adjacent to the BESS to reduce the fuel load.
- → Firebreaks must be burned in the appropriate season with the notification and permission of the local Fire Protection Association. The WEF must be a member of the regional/local FPA and comply with all the legal requirements of the Veld and Fire Act (as amended)

SPECIALIST IMPACT 15: THE IMPACT OF THE BESS AND RESERVOIR ON ECOLOGICAL DRIVERS

- → Do not use herbicides or hoeing when creating firebreaks as this will kill plant species and is likely to lead to erosion. Instead use mowing or brush-cutting.
- → Keep grasslands free of invasive species by implementing an Alien Invasive Species Management Plan.
- → Limit bush encroachment.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Localised	Moderate	Definite	**MODERATE NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

WETLAND IMPACT ASSESSMENT

SPECIALIST IMPACT 16: DIRECT PHYSICAL LOSS OR MODIFICATION OF WETLAND HABITAT

Cause and Comment: *Preferred Alternative:* This is largely a construction phase risk/impact and given that the BESS, Water Reservoir and associated infrastructure will be planned to avoid delineated wetlands and their recommended buffer zones, direct loss or modification impacts are unlikely to occur during the operational phase.

No-Go Alternative: The 'no-go' alternative will not result in additional loss or modification of wetland habitat.

Mitigation Measures:

- → Appropriate storm water management to be implemented with a focus on reducing erosion risk.
- → No solid waste dumping to take place within wetlands or buffers.
- → Should accidental/intentional incursions into or direct disturbance of wetlands occur, rehabilitate wetlands, riparian areas and buffer zones and in accordance with the conceptual 'Wetland Rehabilitation Strategy' provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- → All operation phase mitigation and management measures recommended in section 7.5 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Indirect	Long-Term	Localised	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 17: ALTERATION OF HYDROLOGICAL AND GEOMORPHOLOGICAL PROCESSES (EROSION AND SEDIMENT)

Cause and Comment: *Preferred Alternative:* The BESS, Water Reservoir and associated infrastructure will result in limited / minor hardening of a portion of the catchment area supporting the wetlands at the site, with a resulting small to moderate increase in storm water runoff expected into the receiving environment from the stormwater management system. The ecological impacts are likely to include altered water inputs, modification to the timing, frequency and volume of low flows and storm water runoff as a result of a change in catchment land use. The hardening of a portion of the catchment will ultimately lead to a risk of enhanced runoff volumes and velocities (increased storm flows), with the potential to cause erosion within the downstream wetlands (scouring). Any soil erosion problems initiated during the construction phase and that are not timeously and adequately addressed through on-site rehabilitation post-construction, can also persist into the operational phase of the project and continue to have a negative impact on adjacent/downstream water resources for an extended period of time. Appropriate stormwater outfall and attenuation design should be implemented, and bearing this in mind, the impact could potentially be reduced to a 'Low' impact significance with best practical ecological design incorporated to allows flows and sediment fluxes to remain largely unmodified.

No-Go Alternative: The 'no-go' alternative will not result in additional loss or modification of wetland habitat

Mitigation Measures:

- Appropriate Storm Water Management Plan (SMWP) to be implemented with a focus on reducing downstream erosion risk.
- Monitoring plan to be implemented for water quality and erosion/sediment.
- Maintain storm water infrastructure as necessary through unblocking of drains, desilting where required, etc.
- Implement and adhere to the recommended buffer zones for wetlands.
- Rehabilitate any erosion or vegetation clearing impacts as soon as practically possible and in accordance with the conceptual 'Wetland Rehabilitation Strategy' provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- All operation phase mitigation and management measures recommended in section 7.5 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Indirect	Long-Term	Study Area	Slight	Probable	**MODERATE NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 18: IMPACTS TO WATER QUALITY

Cause and Comment: *Preferred Alternative:* Water quality impacts during the operation of onsite infrastructure will likely be limited to potential increased water turbidity due to sediment inputs and / or erosion. There is however also some potential for contaminated surface runoff / stormwater flows, should at any point the batteries (i.e. Redox Flow Batteries) leak electrolyte chemical into the surrounding environment for various reasons such as faulty or damaged battery units. Water turbidity and / or pollution risks should be effectively mitigated, using practical mitigation to maintain a 'Low' significance level, at an environmentally acceptable level.

No-Go Alternative: The 'no-go' alternative will not result in impacts to water quality.

SPECIALIST IMPACT 18: IMPACTS TO WATER QUALITY

Mitigation Measures:

- → Appropriate Storm Water Management Plan (SMWP) to be implemented with a focus on reducing downstream erosion risk.
- → Monitoring plan to be implemented for water quality and erosion/sediment.
- → Maintain storm water infrastructure as necessary through unblocking of drains, desilting where required, etc.
- → Implement and adhere to the recommended buffer zones for wetlands.
- → Rehabilitate any erosion or vegetation clearing impacts as soon as practically possible and in accordance with the conceptual 'Wetland Rehabilitation Strategy' provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- → All operation phase mitigation and management measures recommended in section 7.5 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Indirect	Long-Term	Study Area	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

SPECIALIST IMPACT 19: IMPACTS TO ECOLOGICAL CONNECTIVITY AND/OR ECOLOGICAL DISTURBANCE IMPACTS

Cause and Comment: *Preferred Alternative:* Operationally, impacts to wetland ecological connectivity are expected to be of 'Low' significance overall and wetland habitat fragmentation is highly unlikely to take place given that the facility will be located well outside of the delineated wetlands. Maintaining the recommended wetland buffer zones will also discourage edge disturbance and related impacts and maintain some form of ecological connectivity between wetland and adjacent terrestrial grassland habitats. Best practical mitigation should be still implemented to maintain the impact at a an appreciably 'low' and environmentally acceptable level.

No-Go Alternative: The 'no-go' alternative will not result in further disturbance to ecological connectivity.

Mitigation Measures:

- → Strict avoidance of the delineated wetlands is to be made a priority and implement and adhere to buffer zones for wetlands.
- → Restrict worker and machinery access to the BESS facility and planned access roads only.
- → Eradicate and/or control Invasive Alien Plant species as necessary.
- → Should accidental/intentional incursions into or direct disturbance of wetlands occur, rehabilitate wetlands, riparian areas and buffer zones and in accordance with the conceptual 'Wetland Rehabilitation Strategy provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- → All operation phase mitigation and management measures recommended in section 7.5 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

Significance Assessment:

SPECIALIST IMPACT 19: IMPACTS TO ECOLOGICAL CONNECTIVITY AND/OR ECOLOGICAL DISTURBANCE IMPACTS										
Impact	**Nature**	**Duration**	**Extent**	**Severity**	**Likelihood**	**Significance Before Mitigation**	**Reversibility**	**Irreplaceable Loss**	**Mitigation Potential**	**Significance After Mitigation**
All Alternatives	Indirect	Long-Term	Study Area	Slight	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

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IMPACTS RESULTING FROM THE DECOMMISSIONING PHASE

AGRICULTURAL ASSESSMENT

SPECIALIST IMPACT 20: SOIL DEGRADATION

Cause and Comment: *Preferred Alternative:* Soil can be degraded by impacts in three different ways: erosion; topsoil loss; and contamination. Erosion can occur as a result of the alteration of the land surface run-off characteristics, which can be caused by construction related land surface disturbance, vegetation removal, and the establishment of hard surface areas including roads. Loss of topsoil can result from poor topsoil management during construction related excavations. Hydrocarbon spillages from construction activities can contaminate soil. Soil degradation will reduce the ability of the soil to support vegetation growth. This impact is relevant only during the construction and decommissioning phases.

No-Go Alternative: Soil erosion exists on site, and the implementation of the 'no-go' alternative will result in the continued slow progression of erosion on site.

Mitigation Measures:

- → Implement an effective system of storm water run-off control, where it is required, at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion.
- → The ECO must undertake periodic site inspections, every 2months during the decommissioning phase, to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring. The ECO periodic site inspections can be reduced to every 6 months after completion of decommissioning, until final sign-off is achieved.
- → Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.
- → The ECO must undertake periodic site inspections to record the occurrence of and re-vegetation progress of all areas that require re-vegetation. This is to occur eevery 4 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.
- → If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface. The ECO must record GPS positions of all occurrences of below-surface soil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Cumulative	Short-Term	Localised	Slight	May Occur	**LOW NEGATIVE (-)**	Reversible	Resource will not be lost	Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Study Area	Moderate	Definite	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 21: LOSS OF INDIGENOUS VEGETATION

Cause and Comment: *Preferred Alternative:* Some indigenous vegetation is likely to have re-established in areas that were used for construction activities but not required during the operation of the facility (e.g. laydown areas). The decommissioning of the proposed project may result in the loss of this recently established vegetation

No-Go Alternative: Under the no-go alternative, the vegetation will not be impacted, and the associated impacts will thus be negligible.

Mitigation Measures:

- A comprehensive Rehabilitation Plan must be compiled for implementation during and after the decommissioning of the proposed project;
- Decommissioning activities must not encroach on the surrounding intact vegetation, seep or forest patch;
- Only indigenous plant species, characteristic of Wakkerstroom Moist Grassland, must be used for rehabilitation purposes;
- Employees must be prohibited from making fires and harvesting plants;
- Any alien vegetation which establishes during the decommissioning phase should be removed from site and disposed of at a registered waste disposal site. Continuous monitoring for seedlings should take place throughout the decommissioning phase;
- As far as practically possible, existing access roads should be utilised; and
- An alien vegetation management plan should be compiled (for implementation during the decommissioning phase).

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Permanent	Localised	Moderate	Probable	**MODERATE NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Localised	Slight	May Occur	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 22: ESTABLISHMENT OF ALIEN PLANT SPECIES

Cause and Comment: *Preferred Alternative:* During the decommissioning phase, failure to remove and manage alien vegetation during decommissioning could result in the permanent establishment of alien vegetation in the study area. The poor rehabilitation of disturbed areas could lead to the permanent degradation of ecosystems as well as allow invasion by alien plant species.

No-Go Alternative: Under the no-go alternative, there is a risk that alien invasive species will establish. This is of low significance.

Mitigation Measures:

- The Alien Vegetation Management Plan must be implemented to prevent the establishment and prevent the spread of undesirable alien plant species during the decommissioning phase; and
- Monitoring of the establishment of alien seedlings should continue throughout the decommissioning phase. Any alien seedlings should be removed and disposed of at a registered landfill.

SPECIALIST IMPACT 22: ESTABLISHMENT OF ALIEN PLANT SPECIES										
Significance Assessment:										
Impact	**Nature**	**Duration**	**Extent**	**Severity**	**Likelihood**	**Significance Before Mitigation**	**Reversibility**	**Irreplaceable Loss**	**Mitigation Potential**	**Significance After Mitigation**
All Alternatives	Direct & Indirect	Permanent	Study Area	Moderate	Probable	**MODERATE NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	Existing	Long-Term	Localised	Slight	May Occur	**LOW NEGATIVE (-)**	N/A	N/A	N/A	**N/A**

SPECIALIST IMPACT 23: IMPACTS OF NOISE ON SURROUNDING FAUNAL POPULATIONS										
Cause and Comment: *Preferred Alternative:* Decommissioning activities will lead to the increase in ambient noise levels in the project area. This could disturb surrounding faunal populations. *No-Go Alternative:* Under the no-go alternative, there will be no increase in noise levels and therefore the no-go alternative will be negligible.										
Mitigation Measures: In addition to the mitigation measures listed for specialist impacts 3 and 4 above, the following must be undertaken: → Ensure machinery and plant is in good working order. The appropriate silencers should be fitted on equipment if required;										
Significance Assessment:										
Impact	**Nature**	**Duration**	**Extent**	**Severity**	**Likelihood**	**Significance Before Mitigation**	**Reversibility**	**Irreplaceable Loss**	**Mitigation Potential**	**Significance After Mitigation**
All Alternatives	Direct & Indirect	Short-Term	Localised	Moderate	Probable	**LOW NEGATIVE (-)**	Reversible	Resource will be lost	Easily Achievable	**LOW NEGATIVE (-)**
No-Go Alternative	***Not Applicable***									

11 RECOMMENDATIONS & CONCLUSION

11.1 RECOMMENDATIONS

It is recommended that the following general and specialist mitigation measures are included in the EMPr for each of the phases of the Waaihoek BESS, associated infrastructure and water reservoir.

11.1.1 General Impact Recommendations and Mitigation

IMPACTS RESULTING FROM THE PLANNING & DESIGN PHASE

- Activities, which trigger listed activities in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent 2017 amendments), must not commence prior to receipt of an Environmental Authorisation (EA) from the national Department of Environment, Forestry and Fisheries (DEFF).
- All identified water uses in terms of Section 21 of the NWA must not commence prior to receipt of the necessary water use authorisation(s) from the Department of Water and Sanitation (DWS).
- All additional permitting and authorisation requirements, including plant removal permits, must be obtained prior to the commencement of any vegetation clearance and/or construction activities.
- A suitably qualified Environmental Control Officer (ECO) must be appointed prior to the commencement of the construction phase to monitor the Applicant's compliance with the conditions of all the relevant permits and authorisations.
- All phases of the Waaihoek BESS development must comply with the relevant municipal by-laws and should consider the available best practice guidelines.
- Ensure the layout and design of the proposed Waaihoek BESS, associated infrastructure and reservoir avoids all 'no-go' areas as identified within this BAR and associated specialist reports.
- The development footprint must be surveyed and demarcated prior to construction commencing to ensure that there is no encroachment into 'no-go' or sensitive areas. 'No-go' areas, as per Section 9 of this BAR, must be clearly demarcated to ensure these areas are clearly visible and avoidable.
- The routing of associated infrastructure, such as underground cabling, overhead powerlines and new access roads, must avoid traversing identified 'no-go' areas.

IMPACTS RESULTING FROM THE CONSTRUCTION PHASE

- Exhaust emissions from construction vehicles must be minimised by ensuring that all vehicles are properly equipped and serviced.
- Vegetation clearance must be limited to the approved and demarcated development footprint.
- If fine building materials, such as sand, are to be transported on the back of trucks, they must be adequately covered.
- A "complaints register", consisting of all public complaints and actions in response to these complaints, must be maintained during the construction phase.
- A speed limit of 40km/h must not be exceeded on gravel roads.
- All construction vehicles must be in sound working order and meet the necessary noise level requirements.
- All relevant municipal by-laws, with regards to noise control, must apply.

- A “complaints register”, consisting of all public complaints and actions in response to these complaints, must be maintained during the construction phase.
- A Stormwater Management Plan must be compiled and implemented throughout the construction phase.
- Where possible, vegetation must be retained to avoid soil erosion.
- Construction activities must be demarcated and vegetation clearing and topsoil removal (if required) limited to these areas.
- Stockpiled materials must not be stored within 100 m of watercourses and should not exceed 1.5 m in height.
- Stockpiles should be covered during windy periods.
- All stationary machinery must be equipped with a drip tray to retain any oil leaks.
- Chemicals used during the construction phase must be stored safely on bunded surfaces in the site camp.
- Cement mixing must take place on a contained and impermeable surface, should it be undertaken on site.
- All stationary machinery must be equipped with a drip tray to retain any oil leaks.
- Chemicals used during the construction phase must be stored safely on bunded surfaces in the site camp.
- Cement mixing must take place on a contained and impermeable surface, should it be undertaken on site.
- Emergency plans, and spill kits, must be in place in case of accidental spillages on site.
- Chemical toilets must be maintained and serviced regularly to reduce the risk of surface- and groundwater contamination.
- Any hazardous substances and waste must be stored in impermeable bunded areas or in secondary containers with 110% of the volume of the contents within it.
- An Erosion Management Plan or method statement must be compiled (pre-construction) indicating what measures will be implemented during the construction phase.
- Vegetation clearance must be kept to a minimum and retained, where possible, to avoid soil erosion.
- Temporary disturbed areas must be rehabilitated as soon as practically possible.
- The site must be monitored regularly for signs of erosion. Remedial action must be taken at the first signs of erosion.
- Erosion controls and sediment trapping measures must be put in place, where necessary.
- Open fires must not be permitted on site during the construction phase.
- Smoking must be restricted to designated smoking areas, which have easy access to fire-fighting equipment.
- The Contractor, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires.
- The Contractor and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on site during the construction phase.
- The Contractor and/or the appointed fire marshal must ensure that all site personnel are aware of the risk of fires, the procedure to be followed in the event of a fire and that all site personnel have access to the relevant contact details of the nearest Fire and Emergency Services.
- Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site.
- A Community Liaison Officer (CLO) should be appointed for the duration of the construction phase. This individual should have knowledge of the local communities and assist with the employment processes. The CLO should be available and accessible to the general public, the developer and all individuals employed by the developer during the construction phase.

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- All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site.
- Waste must not be burned on site.
- Construction workers must be informed that littering is prohibited within the construction site and surrounding areas.
- A Waste Management Plan should be compiled and implemented for the duration of the construction phase.
- All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site.
- The clearance of vegetation must be limited to the development footprint.
- Temporary disturbed areas must be rehabilitated as soon as practically possible.
- Should any subsurface paleontological, archaeological or historical material, be exposed during construction activities, all activities should be suspended, and the archaeological specialist should be notified immediately.
- Should any unmarked human burials/remains be found during the course of construction, work in the immediate vicinity should cease and the find must immediately be reported to the archaeologist, or the SAHRA. Under no circumstances may burials be disturbed or removed until such time as necessary statutory procedures required for grave relocation have been met.
- Road safety measures, as per the National Road Traffic Act (1996) and the Occupational Health and Safety Act (OHSA, 1993), must be implemented and adhered to at all times during construction.
- A Traffic Management Plan must be complied prior to construction (which can be combined with the Waaihoek WEF), and implemented throughout all phases of the development.
- A complaints register must be maintained, should any local residents have any concerns. Issues must be dealt with in a timeously manner.
- The developer must ensure all local farm roads used during the construction phase are maintained to ensure no deterioration of road surfaces for the local residents.

IMPACTS RESULTING FROM THE OPERATIONAL PHASE

- The Stormwater Management Plan, compiled and implemented during the construction phase, must include operational phase management measures for implementation throughout the operational phase.
- The site must be monitored regularly for signs of erosion. Remedial action must be taken at the first signs of erosion.
- All stationary machinery, which is used for maintenance purposes, must be equipped with a drip tray to retain any oil leaks.
- Any chemicals which are stored on site, included those for Redox Flow Batteries, must be stored safely on bunded surfaces in the site camp and any hazardous substances and waste must be stored in secondary containers within impermeable bunded areas with 110% of the volume of the contents within it.
- Redox Flow Battery Technology requiring storage and/or refilling of electrolyte chemicals on site must comply with the conditions of the Occupational Health and Safety Act (No.85 of 1993).
- Emergency plans must be in place and spill kits must readily available in case of accidental spillages on site.
- The Waaihoek BESS must be maintained frequently to reduce the risk of annual degradation of the facility.
- Batteries should be encased in protective covers and/or insulated.

- The maintenance personnel, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires.
- The maintenance personnel and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on site during the operational phase.
- The maintenance personnel must be aware of the risk of fires, the procedure to be followed in the event of a fire and they must have access to the relevant contact details of the nearest Fire and Emergency Services.
- Should Redox Flow Batteries be used on site, a Major Hazards Risk Assessment must be undertaken, where relevant to the specific battery technology used, prior to storage and operation on site, and the recommendations of the assessment be implemented.
- Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site.
- All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site.
- Waste must not be burned on site.
- Maintenance staff must be informed that littering is prohibited within the construction site and surrounding areas.
- The rehabilitation of disturbed areas must be monitored to ensure successful rehabilitation and the resultant decrease in the visual impact.
- The Waaihoek BESS must be maintained frequently to reduce the risk of annual degradation of the facility.
- Road safety measures, as per the National Road Traffic Act (1996) and the Occupational Health and Safety Act (OHSA, 1993), must be implemented and adhered to at all times during operation.
- A Traffic Management Plan must be implemented throughout all phases of the development.
- A complaints register must be maintained, should any local residents have any concerns. Issues must be dealt with in a timeously manner.
- The developer must ensure all local farm roads used during the operation phase are maintained to ensure no deterioration of road surfaces for the local residents.

IMPACTS RESULTING FROM THE DECOMMISSIONING PHASE

As per the temporal scales ("long-term") indicated in the significance statement for the operational phase in the section above, the Waaihoek BESS and associated infrastructure is likely to be used over an extensive period of time, and decommissioning is not foreseen in the near future. Should the infrastructure be decommissioned in the long-term, the impacts associated with the decommissioning phase could be similar to those for the construction phase and most of the mitigation measures stipulated for the construction phase will, therefore, be relevant. **However, there is currently little known about the decommissioning of BESS facilities in South Africa and it is therefore recommended that a specific decommissioning phase EMPr is compiled prior to decommissioning the BESS by a suitably qualified EAP. The decommissioning phase EMPr must include additional decommissioning phase recommendations and mitigation measures based on case studies of BESS decommissioning and it must consider the relevant legislation, policies and guidelines at the time of decommissioning.**

11.1.2 Specialist Impact Recommendations and Mitigation

IMPACTS RESULTING FROM THE PLANNING & DESIGN PHASE

- Design an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion.
- Ensure that the storm water run-off control is included in the engineering design during the planning and design phase.

IMPACTS RESULTING FROM THE CONSTRUCTION PHASE

- Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion.
- The ECO must undertake periodic site inspections, every 2 months, to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.
- The system must effectively collect and safely disseminate any run-off water from all hardened surfaces, and it must prevent any potential down slope erosion.
- Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.
- Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion. The ECO must undertake periodic site inspections, every 4 months, to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.
- If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface, and then stabilized by facilitating vegetation cover. The ECO must record GPS positions of all occurrences of below-surface soil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area.
- No removal of vegetation is to take place within 20m of the wetland seeps or within 50m from the of Low Escarpment Mistbelt Forest to the north west, except for the control of alien vegetation Construction vehicles and machinery must not encroach into identified ‘no-go’ areas or areas outside the project footprint.
- Activities within 500m of a wetland must obtain the necessary Water Use License prior to the commencement of such activities.
- Topsoil (20 cm, where possible) must be collected and stored in an area of low 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.
- Lay down areas must not be located within any watercourses or drainage lines.
- Employees must be prohibited from making open fires during the construction phase.
- An alien invasive management plan for the site must be created.
- An in-situ search and rescue plan must be developed and implemented for succulents and geophytes that will be impacted by the construction of the project site.
- Avoid locating infrastructure in areas identified as high sensitivity as this is where the highest number of Species of Special Concern occur.

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- Prohibit all employees and contractors from harvesting plants.
- Demarcate areas for use during construction and ensure that the construction activities remain within the designated area.
- Where possible, ensure demarcated area avoids populations of SCC.
- Acquire permits for the removal of all Schedule 4 species.
- Ensure that no activities occur within areas designated as no-go areas, particularly within drainage lines and watercourses.
- Prevent staff from persecuting any faunal species during the construction phase, include clause in all contracts.
- Demarcate areas for use during construction and ensure that the construction activities remain within the designated area.
- Ensure that no activities occur within areas designated as no-go areas.
- Removal of natural vegetation must be restricted to a minimum.
- Vegetation must be rehabilitated to its former state where possible after construction.
- Construction of new roads should only be considered if existing roads cannot be upgraded.
- Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.
- No night lighting should be used during construction and operation, if required these must be downlights kept to a minimum in respect to number and wattage.
- Rehabilitate laydown areas.
- Use existing access roads and upgrade these where necessary.
- An Alien Vegetation Management Plan must be developed and implemented to prevent the establishment and spread of undesirable alien plant species during all phases of development.
- Any alien vegetation which establishes during the construction phase must be removed from site and disposed of accordingly.
- Continuous monitoring for alien plant seedlings must take place throughout the construction phase.
- Strict avoidance of the delineated wetlands is to be made a priority and implement and adhere to buffer zones for wetlands, with planned development infrastructure to remain outside of the recommended wetland buffer zones.
- Demarcate the edge of wetland buffers on the ground to avoid incursions into these areas.
- Restrict access to wetland areas beyond the development footprint.
- Should accidental/intentional incursions into or direct disturbance of wetlands occur, rehabilitate wetlands, riparian areas and buffer zones and in accordance with the conceptual 'Wetland Rehabilitation Strategy' provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- Implement appropriate ecological monitoring during construction and use findings to inform site management.
- Construction phase method statement(s) to be developed and finalised prior to construction taking place, taking into consideration the wetland impact mitigation measures and requirements of the EMPr to be developed.
- Strict avoidance of the delineated wetlands is to be made a priority and implement and adhere to buffer zones for wetlands, with planned development infrastructure to remain outside of the recommended wetland buffer zones (20m).
- Limit construction activities to the dry (winter) season where possible, to reduce erosion and sediment risks.
- Address potential construction-phase erosion and sedimentation risks on site through the implementation of Best Management Practices (BMPs) in erosion and sediment control.
- Temporary erosion and sediment control measures are to be implemented, with a greater level of need if construction proceeds into the summer (wet/rainy) period. Temporary erosion/sediment

control to remain in place until construction has been completed and operational storm water management infrastructure is suitably in place and operating correctly.

- Rehabilitate any erosion or vegetation clearing impacts as soon as practically possible and in accordance with the conceptual 'Wetland Rehabilitation Strategy'.
- Implement appropriate ecological monitoring during construction and use findings to inform site management.
- Construction phase method statement(s) to be developed and finalised prior to construction taking place, taking into consideration the wetland impact mitigation measures and requirements of the EMPr to be developed.
- Limit construction activities to the dry (winter) season where possible, to reduce erosion and sediment risks.
- Address potential erosion and sedimentation risks on site through the implementation of Best Management Practices (BMPs) in erosion and sediment control.
- Sediment controls (e.g. silt fences/berms) should be implemented to reduce sediment inputs to the nearby wetlands.
- Address potential spill and pollution risks on site through the implementation of Best Management Practices (BMPs) in spill and pollution control and hazardous substances management.
- Rehabilitate any spill related impacts as soon as practically possible.
- A suitable spill response and remediation plan is to be developed for the construction phase.
- Implement appropriate ecological monitoring during construction and use findings to inform site management.
- Construction phase method statement(s) to be developed and finalised prior to construction taking place, taking into consideration the wetland impact mitigation measures and requirements of the EMPr to be developed.
- All construction phases mitigation and management measures recommended in section 7.3 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

IMPACTS RESULTING FROM THE OPERATIONAL PHASE

- Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring.
- Undertake a periodic site inspection, bi-annually, to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.
- Facilitate re-vegetation of denuded areas throughout the site.
- Undertake periodic site inspections, bi-annually, to record the progress of all areas that require re-vegetation.
- An Alien Vegetation Management Plan must be developed and implemented to prevent the establishment and spread of undesirable alien plant species during all phases of development.
- Any alien vegetation which establishes during the operation phase must be removed from site and disposed of accordingly.
- Continuous monitoring for alien plant seedlings must take place throughout the operation phase.
- Implement measures that will simulate fire such as mowing the area adjacent to the BESS. This must be done at the end of the dry season and not during the growing season every two to three years.
- Do not use herbicides or hoeing when creating firebreaks as this will kill plant species and is likely to lead to erosion. Instead use mowing or brush cutting.

- Keep grasslands free of invasive species by implementing an Alien Invasive Species Management Plan.
- Limit bush encroachment.
- Appropriate storm water management to be implemented with a focus on reducing erosion risk.
- No solid waste dumping to take place within wetlands or buffers.
- Should accidental/intentional incursions into or direct disturbance of wetlands occur, rehabilitate wetlands, riparian areas and buffer zones and in accordance with the conceptual 'Wetland Rehabilitation Strategy' provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- Appropriate Storm Water Management Plan (SMWP) to be implemented with a focus on reducing downstream erosion risk.
- Monitoring plan to be implemented for water quality and erosion/sediment.
- Maintain storm water infrastructure as necessary through unblocking of drains, desilting where required, etc.
- Implement and adhere to the recommended buffer zones for wetlands.
- Rehabilitate any erosion or vegetation clearing impacts as soon as practically possible and in accordance with the conceptual 'Wetland Rehabilitation Strategy' provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- Strict avoidance of the delineated wetlands is to be made a priority and implement and adhere to buffer zones for wetlands.
- Restrict worker and machinery access to the BESS facility and planned access roads only.
- Eradicate and/or control Invasive Alien Plant species as necessary.
- Should accidental/intentional incursions into or direct disturbance of wetlands occur, rehabilitate wetlands, riparian areas and buffer zones and in accordance with the conceptual 'Wetland Rehabilitation Strategy provided in section 7.4 of the Wetland Impact Assessment Report (EcoPulse, 2020).
- All operation phase mitigation and management measures recommended in section 7.5 of the Wetland Impact Assessment Report (EcoPulse, 2020), must be implemented and adhered to.

IMPACTS RESULTING FROM THE DECOMMISSIONING PHASE

- Implement an effective system of storm water run-off control, where it is required, at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion.
- The ECO must undertake periodic site inspections, every 2months during the decommissioning phase, to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring. The ECO periodic site inspections can be reduced to every 6 months after completion of decommissioning, until final sign-off is achieved.
- Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.
- The ECO must undertake periodic site inspections to record the occurrence of and re-vegetation progress of all areas that require re-vegetation. This is to occur eevery 4 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.

- If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface. The ECO must record GPS positions of all occurrences of below-surface soil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area.
- A comprehensive Rehabilitation Plan must be compiled for implementation during and after the decommissioning of the proposed project.
- Decommissioning activities must not encroach on the surrounding intact vegetation, seep or forest patch.
- Only indigenous plant species, characteristic of Wakkerstroom Moist Grassland, must be used for rehabilitation purposes.
- Employees must be prohibited from making fires and harvesting plants.
- Any alien vegetation which establishes during the decommissioning phase should be removed from site and disposed of at a registered waste disposal site. Continuous monitoring for seedlings should take place throughout the decommissioning phase.
- As far as practically possible, existing access roads should be utilized.
- An alien vegetation management plan should be compiled (for implementation during the decommissioning phase).
- The Alien Vegetation Management Plan must be implemented to prevent the establishment and prevent the spread of undesirable alien plant species during the decommissioning phase.
- Monitoring of the establishment of alien seedlings should continue throughout the operational phase. Any alien seedlings should be removed and disposed of at a registered landfill.
- Rehabilitate laydown areas.
- Use existing access roads and upgrade these where necessary.

11.1.3 Summary of recommended management plans and appointments

It must be noted that the following management plans, method statements and/or search and rescue plans have been recommended and should be compiled, implemented and/or undertaken prior to the commencement of the relevant phases of the Waaihoek BESS, associated infrastructure and reservoir:

- Stormwater Management Plan;
- Emergency Plan/Method Statement(s) (General);
- Traffic Management Plan;
- Erosion Management Plan;
- Waste Management Plan;
- Plant and Faunal Search and Rescue Plan;
- Alien Vegetation Management Plan;
- Rehabilitation Plan.

In addition, the appointment of the following individuals is recommended for the construction phase:

- A suitably qualified/experienced Community Liaison Officer (CLO);
- A suitably qualified/experienced Environmental Control Officer (ECO);
- A suitably qualified/experienced botanical specialist (for SCC translocation); and
- If necessary, a suitably qualified/experienced fire marshal.

11.2 CONCLUSIONS

11.2.1 Summary of identified impacts

Table 11-1 and Table 11-2 below consists of a summary of the potential impacts associated with the proposed Waaihoek BESS, associated infrastructure and reservoir.

Table 11-1: Summary of the Potential General Impacts.

Impact	All Alternatives		No-Go Alternative
General Impacts	Prior to Mitigation	Post-Mitigation	
Planning and Design Phase			
Impact 1: Compliance with Relevant Legislation	High Negative (-)	Low Negative (-)	Not Applicable
Impact 2: Infrastructure Design and Layout	High Negative (-)	Low Negative (-)	Not Applicable
Construction Phase			
Impact 3: Increase in Air Emissions (Dust)	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 4: Increase in Noise Levels	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 5: Sedimentation and Stormwater Management	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 6: Soil and Water Contamination due to Hazardous Substances	High Negative (-)	Moderate Negative (-)	Not Applicable
Impact 7: Increase in Erosion	Moderate Negative (-)	Low Negative (-)	Not Applicable
Impact 8: Fire Risk	High Negative (-)	Moderate Negative (-)	Moderate Negative (-)
Impact 9: Socio-Economic Benefits	Low Positive (+)	Moderate Positive (+)	Not Applicable
Impact 10: Waste Management	Moderate Negative (-)	Low Negative (-)	Not Applicable
Impact 11: Visual and Aesthetic Impacts	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 12: Impact on Archaeological, Cultural Heritage Resources and Palaeontology	No Significance	No Significance	Not Applicable
Impact 13: Traffic Impacts	Low Negative (-)	Low Negative (-)	Not Applicable
Operational Phase			
Impact 14: Stormwater Management & Soil Erosion	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 15: Soil and Water Contamination due to Hazardous Substances	Moderate Negative (-)	Low Negative (-)	Not Applicable
Impact 16: Fire Risk (Technology Alt 1)	High Negative (-)	Moderate Negative (-)	Moderate Negative (-)
Impact 17: Fire Risk (Technology Alt 2&3)	Low Negative (-)	Low Negative (-)	Moderate Negative (-)
Impact 18: Major Hazards Risk (Technology Alt 2&3)	High Negative (-)	Moderate Negative (-)	Not Applicable
Impact 19: Major Hazards Risk ((Technology Alt 1)	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 20: Socio-Economic Benefits	Moderate Positive (+)	Moderate Positive (+)	Not Applicable
Impact 21: Waste Management	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 22: Visual and Aesthetic Impacts	Low Negative (-)	Low Negative (-)	Not Applicable
Impact 23: Support of Renewable Energy Infrastructure Functioning	High Positive (+)	High Positive (+)	Not Applicable
Impact 24: Traffic Impacts	Low Negative (-)	Low Negative (-)	Not Applicable
Decommissioning Phase			

Impact	All Alternatives		No-Go
General Impacts	Prior to Mitigation	Post-Mitigation	Alternative
As per the temporal scales ("long-term") indicated in the significance statement for the operational phase in the section above, the Waaihoek BESS and associated infrastructure is likely to be used over an extensive period of time, and decommissioning is not foreseen in the near future. Should the infrastructure be decommissioned in the long-term, the impacts associated with the decommissioning phase could be similar to those for the construction phase and most of the mitigation measures stipulated for the construction phase will, therefore, be relevant. **However, there is currently little known about the decommissioning of BESS facilities in South Africa and it is therefore recommended that a specific decommissioning phase EMPr is compiled prior to decommissioning the BESS by a suitably qualified EAP. The decommissioning phase EMPr must include additional decommissioning phase recommendations and mitigation measures based on case studies of BESS decommissioning and it must consider the relevant legislation, policies and guidelines at the time of decommissioning.**			

Table 11-2: Summary of Potential Specialist Impacts

Impact	Preferred Alternative		No-Go
Specialist Impacts	Prior to Mitigation	Post-Mitigation	Alternative
Construction Phase			
Specialist Impact 1: Loss of Agricultural Land Use	Low Negative (-)	Low Negative (-)	Moderate Negative (-)
Specialist Impact 2: Soil Degradation	Low Negative (-)	Low Negative (-)	Low Negative (-)
Specialist Impact 3: Loss of Wakkerstroom Montane Grassland	Moderate Negative (-)	Moderate Negative (-)	Low Negative (-)
Specialist Impact 4: Loss of Plant Species of Special Concern	Moderate Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 5: Loss of Extent of Faunal Habitat for SCC	Moderate Negative (-)	Low Negative (-)	Moderate Negative (-)
Specialist Impact 6: Disruption of Ecosystem Function and Process	Low Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 7: Impacts of Increased Noise on Surrounding Faunal Populations	Low Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 8: Establishment of Alien Plant Species	High Negative (-)	Low Negative (-)	Low Negative (-)
Specialist Impact 9: Direct physical loss or modification of wetland habitat	Low Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 10: Alteration of hydrological and geomorphological processes (flow, erosion & sediment regime changes)	Moderate Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 11: Impacts to water quality	Low Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 12: Impacts to ecological connectivity and/or ecological disturbance impacts	Low Negative (-)	Low Negative (-)	Not Applicable
Operational Phase			
Specialist Impact 13: Soil Degradation	Not Applicable	Not Applicable	Low Negative (-)
Specialist Impact 14: Infestation of Alien Plant Species	High Negative (-)	Low Negative (-)	Low Negative (-)
Specialist Impact 15: The Impact of the BESS and Reservoir on Ecological Drivers	Moderate Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 16: Direct physical loss or modification of wetland habitat	Low Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 17: Alteration of hydrological and geomorphological processes (erosion and sediment)	Moderate Negative (-)	Low Negative (-)	Not Applicable

Impact	Preferred Alternative		No-Go Alternative
Specialist Impacts	Prior to Mitigation	Post-Mitigation	
Specialist Impact 18: Impact on Archaeological and Cultural Heritage Resources	Low Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 19: Impacts to ecological connectivity and/or ecological disturbance impacts	Low Negative (-)	Low Negative (-)	Not Applicable
Decommissioning Phase			
Specialist Impact 20: Soil Degradation	Low Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 21: Loss of Indigenous Vegetation	Moderate Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 22: Establishment of Alien Plant Species	Moderate Negative (-)	Low Negative (-)	Not Applicable
Specialist Impact 23: Impacts of Noise on surrounding Faunal Populations	Low Negative (-)	Low Negative (-)	Not Applicable

11.2.2 Conclusion

As shown in Figure 11-1 below, the proposed layout of the proposed Waaihoek BESS, associated infrastructure and reservoir avoids areas of high sensitivity (no-go areas) as identified by the National Screening Tool Report, the BA and the specialist studies. Although not part of this application and assessment, the siting of the authorized Waaihoek substation must also avoid these areas of high sensitivity.

It is the opinion of the EAP that no fatal flaws have been identified and there is no reason not to authorise the proposed Waaihoek BESS and reservoir development, due to the careful consideration of the identified sensitivities in determining the least impactful siting of the 2 - 3ha development footprint within the larger 130 ha study area.

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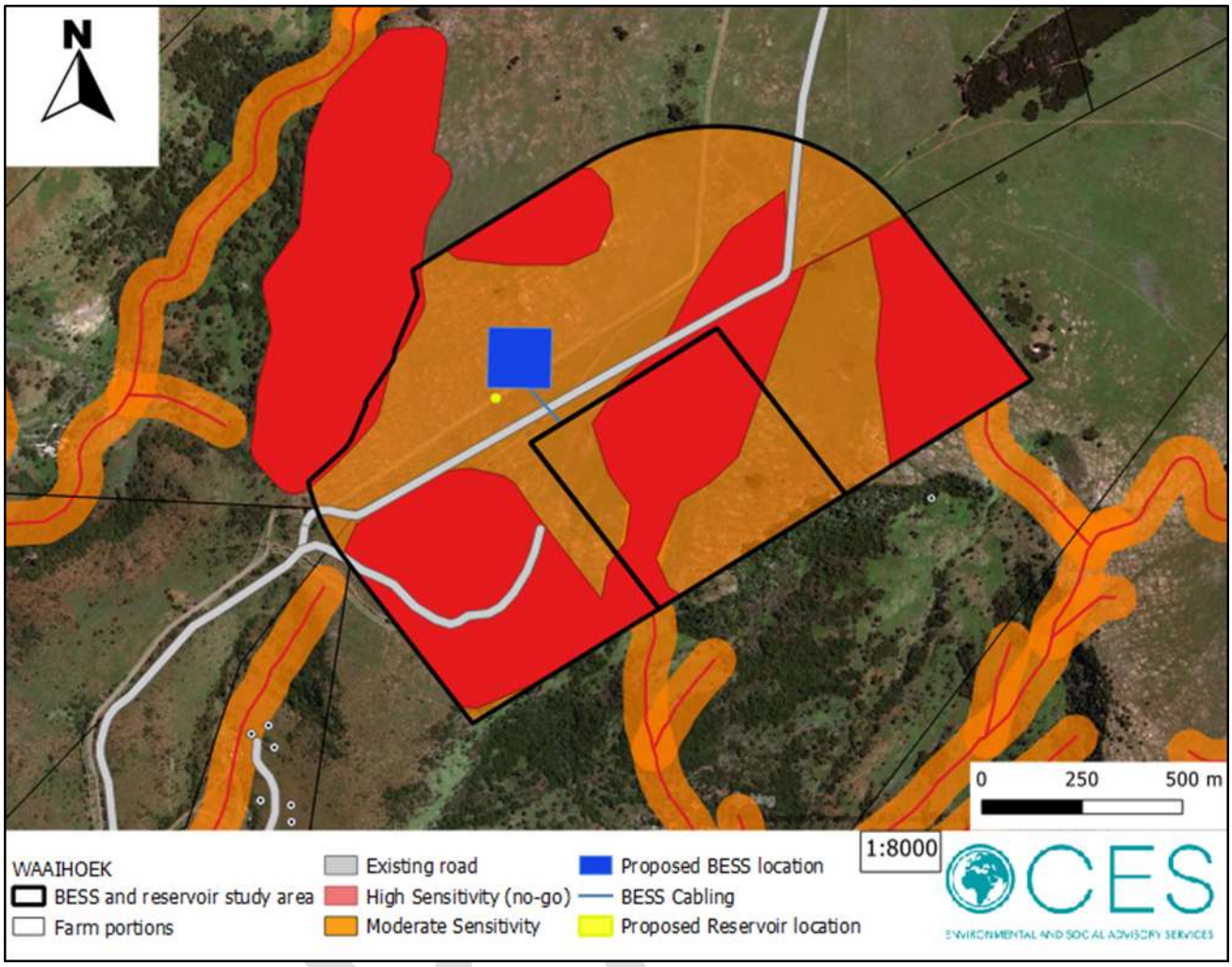

Figure 11-1: Final Sensitivity Map and proposed layout.

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LEGISLATION, POLICIES AND GUIDELINES

- Constitution Act (Act No. 108 of 1996)
- National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) Environmental Impact Assessment Regulations (2014 and subsequent 2017 amendments)
- National Environmental Management: Biodiversity Act (NEM:BA Act No. 10 of 2004)
- National Water Act (NWA, Act No. 36 of 1998)
- National Heritage Resources Act (NHRA, Act No. 25 of 1999)
- National Environmental Management: Waste Act (NEM:WA, Act No. 59 of 2008)
- National Forestry Act (NFA, Act No. 84 of 1998)
- Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974)
- Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983)
- Electricity Regulation Act (Act No. 4 of 2006)
- Occupational Health and Safety Act (OHSA, Act No. 85 of 1993)
- National Environmental Management: Air Quality Act (NEM:AQA, Act No. 39 of 2004)

APPENDIX A: CURRICULUM VITAE OF THE PROJECT TEAM

- Dr Alan Carter (CES)
- Ms Caryn Clarke (CES)

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ALAN ROBERT CARTER

Curriculum Vitae

CES
ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

CONTACT DETAILS

Name of Company	**CES – Environmental and Social Advisory Services**
Designation	East London Branch
Profession	Executive
Years with firm	17 (Seventeen) Years
E-mail	a.carter@cesnet.co.za
Office number	+27 (0)43 7267809 / 8313
Nationality	South African
Professional Body	SACNASP: South African Council for Natural Scientific Profession EAPSA: Environmental Assessment Practitioners Southern Africa IWMSA: Institute Waste Management Southern Africa TSBPA: Texas State Board of Public Accountancy (USA)
Key areas of expertise	➢ Marine Ecology ➢ Environmental and coastal management ➢ Waste management ➢ Financial accounting and project feasibility studies ➢ Environmental management systems, auditing and due-diligence

PROFILE

Alan has extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He is a member of the American Institute of Certified Public Accountants (licensed in Texas) and holds a PhD in Plant Sciences. He is also a certified ISO14001 EMS auditor with the American National Standards Institute. Alan has been responsible for leading and managing numerous and varied consulting projects over the past 25 years.

ALAN ROBERT CARTER
Curriculum Vitae

CES
ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

EMPLOYMENT EXPERIENCE

- October 2013 – Present: Executive (EOH Coastal & Environmental Services, East London, South Africa)
- January 2002 – September 2013: Director (Coastal & Environmental Services, East London, South Africa)
- January 1999 – December 2001: Manager (Arthur Andersen LLP, Public Accounting Firm, Chicago, Illinois USA)
- December 1996 – December 1998: Senior Accountant/Auditor (Ernst & Young LLP, Public Accounting Firm, Austin, Texas, USA).)
- January 1994 – December 1996: Senior Accountant/Auditor (Ernst & Young, Charteris & Barnes, Chartered Accountants, East London, South Africa)
- July 1991 – December 1994: Associate Consultant (Coastal & Environmental Services, East London, South Africa)
- March 1989 – June 1990: Data Investigator (London Stock Exchange, London, England, United Kingdom)

ACADEMIC QUALIFICATIONS

- Ph.D. Plant Science (Marine) Rhodes University 1987
- B. Compt. Hons. Accounting Science University of South Africa 1997
- B. Com. Financial Accounting Rhodes University 1995
- B.Sc. Hons. Plant Science Rhodes University 1983
- B.Sc. Plant Science & Zoology Rhodes University 1982

COURSES

- *Environmental Management Systems Lead Auditor Training Course - American National Standards Institute and British Standards Institute (2000)*
- *ISO 14001:2015 Implementing Changes - British Standards Institute (2015)*
- *Numerous other workshops and training courses*

CONSULTING EXPERIENCE

Environmental Impact Assessment, Feasibility and Pre-feasibility Assessments

- Managed numerous projects and prepared environmental impact assessment (EIA) reports in terms of relevant EIA legislation and regulations for development proposals including: Infrastructure projects: bulk water and waste water, roads, electrical, mining, ports, aquaculture, renewable energy (solar and wind), industrial processes, housing developments, golf estates and resorts, etc. (2002 – present).
- Projects have also included preparation of applications in terms of other statutory requirements, such as water-use and mining licence /permit applications.
- Managed projects to develop pre-feasibility and feasibility assessments for various projects, including various tourism developments, infrastructure projects, etc.
- Managed project for the East London Industrial Development Zone (ELIDZ) to develop a Conceptual Framework for a Mariculture Zone within the ELIDZ (2009).
- Managed pre-feasibility study to establish a Mariculture Zone within the Coega Industrial Development Zone (2014).
- Assisted City of Johannesburg in the process to proclaim four nature reserves in terms of relevant legislation (2015-2016).

- Acted as Environmental Control Officer (ECO) for numerous projects including solar and wind farms, roads, industrial processes, etc.

Strategic Environmental Assessment

- Managed Strategic Environmental Assessment (SEA) project toward the development of a Biofuel Industry in the Eastern Cape Province of South Africa (2014-2016)
- Managed Strategic Environmental Assessment (SEA) projects for two South African ports (2006 – 2007).
- Managed Strategic Environmental Assessment (SEA) projects for five (5) local municipalities in the Eastern Cape as part of the municipal Spatial Development Framework plans (2004 – 2005).
- Involved in the financial assessment of various land-use options and carbon credit potential as part of a larger Strategic Environmental Assessment (SEA) for assessing forestry potential in Water Catchment Area 12 in the Eastern Cape of South Africa (2006).

Climate change, emissions trading and renewable energy

- Provided specialist peer review services for National Department of Environmental Affairs relating to climate change impact assessments for large infrastructure projects (2017-2018).
- Conducted climate change impact assessment for a proposed coal-fired power station in Africa (2017-2018).
- Participated in the development of a web-based Monitoring & Evaluation (M&E) system for climate change Mitigation and Adaptation in South Africa for National Department of Environmental Affairs (DEA) (2015-2016.
- Managed project to develop a Climate Change Strategy for Buffalo City Metro Municipality (2013).
- Managed projects to develop climate change strategies for two district municipalities in the Eastern Cape Province (2011).
- Conducted specialist carbon stock and greenhouse gas emissions impact and life cycle assessment as part of the Environmental, Social and Health Impact Assessment for a proposed sugarcane to ethanol project in Sierra Leone (2009 - 2010) and a proposed Jatropha bio-diesel project in Mozambique (2009 - 2010).
- Managed project to develop the Eastern Cape Province Climate Change Strategy (2010).
- Managed project to develop a Transnet National Ports Authority Climate Change Risk Strategy (2009)
- Participated in a project to develop a Renewable Energy roadmap for the East London Industrial Development Zone (ELIDZ) (2013).
- Participated in a project for the East London Industrial Development Zone (ELIDZ) and Eastern Cape Government to prepare a Renewable Energy Strategy (2009).
- Contributed to the development of Arthur Andersen LLP's International Climate Change and Emissions Trading Services (2001).
- Conducted carbon credit (Clean Development Mechanism - CDM) feasibility assessment for a variety of renewable energy projects ranging from biogas to solar PV.
- Participated in the preparation of CDM applications for two solar PV projects

in the Eastern Cape.

Waste Management

- Managed project to develop Integrated Waste Management Plans for six local municipalities on behalf of the Sarah Baartman District Municipality in the Eastern Cape Province (2016).
- Managed project to develop Integrated Waste Management Plans for four local municipalities on behalf of Alfred Nzo District Municipality in the Eastern Cape Province (2015).
- Managed project to develop Integrated Waste Management Plans for eight local municipalities on behalf of Chris Hani District Municipality in the Eastern Cape Province (2011).
- Managed a project to develop a zero-waste strategy for a community development in the Eastern Cape Province (2010).
- Managed waste management status quo analysis for a District Municipality in the Eastern Cape Province (2003).
- For three consecutive years, managed elements of the evaluation of the environmental financial reserves of the three largest solid waste companies (Waste Management, Inc., Republic Services, Inc., Allied Waste, Inc.) and number of smaller waste companies in the USA as part of the annual financial audit process for SEC reporting purposes. Ensured compliance with RCRA and CERCLA environmental regulations.
- Managed elements of the evaluation of the environmental financial reserves of the largest hazardous waste company in the USA (Safety-Kleen, Inc.), as part of the audit process for SEC reporting purposes. Ensured compliance with RCRA and CERCLA environmental regulations.

Environmental Due Diligence and Business Risk

- Conducted environmental due diligence projects on behalf of the German Development Bank for a forestry pulp and paper operation in Swaziland (2010) and for a large diversified South African agricultural/agro-processing company (2011)
- Managed project for the Transnet National Ports Authority to identify the environmental risks and liabilities associated with the operations of the Port of Durban as part of a broader National initiative to assess business and financial risks relating to environmental management (2006).
- Managed project to determine the financial feasibility of various proposed tourism developments for the Kouga Development Agency in the Eastern Cape Province (2006)
- Contributed significantly to a study to determine the financial and environmental feasibility of three proposed tourism development projects at Coffee Bay on the Wild Coast (2004).
- Conducted sustainability and cost/benefit analysis of various waste water treatment options (including a marine pipeline at Hood Point) for the West Bank of East London (2004).
- Conducted analysis of permit fees and application processing costs for off-road vehicle use on the South African coastline for the Department of Environmental Affairs and Tourism, Marine & Coastal Management (2003).
- Involved in the determination of the historical cost element of environmental remediation insurance claims for a number of multinational

companies, including Dow Chemicals, Inc. and International Paper, Inc.
- Evaluated the environmental budgeting process of the US Army and provided best practice guidance for improving the process.

Policy and Guidelines
- Development of Administration / Application Fee Structure for the Reclamation of Land, Coastal Use Permits, Coastal Waters
- Discharge Permits, Dumping Of Waste at Sea, Off-Road Vehicle Regulations Promulgated in Terms of the National Environmental Management Act: Integrated Coastal Management Act (Act No. 24 Of 2008) (2017).
- Managed project to develop an Estuarine Management Plan for the Buffalo River Estuary for the National Department of Environmental Affairs (2017).
- Managed project to develop a Coastal Management Programme for Amathole District Municipality, Eastern Cape (2015 – 2016).
- Managed project to develop a sustainability diagnostic report as part of the development of the Eastern Cape Development Plan and Vision 2030 (2013).
- Managed project for the Department of Environmental Affairs and Tourism, Marine & Coastal Management to determine the cost implications associated with the implementation of the Integrated Coastal Management Act (2007).
- Managed project to develop a Conservation Plan and Municipal Open Space System (MOSS) for Buffalo City Municipality (2007)
- Managed project to develop a Sanitation Policy and Strategy for Buffalo City Municipality, Eastern Cape (2004 – 2006).
- Managed project to develop an Integrated Environmental Management Plan and Integrated Coastal Zone Management Plan for Buffalo City Municipality, Eastern Cape (2004 – 2005).
- Managed projects to develop and implement an Environmental Management System (EMS) for the Chris Hani and Joe Gqabi (formerly Ukhahlamba) District Municipalities in the Eastern Cape generally in line with ISO14001 EMS standards (2004 – 2005).
- Managed project to develop a State of the Environment Report and Environmental Implementation Plans for Amathole, Chris Hani, OR Tambo and Joe Gqabi District Municipalities in the Eastern Cape Province (2005 – 20010).
- Conducted analysis of permit fees and application processing costs for off-road vehicle use on the South African coastline for the Department of Environmental Affairs and Tourism, Marine & Coastal Management (2003).

Environmental auditing and compliance
- Conducted environmental legal compliance audit for various large Transnet Freight Rail facilities (2018).
- Managed projects to develop Environmental & Social Management Systems (ESMS) in line with IFC Performance Standards for three (3) wind farms in South Africa (2015-2018).
- Managed project to develop an Environmental & Social Management System (ESMS) in line with IFC Performance Standards for a telecoms company in Zimbabwe on behalf of the German Development Bank (2013)
- Participated in numerous ISO14001 Environmental Management System (EMS) audits for large South African corporations including SAPPI, BHP

Billiton, SAB Miller, Western Platinum Refinery, Dorbyl Group and others (2002 – present).

- Reviewed the SHE data reporting system of International Paper, Inc. (IP) for three successive years as part of the verification of the IP SHE Annual Report, which included environmental assessments of 12 IP pulp and paper mills located throughout the USA.
- Conducted Environmental Management System (EMS) reviews for a number of large US corporations, including Gulfstream Aerospace Corporation

Public financial accounting

- While with Ernst & Young LLP, (USA), functioned as lead financial auditor for various public and private companies, mostly in the technology business segment of up to $200 million in annual sales. Client experience included assistance in a $100 million debt offering, a $100 million IPO and SEC annual and quarterly reporting requirements.
- Completed three years of articles (training contract) in fulfilment of the certification requirements of the South African Institute of Chartered Accountants which included auditing, accounting and preparation of tax returns for many small to medium sized commercial entities.

PUBLICATIONS

Refereed Publications

- Carter, A.R. 1985. Reproductive morphology and phenology, and culture studies of Gelidium pristoides (Rhodophyta) from Port Alfred in South Africa. Botanica Marina 28: 303-311.
- Carter, A.R. 1993. Chromosome observations relating to bispore production in Gelidium pristoides (Gelidiales, Rhodophyta). Botanica Marina 36: 253-256.
- Carter, A.R. and R.J. Anderson. 1985. Regrowth after experimental harvesting of the agarophyte Gelidium pristoides (Gelidiales: Rhodophyta) in the eastern Cape Province. South African Journal of Marine Science 3: 111-118.
- Carter, A.R. and R.J. Anderson. 1986. Seasonal growth and agar contents in Gelidium pristoides (Gelidiales, Rhodophyta) from Port Alfred, South Africa. Botanica Marina 29: 117-123.
- Carter, A.R. and R.H. Simons.1987. Regrowth and production capacity of Gelidium pristoides (Gelidiales, Rhodophyta) under various harvesting regimes at Port Alfred, South Africa. Botanica Marina 30: 227-231.
- Carter, A.R. and R.J. Anderson. 1991. Biological and physical factors controlling the spatial distribution of the intertidal alga Gelidium pristoides in the eastern Cape Province, South Africa. Journal of the Marine Biological Association of the United Kingdom 71: 555-568.

Published reports

- Water Research Commission. 2006. Profiling Estuary Management in Integrated Development Planning in South Africa with Particular Reference to the Eastern Cape. Project No. K5/1485.
- Turpie J., N. Sihlophe, A. Carter, T, Maswime and S. Hosking. 2006. Maximising the socio-economic benefits of estuaries through integrated planning and management: A rationale and protocol for incorporating and

enhancing estuary values in planning and management. Un-published Water Research Commission Report No. K5/1485

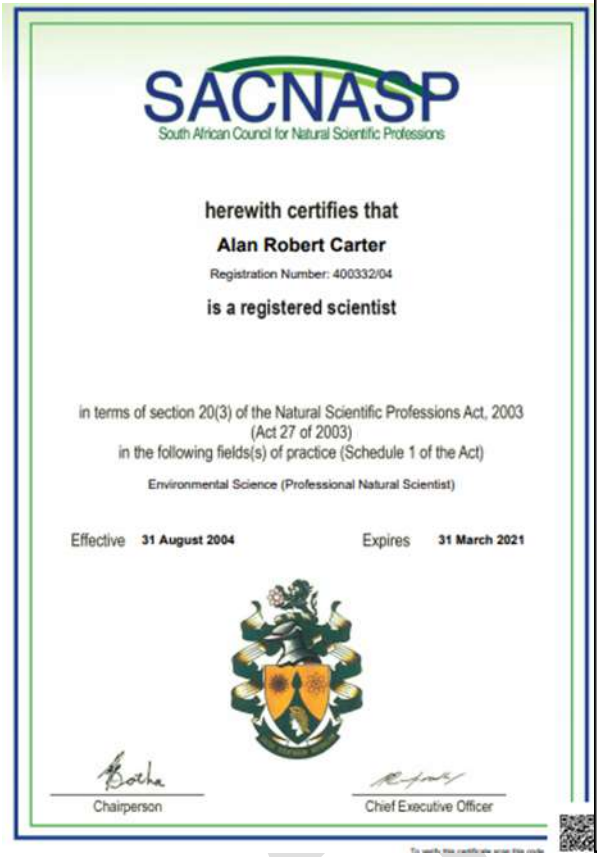
Conference Proceedings

- Carter, A.R. 2002. Climate change and emission inventories in South Africa. Invited plenary paper at the 5th International System Auditors Convention, Pretoria. Held under the auspices of the South African Auditor & Training Certification Association Conference (SAATCA).
- Carter, A.R. 2003. Accounting for environmental closure costs and remediation liabilities in the South African mining industry. Proceedings of the Mining and Sustainable Development Conference. Chamber of Mines of South Africa, Vol. 2: 681-5
- Carter, A.R. and S. Fergus. 2004. Sustainability analysis of wastewater treatment options on the West Bank of East London, Buffalo City. Proceedings of the Annual National Conference of the International Association for Impact Assessment, South African Affiliate: Pages 295-301.
- Carter, A., L. Greyling, M. Parramon and K. Whittington-Jones. 2007. A methodology for assessing the risk of incurring environmental costs associated with port activities. Proceedings of the 1st Global Conference of the Environmental Management Accounting Network.
- Hawley, GL, McMaster AR and Carter AR. 2009, Carbon, carbon stock and life-cycle assessment in assessing cumulative climate change impacts in the environmental impact process. Proceedings of the Annual National Conference of the International Association for Impact Assessment, South African Affiliate.
- Hawley, GL, McMaster AR and Carter AR. 2010. The Environmental and Social Impact Assessment and associated issues and challenges. African, Caribbean and Pacific Group of States (ACP), Science and Technology Programme, Sustainable Crop Biofuels in Africa.
- Carter, A.R. 2011. A case study in the use of Life Cycle Assessment (LCA) in the assessment of greenhouse gas impacts and emissions in biofuel projects. 2nd Environmental Management Accounting Network- Africa Conference on Sustainability Accounting for Emerging Economies. Abstracts: Pages 69-70.

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

ALAN ROBERT CARTER Date: January 2019



SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Alan Robert Carter

Registration Number: 400332/04

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **31 August 2004** Expires **31 March 2021**

Chairperson

Chief Executive Officer

EAPASA
Unit 19 Oxford Office Park
3 Bauhinia Street
Highveld Technio Park
Centurion
0157
Tel. (+27) 12 880 2154

Environmental Assessment Practitioners Association of South Africa

Email: registrar@eapasa.org / Website: www.eapasa.org

Dr Alan Carter
39 Harewood Drive
Nahoon Mouth
East London
5201

Sent by email to: a.carter@ceaprat.co.za

Dear Dr Carter

Registered Environmental Assessment Practitioner: Number 2019/1807
Alan Robert Carter : South African ID 5907075141086

The Environmental Assessment Practitioners Association of South Africa (EAPASA) herewith certifies that Alan Robert Carter is a Registered Environmental Assessment Practitioner (EAP) in accordance with the prescribed criteria of Regulation 15.(1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Your registration is duly authorised by EAPASA as the single Registration Authority for EAPs in South Africa (appointed as per Regulation No. 104, Gazette No. 41434 of 8 February 2018, in terms of section 24H(3)(a) of the NEMA). Your status as a Registered EAP is displayed in the 'EAP Register' - please find your name and contact email address at

https://registration.eapasa.org/registered-practitioners

Your registration is effective for a period of five years from 30 June 2020, and expires on 30 June 2025. The renewal of your registration in 2025 will be contingent on you having met the requirements of EAPASA's Continuing Professional Development (CPD) policy during each year of registration.

As a Registered EAP you are required to uphold the EAPASA Code of Ethical Conduct and Practice in your professional endeavours, towards the goal of quality assurance in environmental assessment practice.

Please accept my congratulations on your registration.

Best regards

Dr Richard Hill
Registrar
Date: 30 June 2020

CARYN CLARKE

CONTACT DETAILS

Name of Company	**CES – Environmental and Social Advisory Services**
Designation	East London Branch
Profession	Senior Environmental Consultant
Years with firm	2 Years
E-mail	c.clarke@cesnet.co.za
Office number	+27 87 830 9804
Nationality	South African
Professional Affiliations	South African Council for Scientific Natural Professionals (SACNASP): Candidate Natural Scientist (500022/14) International Association of Impact Assessment (IAIAsa)
Key areas of expertise	• Environmental Impact Assessments • Environmental Management Plans • Environmental Compliance Monitoring • Geographic Information Systems • Licensing and Permit Applications

PROFILE

Ms Caryn Clarke

Caryn holds a M.Sc. Environmental Science (2012), B.Sc. Hon. Environmental Science (2010), and a B.Sc. Environmental Science and Economics (2009) from Rhodes University. Her M.Sc. thesis was titled "Responses to the linked stressors of Climate Change and HIV/AIDS amongst vulnerable rural households in the Eastern Cape, South Africa". Her B.Sc. Hon. thesis investigated climate change perceptions, drought responses and views on carbon farming amongst commercial livestock and game farmers within the Great Fish River Valley, Eastern Cape, from which a paper was published in the African Journal of Range and Forage Science 2012, 29(1):13-23. Caryn has further completed a Carbon Footprint Analysis Course (2013). Caryn's professional interests and expertise includes project management, Environmental and Social Impact Assessment (ESIAs), Environmental Impact Assessments (EIAs) including public participation, environmental compliance monitoring, various licensing and permit applications, feasibility assessments and GIS mapping. Caryn is a registered Candidate Natural Scientist under the South African Council for Natural Scientific Professions.

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EMPLOYMENT EXPERIENCE	**Senior Environmental Consultant - Coastal and Environmental Services (East London)** *August 2018-Current* • Environmental and Social Impact Assessments (World Bank/IFC standards) • Environmental Impact Assessments • Feasibility Assessments • Water Use Licensing • Environmental Compliance Monitoring • Geographic Information Systems **Environmental Consultant - Environmental Impact Management Services (East London)** *March 2013 – September 2015* • Environmental Impact Assessments • Water Use Licensing • Environmental Compliance Monitoring • Geographic Information Systems
ACADEMIC QUALIFICATIONS	• 2012 - M.Sc. Environmental Science (distinction) (Rhodes University) • 2010 - B.Sc. Hon. Environmental Science (distinction) (Rhodes University) • 2009 - B.Sc. Environmental Science (distinction) (Rhodes University)
CONTINUING PROFESSIONAL DEVELOPMENT	• Terra Firma Academy, Johannesburg: "Carbon Footprint Analysis Course" (2013); and • Attended a 1-day workshop titled "Water Law in South Africa", presented by IMBEWU (2013).
PUBLICATIONS	• Published an article in the African Journal of Range and Forage Science 2012, 29(1): 13-23. Titled: "Climate change perceptions, drought responses and views on carbon farming amongst commercial livestock and game farmers in the semiarid Great Fish River Valley, Eastern Cape Province, South Africa."; and • Paper (co-authored) delivered at the Transformation Conference, Oslo University, 18-20th June 2013, Norway. Titled: "Factors influencing local level transformation in the context of multiple stressors: Understandings from research and social learning process in two rural sites in the Eastern Cape, South Africa."
PROFESSIONAL EXPERIENCE	**Environmental Impact Assessments (EIAs) and Basic Assessment processes:** • Environmental and Social Impact Assessment (ESIA) for a large-scale cocoa plantation, Tanzania (2020); • Full Scoping and EIA process for the Wild Coast Abalone facility expansion (2020); • Full Scoping and EIA process for the proposed Wild Coast SEZ Upper Ncise Aquaponics development, Mthatha Dam (2019); • Basic Assessment for the Clarkebury road upgrade, Eastern Cape (2019); • Basic Assessment for the SANRAL Heidelberg to Lizmore road upgrade, Western Cape (2019);

- Basic Assessment for the SANRAL V3 Ndabakazi and R409 Interchange upgrade, Ndabakazi, Eastern Cape (2019);
- Basic Assessment for the proposed Eskom Lesokwana substation and associated powerlines, Gauteng (2019);
- Basic Assessment for the Kei Mouth Eco Estate, Kei Mouth, Eastern Cape (2020);
- Full Scoping and EIA process for AOE Oil Production Right, Nanaga;, Eastern Cape (2015);
- Full Scoping and EIA process for BCMM Sunny South Housing Development (2014);
- Full Scoping and EIA process for the AES Photovoltaic Solar Energy Facility near Aggeneys, Northern Cape (2014);
- Basic Assessment for the formalisation of Mdantsane informal settlements (2014);
- Basic Assessments for the Sidwadeni and Mngazi River Bridge and Access Road, Mthatha and Mngazi, Eastern Cape (2014); and
- Public Participation for the Silver Wave Energy Exploration Rights (2014).

Integrated Water and Waste Management Plans:

- Integrated Water and Waste Management Plan for Vlakvarkfontein Coal Mine Consolidation (2015).

Water Use Licensing Applications:

- Olivewood Golf and Housing Estate, Eastern Cape (2019);
- Northern Cape Economic Development, Trade and Investment Promotion Agency (NCEDA) SEZ, Upington, Northern Cape (2019);
- Wild Coast Abalone facility expansion, Haga Haga, Eastern Cape (2019);
- Kei Mouth Eco Estate, Kei Mouth, Eastern Cape (2019);
- SANRAL V3 Ndabakazi and R409 Interchange upgrade, Ndabakazi, Eastern Cape (2019);
- Formalisation of Mdantsane Informal Settlements (2014); and
- Integrated Water Use Licensing for Leiden Coal Mine (2014).

Environmental compliance auditing:

- Lusikisiki Waste Water Treatment Works and pipeline, Eastern Cape (2015);
- East London Industrial Development Zone (ELIDZ) 1B West Infrastructure Services (2014);
- Reconstruction of Fleet Street, East London (2015);
- Sunny South Housing Development, East London (2015);
- Eskom Albany 88kV powerline, Alicedale, Eastern Cape (2014);
- Formalisation of Mdantsane Informal Settlements (2014); and
- Noblesfontein Wind Energy Facility, Victoria West, Northern Cape (2015).

Specialist Assessments and Input

- Ecological Impact Assessment for the Kei Mouth Eco Estate, Kei Mouth, Eastern Cape (2020);
- Vegetation Impact Assessment for three access road upgrades, Mbashe, Eastern Cape (2019); and
- Social facilitation and field work as part of the Social Impact Assessment for a large-scale cocoa plantation, Tanzania (2020).

Other:

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Other:

- Fatal Flaw Assessments for two Wind Energy Facilities (WEFs), Molteno and Noupoort, South Africa (2019-2020);
- Environmental Sensitivity Assessment for the Lesotho Electricity Company 132 kV Mahlasela - Letseng Powerline, Lesotho (2019);
- Coastal Discharge Permit for the Wild Coast Abalone Expansion, Eastern Cape (2019);
- Air Emissions License application for the Bushveld Energy Vanadium Development, ELIDZ, Eastern Cape (2019);
- Conservation Management Plan for the CDC Wild Coast Mthatha SEZ, Eastern Cape (2019);
- Feasibility Assessment for the DAFF Multispecies Hatchery Development within the Eastern Cape (2019);
- Market Analysis for the DAFF Richards Bay Marine Cage Culture Aquaculture Feasibility Assessment (2019);
- Vincent-Berea Local Spatial Development Framework (LSDF) (2014);
- Section 24G for the Tankatara Level Crossing to Coega Station service road upgrade (2014); and
- Participatory Planning for Informal Settlements: National Upgrading Support Programme (NUSP) (2014).

During the course of her professional career, Caryn has worked in Tanzania, Eswatini, Lesotho and South Africa.

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

Caryn Clarke Date: 26 January 2020

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APPENDIX B: EAP DECLARATION

APPENDIX 10
DECLARATION OF THE EAP

I, Alan Carter, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being: –~~

Signature of the environmental assessment practitioner

Coastal and Environmental Services (Pty) Ltd. T/A CES
Name of company:

28th October 2020
Date

2. **UNDERTAKING UNDER OATH/ AFFIRMATION**

I, ALAN CARTER, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Environmental Assessment Practitioner

COASTAL AND ENVIRONMENTAL SERVICES (PTY) LTD.
Name of Company

28TH OCTOBER 2020
Date

Signature of the Commissioner of Oaths

28.10.2020
Date

LYNN SMIT
COMMISSIONER OF OATHS
REFERENCE NUMBER: 9/1/8/2 EAST LONDON
25 TECOMA STREET, BEREA
EAST LONDON, 5214

APPENDIX C: SPECIALIST REPORTS

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APPENDIX D: DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

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APPENDIX E: PUBLIC PARTICIPATION PROOF

APPENDIX E1: APPROVED PPP PLAN

From: Lerato Mokoena <LMokoena@environment.gov.za>
Sent: Thursday, October 15, 2020 2:52 PM
To: Liandra Scott-Shaw <LiandraS@sivest.co.za>
Cc: Jay-Jay Mpelane <JMpelane@environment.gov.za>; Wayne Hector <WHector@environment.gov.za>
Subject: FW: Request for PPP : 2020-09-0033

Dear Liandra

Please note that your PPP Plan is acceptable to the Department and you may continue as proposed.

Regards
Lerato Mokoena
DEFF

PROPOSED PUBLIC PARTICIPATION PROCESS (PPP) PLAN FOR THE PROPOSED WAAIHOEK BESS AND RESERVOIR

1. PUBLIC PARTICIPATION PROCESS

Table 1 has been compiled in accordance with Regulations 40 to 44 of the EIA Regulations (2014, and subsequent 2017 amendments) and required no further amendment subsequent to the pre-application meeting held on the 13th October 2020.

Table 1: Public Participation Legislated Requirements.

	PUBLIC PARTICIPATION REQUIREMENTS	PROPOSED PUBLIC PARTICIPATION
1.	(40)(1) The public participation process to which the – (b) Scoping report submitted in terms of regulation 21 and the environmental impact assessment report and EMPr submitted in terms of regulation 23; Must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on each of the basic assessment report, EMPr, scoping report and environmental impact assessment report, and where applicable the closure plan, as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times.	The Draft Basic Assessment Report and associated specialist reports will be made available for a thirty (30) day public review period.
2.	(40)(2) The public participation process contemplated in this regulation must provide access to all information that reasonably has or may have the potential to influence any decision with regard to an application unless access to that information is protected by law and must include consultation with –	All registered stakeholders and Interested and/or Affected Parties (I&APs), which were registered during the Scoping and EIA Process for the Waaihoek Wind Energy Facility (WEF), and associated projects which was undertaken on the same land parcel, will form part of the stakeholder and I&AP database for this Basic Assessment

	(a) The competent authority; (b) Every State department that administers a law relating to a matter affecting the environment relevant to an application for an environmental authorisation; (c) All organs of state which have jurisdiction in respect of the activity to which the application relates; and (d) All potential, or, where relevant, registered interested and affected parties.	Process. Any additional stakeholders and/or I&APs, that register during this public review period, will also be added to the database.
3.	(40)(3) Potential or registered interested and affected parties. Including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but must be provided with an opportunity to comment on such reports once the application has been submitted to the competent authority.	
4.	(41)(2)(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 board will be placed at the entrance to the site (which is the entrance to the Eskom Waaihoek Substation).
5.	(41)(2)(b) Giving written notice, in any of the manners provided for in Section 47D of the Act, to - (i) The occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken; (ii) Owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken; (iii) The municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) The municipality which has jurisdiction in the area; (v) Any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) Any other party as required by the competent authority.	All registered stakeholders and I&APs will be notified of the availability of the Basic Assessment Report and associated reports for public review via email and sms (where applicable) notification. The public will be notified via a local newspaper advertisement (the Vryheid Herald and/or the Natal Witness). The advert will be published on the onset of the public review period. The public will also be notified through CES social media platforms (Facebook page). This advertisement will outline the availability of the Draft Basic Assessment Report for public review and will invite I&APs to view the documentation either via the CES website.
6.	(41)(2)(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.	The public will be notified via a local newspaper advertisement (the Vryheid Herald and/or the Natal Witness). The advert will be published on the onset of the public review period. The proposed project will also be advertised through CES social media platforms (Facebook page).

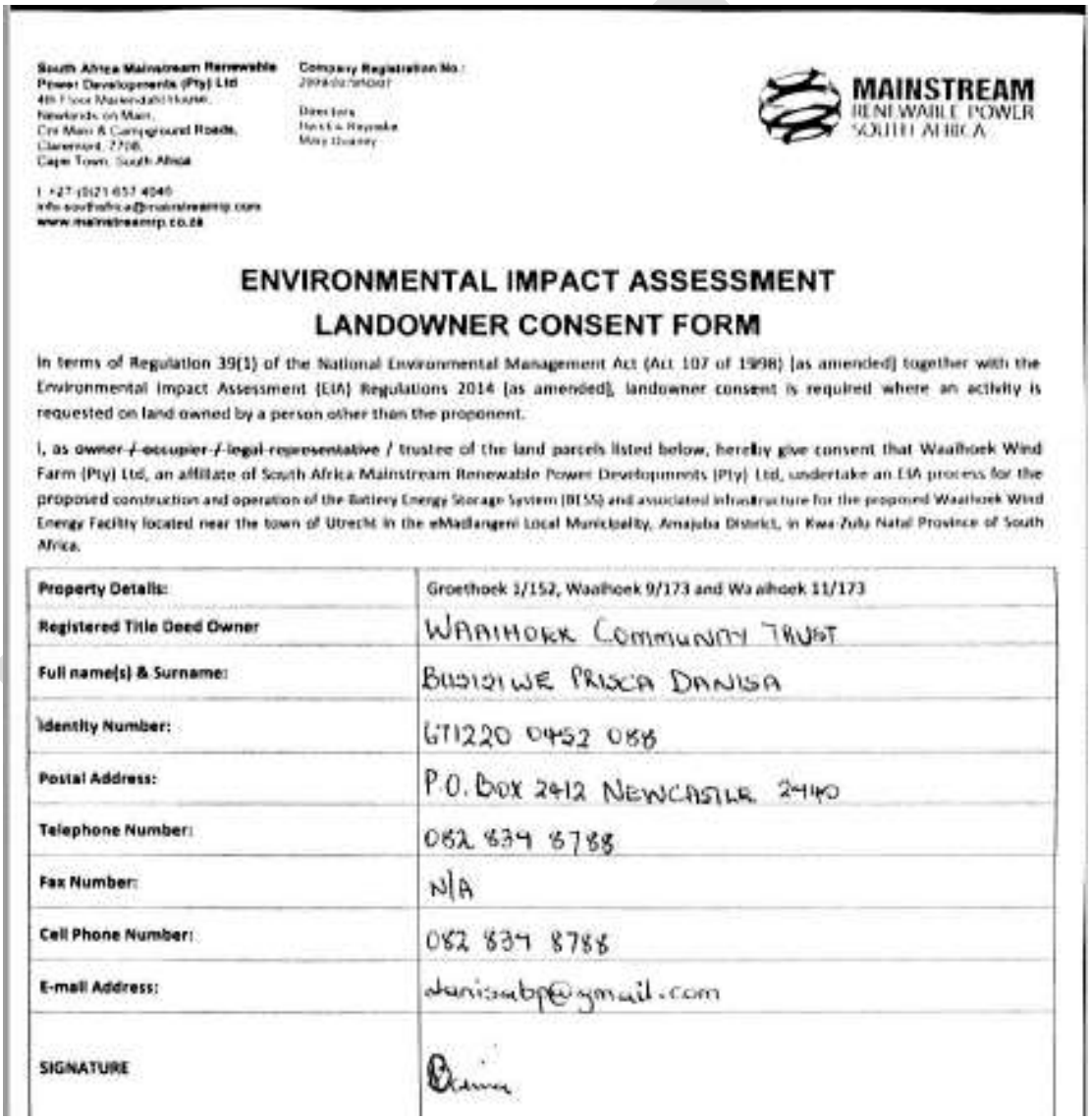
7.	(41)(2)(d) Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph.	Not applicable. The entire Waaihoek Battery Storage Facility site is situated within the eMadlangeni Local Municipality.
8.	(41)(2)(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.	Due to the Covid-19 pandemic, no public meetings will be held during the release of the Draft Basic Assessment Report for public review. However, all comments received via telephone and sms will be included in the Issues and Report Trail (IRT) to accommodate those that do not have access to the internet, those that are illiterate and those with disabilities. In addition, a brief project background can be provided verbally during telephone discussions, where necessary.
9.	(42) A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such register to the competent authority, which register must contain the names, contact details and addresses of – (a) All persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP; (b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and (c) all organs of state which have jurisdiction in respect of the activity to which the application relates.	Please refer to Appendix 1 for a copy of the registered stakeholder and I&AP database, which was maintained and updated throughout the Waaihoek WEF Scoping and EIA Process (and subsequent EA amendment processes). Any additional I&APs who register during this Basic Assessment Process will be added to the Stakeholder and I&AP database.
10.	(43)(1) A registered interested and affected party is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.	The Draft Basic Assessment Report will be published on the CES website during the public review period (http://www.cesnet.co.za/public-documents). The email and sms notifications, advertisements and CES social media posts (Facebook page), notifying the public and registered stakeholders and I&APs of the release of the Draft Basic Assessment Report, will include the link to the location of the Waaihoek BESS documents on the CES website. All comments received and responses to the comments, will be recorded in the Waaihoek BESS Facility IRT.

11.	(43)(2) In order to give effect to section 24O of the Act, any State department that administers a law relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days.	All registered stakeholders and I&APs, including the State departments which administer laws relating to matters affecting the environment, will be notified of the availability of the Draft Basic Assessment Report and associated reports for public review via email notification. The availability of the reports will also be published in a newspaper advertisement (the Vryheid Herald and/or the Natal Witness) and advertised through CES social media platforms (Facebook page). The Draft Basic Assessment Report will be available for a thirty (30) day public review period.
12.	44(1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.	An IRT will be compiled and updated during the public review to include all comments received and responses to comments. After the public review period, the final IRT and proof of correspondence will be included in the Final Basic Assessment Report for submission to the Competent Authority.
13.	44(2) Where a person desires but is unable to access written comments as contemplated in subregulation (1) due to – (a) A lack of skills to read or write; (b) Disability; or (c) Any other disadvantage; Reasonable alternative methods of recording comments must be provided for.	Due to the Covid-19 pandemic, no public meetings will be held during the release of the Draft Basic Assessment Report for public review. However, all comments received via telephone will be included in the IRT to accommodate those that do not have access to the internet, those that are illiterate and those with disabilities. In addition, a brief project background can be provided verbally during telephone discussions, where necessary.

DRAFT

APPENDIX E2: LANDOWNER CONSENT

Farm number	Contact person	Postal/email address	Telephone
173/9 Waaihoek 173/11 Waaihoek 152/1 Groothoek	**Waaihoek Community Trust** Busisiwe Danisa	danisabp@gmail.com	082 839 8788
17068/5 Wijdgelegen	**Fanie Landman Familie Trust-Trustees** Karel Landman	cklandman@vodamail.co.za	(082) 375 9045



South Africa Mainstream Renewable Power Developments (Pty) Ltd
4th Floor Maiden's Wharf,
Newlands on Main,
Cnr Main & Campground Roads,
Claremont, 7708,
Cape Town, South Africa

T +27 (0)21 657 4040
info.southafrica@mainstreamrp.com
www.mainstreamrp.co.za

Company Registration No.:
2004/031460/07

Directors
Hardus Heyneke
Mary Doheny

MAINSTREAM RENEWABLE POWER SOUTH AFRICA

ENVIRONMENTAL IMPACT ASSESSMENT
LANDOWNER CONSENT FORM

In terms of Regulation 39(1) of the National Environmental Management Act (Act 107 of 1998) [as amended] together with the Environmental Impact Assessment (EIA) Regulations 2014 [as amended], landowner consent is required where an activity is requested on land owned by a person other than the proponent.

I, as ~~owner / occupier / legal representative~~ / trustee of the land parcels listed below, hereby give consent that Waaihoek Wind Farm (Pty) Ltd, an affiliate of South Africa Mainstream Renewable Power Developments (Pty) Ltd, undertake an EIA process for the proposed construction and operation of the Battery Energy Storage System (BESS) and associated infrastructure for the proposed Waaihoek Wind Energy Facility located near the town of Utrecht in the eMadlangeni Local Municipality, Amajuba District, in Kwa-Zulu Natal Province of South Africa.

Property Details:	Groethoek 1/152, Waaihoek 9/173 and Waaihoek 11/173
Registered Title Deed Owner	WAAIHOEK COMMUNITY TRUST
Full name(s) & Surname:	BUSISIWE PRISCA DANISA
Identity Number:	671220 0452 086
Postal Address:	P.O. Box 2412 NEWCASTLE 2940
Telephone Number:	082 839 6788
Fax Number:	N/A
Cell Phone Number:	082 839 8788
E-mail Address:	danisabp@gmail.com
SIGNATURE	

South Africa Mainstream Renewable Power Developments (Pty) Ltd
4th Floor Mainstream House
Newlands on Main
Old Main & Campground Roads
Claremont, 7708
Cape Town, South Africa

t: +27 (0)21-657 4040
info-southafrica@mainstreamrp.com
www.mainstreamrp.co.za

Company Registration No.:
2009/007893/07

Directors
Hendrik Reynolds
Mark Gleeney

MAINSTREAM RENEWABLE POWER SOUTH AFRICA

ENVIRONMENTAL IMPACT ASSESSMENT
LANDOWNER CONSENT FORM

In terms of Regulation 39(1) of the National Environmental Management Act (Act 107 of 1998) [as amended] together with the Environmental Impact Assessment (EIA) Regulations 2014 [as amended], landowner consent is required where an activity is requested on land owned by a person other than the proponent.

I, as ~~owner / occupier / legal representative~~ / trustee of the land parcels listed below, hereby give consent that Waaihoek Wind Farm (Pty) Ltd, an affiliate of South Africa Mainstream Renewable Power Developments (Pty) Ltd, undertake an EIA process for the proposed construction and operation of the Battery Energy Storage System (BESS) and associated infrastructure for the proposed Waaihoek Wind Energy Facility located near the town of Utrecht in the eMadlangeni Local Municipality, Amajuba District, in Kwa-Zulu Natal Province of South Africa.

Property Details:	**Wijdgelegen 5/17068**
Registered Title Deed Owner	Fanie Landman Familie Trust
Full name(s) & Surname:	Andre Theron Landman
Identity Number:	IT4029/96
Postal Address:	P.O. Box 1,Wakkerstroom,2480
Telephone Number:	
Fax Number:	
Cell Phone Number:	082 306 9263
E-mail Address:	dagwachtboerdery@gmail.com
SIGNATURE	
Date of signature:	03/11/2020

APPENDIX E3: PROOF OF ADVERT

PROPOSED WAAIHOEK BATTERY ENERGY STORAGE SYSTEM AND RESERVOIR, SOUTH EAST OF UTRECHT, EMADLANGENI LOCAL MUNICIPALITY, KWAZULU NATAL PROVINCE

Notice is hereby given, in accordance with GN 982 Environmental Impact Assessment (EIA) Regulations (2014, as amended in 2017) Section 41(2) published in in terms of Chapter 6 of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments), of the submission of an application to the national Department of Environment, Forestry and Fisheries (DEFF) for Environmental Authorisation (EA).

Proponent, Activities and Location:

Waaihoek Wind Farm (Pty) Ltd. proposes to construct a Battery Energy Storage System (BESS) and water reservoir within the Waaihoek Wind Energy Facility (WEF) project site on Groothoek Farm 152, Portion 1, Waaihoek Farm 173 Portions 9 & 11, and Wijdgelegen Farm 17068, Portion 5, located south-east of Utrecht, KwaZulu Natal Province.

NEMA Listed Activities:

A Basic Assessment (BA) process is potentially triggered by the following listed activities:

Listing Notice 1

- Activity 11: The development of facilities or infrastructure for the transmission and distribution of electricity;
- Activity 14: The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good;
- Activity 27: The clearance of an area of 1 hectare or more but less than 20 hectares of indigenous vegetation; and
- Activity 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998.

Listing Notice 3

- Activity 2: The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres; and
- Activity 10: The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good.

Competent Authority:

The competent authority for this application is the National Department of the Environment, Forestry and Fisheries (DEFF).

CES has been commissioned by Waaihoek Wind Farm (Pty) Ltd. to undertake the BA process in terms of NEMA 2017 EIA Regulations. You are hereby invited to register as an Interested & Affected Party (I&AP). Please submit your name, contact information and any comments to the contact person below.

For more information, registration as an I&AP or submission of written comments contact by post, phone, fax or e-mail: Caryn Clarke, PO Box 8145, Nahoon, 5210, Tel: 087 830 9806; Fax: 086 410 7822; Email: c.clarke@cesnet.co.za

Date of placement: 2 November 2020 in the Natal Witness (Provincial Newspaper)

The Witness

CLASSIFIEDS

NOTICES

Classifieds

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KWAZULU-NATAL PROVINCE
COOPERATIVE GOVERNANCE AND TRADITIONAL AFFAIRS
REPUBLIC OF SOUTH AFRICA

CHIEF DIRECTORATE: MUNICIPAL SERVICE DELIVERY SUPPORT

DIRECTORATE: LOCAL GOVERNMENT CHAMPIONS
POST TITLE: LOCAL GOVERNMENT SPECIALIST
SALARY: R 1 057 326 PER ANNUM (All inclusive remuneration package to be structured in accordance with the rules of the Senior Management Service)
CENTRE: PIETERMARITZBURG
REFERENCE: 5/2020 (MSDS)

UBUHLEBEZWE MUNICIPALITY
OFFICE OF THE MUNICIPAL MANAGER

APPENDIX E4: SITE NOTICES

ENGLISH VERSION

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS | BA |

WAAIHOEK BATTERY ENERGY STORAGE SYSTEM AND RESERVOIR

CES
ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

PROPOSED WAAIHOEK BATTERY ENERGY STORAGE SYSTEM, ASSOCIATED INFRASTRUCTURE AND RESERVOIR, SOUTH EAST OF UTRECHT, EMADLANGENI LOCAL MUNICIPALITY, KWAZULU NATAL PROVINCE

Notice is hereby given, in accordance with GN 982 Environmental Impact Assessment (EIA) Regulations (2014, as amended in 2017) Section 41(2) published in in terms of Chapter 6 of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments), of the submission of an application to the national Department of Environment, Forestry and Fisheries (DEFF) for Environmental Authorisation (EA).

Proponent, Activities and Location:

Waaihoek Wind Farm (Pty) Ltd. proposes to construct a battery energy storage system (BESS) and water reservoir within the Waaihoek Wind Energy Facility (WEF) project site on Groothoek Farm 152, Portion 1, Waaihoek Farm 173 Portions 9 & 11, and Wijdgelegen Farm 17068, Portion 5, located south-east of Utrecht, KwaZulu Natal Province.

NEMA Listed Activities:

A Basic Assessment (BA) process is potentially triggered by the following listed activities:

Listing Notice 1

Activity 11: The development of facilities or infrastructure for the transmission and distribution of electricity;

Activity 14: The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good;

Activity 27: The clearance of an area of 1 hectare or more but less than 20 hectares of indigenous vegetation; and

Activity 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998.

Listing Notice 3

Activity 2: The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres; and

Activity 10: The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good.

Competent Authority:

The competent authority for this application is the National Department of the Environment, Forestry and Fisheries (DEFF).

CES has been commissioned by Waaihoek Wind Farm (Pty) Ltd. to undertake the BA process in terms of NEMA 2017 EIA Regulations. You are hereby invited to register as an Interested & Affected Party (I&AP). Please submit your name, contact information and any comments to the contact person below.

For more information, registration as an I&AP or submission of written comments contact by post, phone, fax or e-mail: Caryn Clarke, PO Box 8145, Nahoon, 5210, Tel: 087 830 9806; Fax: 086 410 7822; Email: c.clarke@cesnet.co.za

DRAFT

ISAZISO SENQUBO YOKUHLOLA UMTHELELA WEZEMVELO | BA |
WAAIHOEK BATTERY ENERGY STORAGE SYSTEM AND RESERVOIR

DRAFT

UHLELO LOKUGCINA AMABHASI AWAIHOEK LUPHAKANISIWE, UHLELO LOKUXHUMANISA NEZINDAWO ZOKUXHUMANISA, ENINGIZIMU EAST E-UTRECHT, UMASIPALA WASEKHAYA WEMADLANGENI, ISIFUNDAZWE SAKWAZULU NATAL

Kukhishwa isaziso, ngokuya ngeMithethonqubo ye-GN 982 Environmental Impact Assessment (EIA) Regulations (2014, njengoba ichitshiyelwe ngo-2017) Isigaba 41 (2) esishicilelwe ngokweSahluko 6 soMthetho Kazwelonke Wokuphathwa Kwezemvelo (NEMA, Act No. 107 we-1998 kanye nezichibiyelo ezalandela), zokufakwa kwesicelo eMnyangweni Wezemvelo, Ezamahlathi kanye Nezokudoba (DEFF) Wokugunyazwa Kwezemvelo (EA) kuzwelonke.

Umxhasi, Imisebenzi kanye nendawo:

I-Waaihoek Wind Farm (Pty) Ltd. iphakamisa ukwakha uhlelo lokugcina amandla ebhethri (i-BESS) kanye nedamu lamanzi endaweni yephrojekthi ye-Waaihoek Wind Energy Facility (WEF) eGroothoek Farm 152, Portion 1, Waaihoek Farm 173 Portions 9 & 11, futhi Wijdgelegen Farm 17068, Portion 5, etholakala eningizimu-mpumalanga ye-Utrecht, esifundazweni saKwaZulu Natal.

NEMA Listed Activities:

Inqubo Yokuhlola Okuyisisekelo (i-BA) ingahle idalwe yile misebenzi elandelayo efakwe kuhlu:

Listing Notice 1

Activity 11: Ukuthuthukiswa kwezinsiza noma ingqalasizinda yokudlulisa nokusabalalisa ugesi:

Activity 14: Ukuthuthukiswa nokusebenza okuhlobene kwezikhungo noma kwengqalasizinda, ukugcina, noma ukugcina nokuphatha, okuhle okuyingozi;

Activity 27: i-clearnace ye-1 ha noma ngaphezulu yohlaza lwendabuko;

Activity 28: Ukuthuthukiswa kokuhlala, okuxubekile, okudayisa, kwezebhizinisi, kwezezimboni noma kwezikhungo lapho lowo mhlaba ubusetshenziselwa ezolimo, ukulima izilwane zasendle, izinhloso zamahhashi noma ukuhlanyelwa kwamahlathi ngomhlaka 1 Ephreli 1998 noma ngemuva kwawo.

Listing Notice 3

Activity 2: Ukwakhiwa kwamadamu, ngaphandle kwamadamu, anomthamo ongaphezu kwama-cubic metres angama-250;

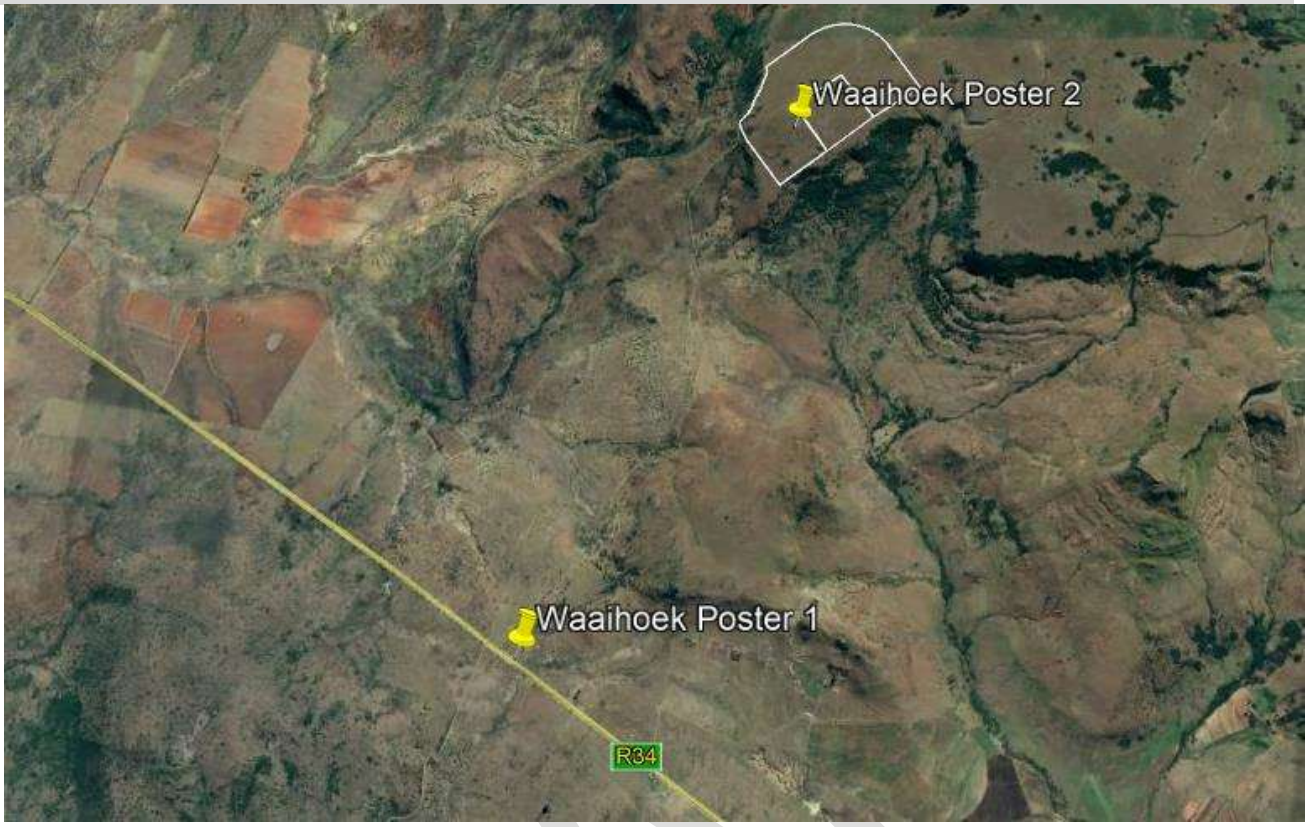
Activity 10: Ukuthuthukiswa nokusebenza okuhambisanayo kwezinsiza noma ingqalasizinda yokugcina, noma ukugcina nokuphatha okuhle okuyingozi.

Competent Authority:

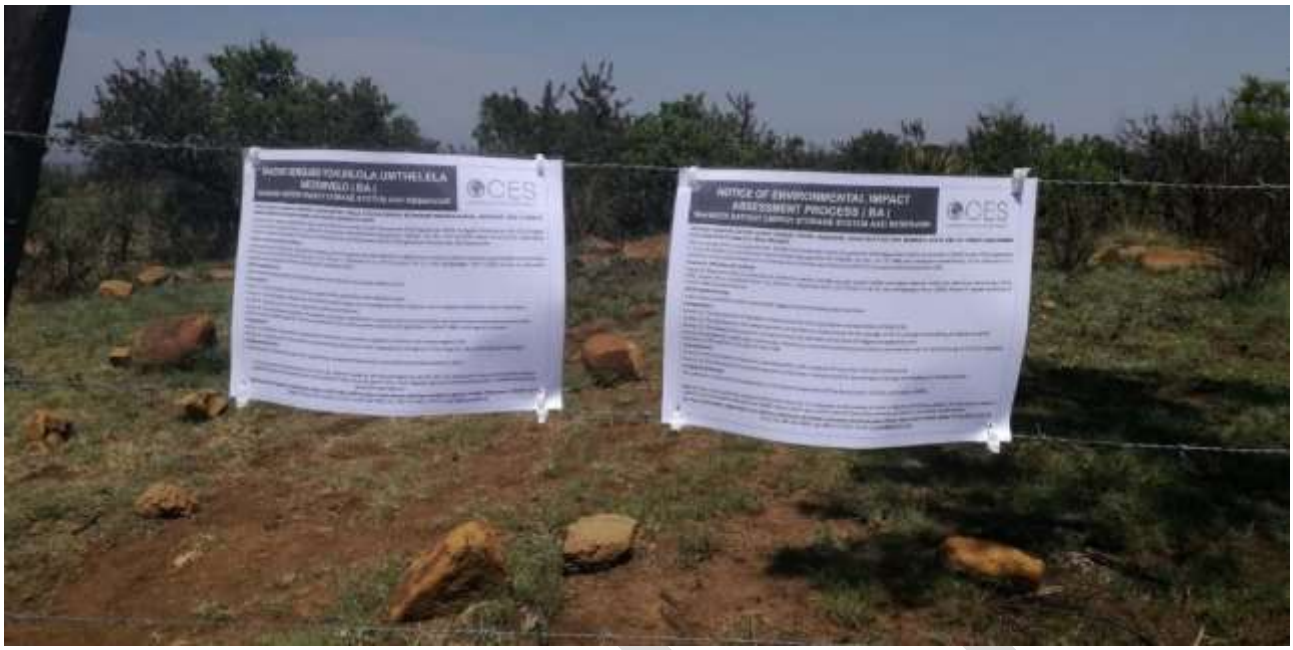
Isiphathimandla esifanelekile salolu hlelo nguMnyango Kazwelonke Wezemvelo, Ezamahlathi kanye Nezokudoba (i-DEFF).

I-CES ithunyelwe yi-Waaihoek Wind Farm (Pty) Ltd. ukwenza inqubo ye-BA ngokwemigomo ye-NEMA 2017 EIA Regulations. Uyamenywa ukuthi ubhalise njengeNhlangano Enentshisekelo Nethintekayo (I&AP). Sicela uthumele igama lakho, imininingwane yokuxhumana nanoma yikuphi ukuphawula kumuntu oxhumana naye ngezansi.

Ngeminye imininingwane, ukubhaliswa njenge-I & AP noma ukuthunyelwa kwamazwana abhaliwe uthintane ngeposi, ucingo, ifeksi noma i-imeyili: Caryn Clarke, PO Box 8145, Nahoon, 5210, Tel: 087 830 9806; Fax: 086 410 7822; Email: c.clarke@cesnet.co.za



Site Notice 1: 27°47'27.70"S: 30°25'17.21"E



Site Notice 2: 27°47'27.70"S: 30°25'17.21"E

DRAFT

BASIC ASSESSMENT PROCESS: PROPOSED WAAIHOEK BATTERY ENERGY STORAGE SYSTEM AND RESERVOIR, SOUTH EAST OF UTRECHT, EMADLANGENI LOCAL MUNICIPALITY, KWAZULU NATAL PROVINCE

BACKGROUND INFORMATION DOCUMENT (BID) & INVITATION TO COMMENT

Return address for comments:

CES

Attention: Caryn Clarke
P.O Box 8145,
Nahoon, East London, 5241
Tel: (043) 726 7809
Fax: (086) 410 7822
Email: c.clarke@cesnet.co.za

DRAFT

AIM OF THIS DOCUMENT

The purpose of this document is to ensure that **people who are interested in** or **affected by the proposed project** are **provided with information about the proposal, the process being followed** and **provided with an opportunity to be involved** in the Basic Assessment (BA) process for proposed Waaihoek Battery Energy Storage System (BESS), associated infrastructure and water reservoir linked to the Waaihoek Wind Energy Facility (WEF).

Registering as an **Interested and/or Affected Party** (I&AP) allows individuals or groups the opportunity to **contribute ideas, issues, and concerns relating to the project**. I&APs also have an opportunity to **review all of the reports and submit their comments** on those reports. All of the comments that are received will be included in the reports that are submitted to the Competent Authority (CA).

THE PROPONENT

Waaihoek Wind Farm (Pty) Ltd. proposes to construct a Battery Energy Storage System (BESS), associated infrastructure and water reservoir within the Waaihoek Wind Energy Facility (WEF) project site. In addition, listed activities applicable under the current 2017 EIA regulations to the Waaihoek WEF and Grid Connection, previously authorized under the 2010 and 2014 EIA Regulations, will be applied for. Waaihoek Wind Farm (Pty) Ltd have appointed Coastal and Environmental Services (t/a CES) as the project Environmental Assessment Practitioners (EAP).

LOCATION

The proposed Waaihoek BESS, associated infrastructure and water reservoir is located within the Waaihoek WEF project site located south-east of Utrecht, in the eMadlangeni Local Municipality, Amajuba District Municipality, KwaZulu Natal Province.

The table below lists the properties affected by the proposed development:

Farm name	Farm number	21- digit Surveyor General code
Groothoek	Farm 152, Portion 1	N0HT00000000015200001
Waaihoek	Farm 173, Portion 9	NOHT00000000017300009
Waaihoek	Farm 173, Portion 11	NOHT00000000017300011
Wijdgelegen	Farm 17068, Portion 5	N0HT00000001706800005

PROJECT DESCRIPTION

Waaihoek Wind Farm (Pty) Ltd is proposing the construction and operation of a BESS and associated infrastructure for the authorised Waaihoek WEF (DEFF Reference numbers: 14/12/16/3/3/2/655 and 14/12/16/3/3/2/654), located south-east of the town of Utrecht, in the eMadlangeni Local Municipality, Amajuba District Municipality, in Kwa-Zulu Natal Province of South Africa.

The need for a BESS stems from the fact that electricity is only produced by the Renewable Energy Facility while wind is blowing, while the peak demand may not necessarily occur during this time. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the facility is more efficient and reliable and that electricity supply is more constant.

The BESS will:

- Store and integrate a greater amount of renewable energy from the Waaihoek WEF into the electricity grid;
- This will assist with the objective to generate electricity by means of renewable energy to feed into the National Grid which will be procured under either the Renewable Energy Independent Power Producer Procurement Program (REIPPPP), other government run procurement programmes or for sale to private entities if required.
- Footprint of battery storage area: Up to 2 ha
- Capacity of battery storage: 200MWh
- Technology to be used: Lithium Ion
- Battery types to be considered: Solid State Batteries and Redox Flow Batteries

Refer to the Figure 1: Locality Map

THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

CES was established in 1990 as a specialist environmental consulting company and has considerable experience in terrestrial, marine and freshwater ecology, the Social Impact Assessment (SIA) process, State of Environment Reporting (SOER), Integrated Waste Management Plans (IWMP), Environmental Management Programme (EMPr), Spatial Development Frameworks (SDF), public participation, as well as the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) processes. EOH CES has been active in all of the above fields, and in so doing have made a positive contribution towards environmental management and sustainable development in the Eastern Cape, South Africa and many other African countries. We believe that a balance between development and environmental protection can be achieved by skilful, considerate and careful planning.

THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

According to the EIA regulations (2014, as amended) promulgated under the National Environmental Management Act (NEMA) (Act No.107 of 1998; NEMA) the potential impacts on the environment will have to be assessed in terms of the listed activities. The proposed Waaihoek BESS and reservoir triggers listed activities (Table 1 below) in terms of the NEMA EIA Regulations (2014, as amended) as per Listing Notices 1, 2, and 3, and as such requires a **Basic Assessment** process to be undertaken in accordance with Regulation 6 of the EIA Regulations (2014, as amended). The competent authority for this application will be the national Department of the Environment, Forestry and Fisheries (DEFF).

Table 11-3: The potential triggered listed activities in terms of the NEMA EIA regulations (2014, as amended).

Activity No(s):	Listing Notice 1 of the EIA Regulations, 2014 as amended	Description
12 (ii) (c)	The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	• Infrastructure associated with the BESS and reservoir may be located within 32m of a watercourse.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80m^3 or more but not exceeding 500m^3.	• The proposed WEF development will require an on-site storage facility for the temporary storage of fuel for the duration of construction. The combined storage capacity will be larger than 80m^3 but will not exceed 500m^3. This infrastructure would be placed within the footprint of either the BESS/ Substation/Construction Camp, pending detailed design. • Potentially applicable for Redox Flow Battery system which consists of electrolyte storage tanks contained within a 2.5 m high berm wall to prevents leakage of the electrolyte chemical into the surrounding environment.
27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	• The proposed BESS, reservoir and associated infrastructure, associated with the authorised WEF, will involve the clearance of more than 1ha of indigenous vegetation.
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 proposed BESS and reservoir will be developed on land zoned as agriculture, outside of an urban area and will be more than 1ha in extent.
Activity No(s):	**Listing Notice 3 of the EIA Regulations, 2014 as amended**	**Description**

Activity No(s):	Listing Notice 1 of the EIA Regulations, 2014 as amended	Description
2 d (xii) (aa)	The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres. d. KwaZulu-Natal xii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;	The construction of a 400m3 reservoir on site for water supply during construction of the WEF, which will be located within 5km of a protected area.
4 d (xii) (aa)	The development of a road wider than 4 metres with a reserve less than 13,5 metres. d. KwaZulu-Natal xii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.	• The proposed BESS and reservoir will include the development of roads wider than 4 metres in extent. While existing roads will be used where feasible, additional new sections may be required. Roads will occur in the KZN, outside of urban areas, within 5km of a protected area.
10 d (xiii) (aa) (cc)	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good. d. KwaZulu-Natal: xiii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve; (cc) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland;	• Applicable for Redox Flow Battery system which consists of electrolyte storage tanks contained within a bunded area to prevent leakage of the electrolyte chemical into the surrounding environment, to be located within 5km of a protected area and possibly within 100m from a wetland.
18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. d. KwaZulu-Natal xii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.	• The proposed BESS and water reservoir, associated with the authorised Waaihoek WEF, will require the widening or lengthening of existing roads which will be located within 5km of a protected area.

APPROACH TO THE EIA PROCESSES

The EIA process required for the Waaihoek BESS and reservoir is a **Basic Assessment (BA)** process. The illustration below indicates where we are currently in the BA process:

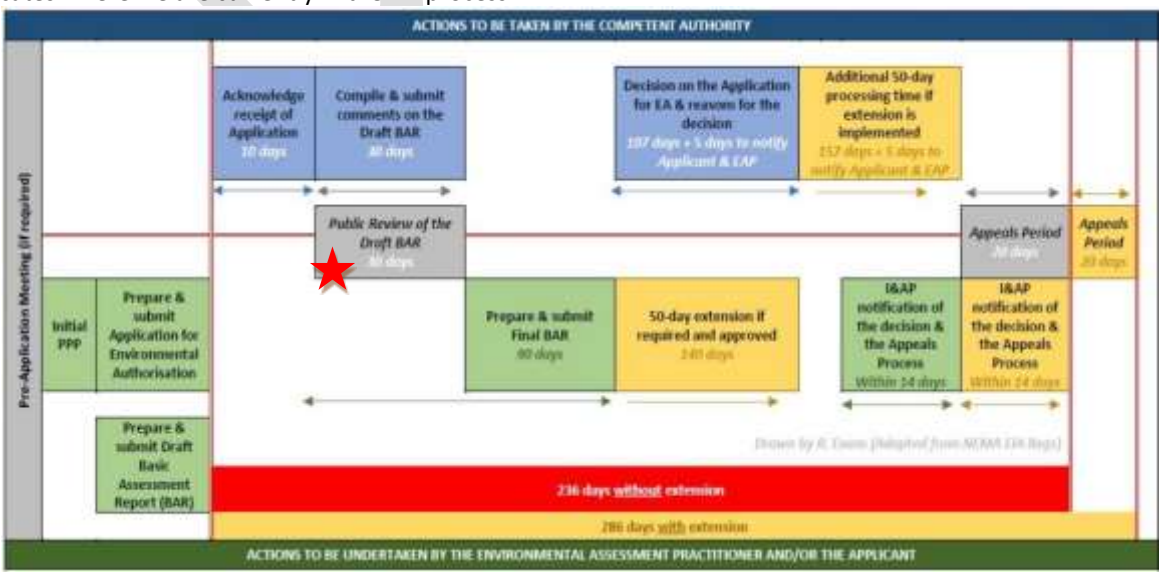


Figure 1. Basic Assessment (BA) process

POTENTIAL IMPACTS AND BENEFITS

CES will assess the impacts of the proposed activity on the environment. Impacts will be assessed for various alternatives; including the preferred alternative and the "No-Go" alternative. Impacts will be assessed for the planning and design phase, construction phase, operational phase and decommissioning phase of the proposed development.

HOW CAN YOU BE INVOLVED?

A Public Participation Process (PPP) is being conducted as part of the BA process for the proposed Waaihoek BESS and reservoir. The aim of the PPP is to allow everyone who is interested in, or likely to be affected by the proposed development to provide input into the process.

The Public Participation Process includes:

- Advertisement in a local newspaper;
- On-site signage;
- Written notifications and circulation of the BID *(this document)* to all identified I&APs and stakeholders;
- 30-day review of the reports by all registered I&APs and stakeholders.

If you consider yourself an interested and/or affected person/party, it is important that you become, and remain, involved in the PPP. In order to do so, please follow the steps below to ensure that you are continually informed of the project developments and will ensure your opportunity to raise issues and concerns pertaining to the project.

STEP 1: Please register by responding to our notification and invitation, with your name and contact details (details provided on cover page and below). As a registered I&AP, you will be informed of all meetings, report reviews and project developments throughout the BA process.

STEP 2: Review and comment on reports that are made available. Your valuable inputs are needed to ensure that accurate information is captured and that all potential issues are addressed.

CES is required to engage with all private and public parties that may be interested and/or affected by the proposed interchange construction, in order to distribute information for review and comment in a transparent manner.

In the same light, it is important for I&APs to note the following:

1. In order for CES to continue engaging with you, please **ENSURE** that you register on our database by contacting the person below.
2. As the BA process is regulated by specific review and comment timeframes, it is your responsibility to submit your comments within these timeframes.

Please send your enquiries and/or comments to:

Ms. Caryn Clarke
P.O Box 8145, Nahoon, East London, 5241
Tel: (043) 726 7809/8313
Fax: 086 410 7822
Email: c.clarke@cesnet.co.za

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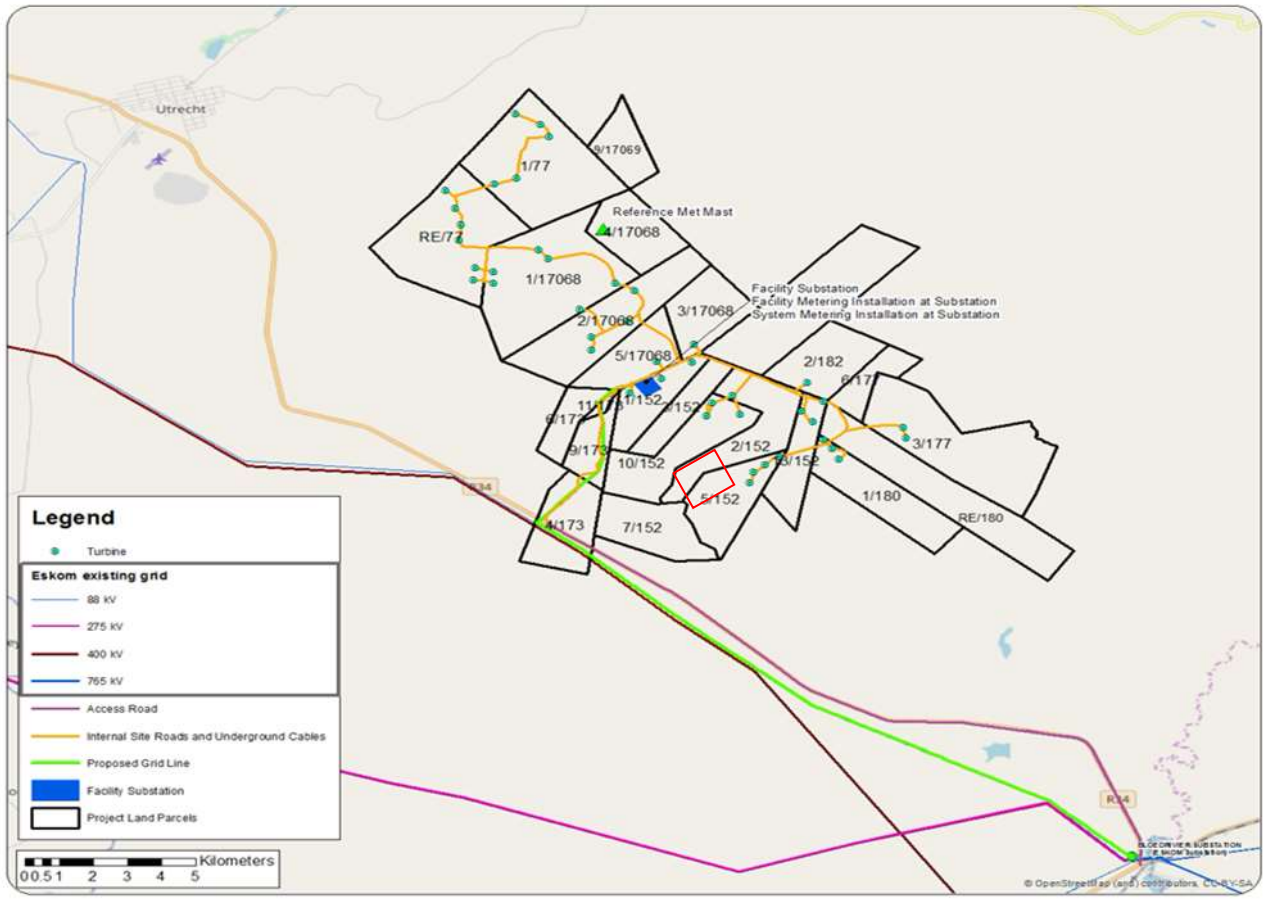

Figure 1: Locality Map. BESS study area outline in red.

I hereby wish to register as an Interested and Affected Party (I&AP) for the proposed Waaihoek Battery Energy Storage System (BESS) and water reservoir located within the Waaihoek WEF project site, south-east of Utrecht, in the eMadlangeni Local Municipality, KwaZulu Natal Province.

Name & Surname:

Organisation:

Postal Address:

Email:

Phone #:

Fax #:

My initial comments, issues or concerns are:

Other individuals, stakeholders, organisations or entities that should be registered are:

Name & Surname:

Organisation:

Postal address:

Contact details:

Please return details to: **Caryn Clarke**: P.O. Box 8145, Nahoon, East London, 5214
Telephone: (043) 726 7809 | Fax: 086 410 7822 | Email: c.clarke@cesnet.co.za

APPENDIX E6: INITIAL NOTIFICATIONS AND DRAFT BAR AVAILABILITY

EMAIL (DATE): 13 November 2020

Caryn Clarke

From: Caryn Clarke
Sent: Friday, November 13, 2020 3:12 PM
To: GouwsJ@nra.co.za; thokob@daff.gov.za; MashuduMa@daff.gov.za; john.geeringh@eskom.co.za; nekhalt@eskom.co.za; NicolM@eskom.co.za; eddie.leach@eskom.co.za; atiplady@ska.co.za; makwabasan@dwa.gov.za; mokgadi.mathekgana@energy.gov.za; AModise@environment.gov.za; mrabothata@environment.gov.za; william.mngoma@kzndae.gov.za; Zama.Mathenjwa@kzndae.gov.za; johnnhleko@yahoo.com; poovey.moodley@kzndae.gov.za; lindaa@amajuba.gov.za; gugum@emadlageni.gov.za; utrechtmun@telkomsa.net; gwala.khu@gmail.com; ndlovuv@emadlangeni.gov.za; ndlovuv@emadlangeni.gov.za; Abigail.knox@gmail.com; CouchRA@telkom.co.za; viljoena@sentech.co.za; radebej@sentech.co.za; andre.barnard@vodacom.co.za; StrohL@caa.co.za; camu@atns.co.za; Dominic.Wieners@kznwildlife.com; dinesree.thambu@kznwildlife.com; felicity.elliott@kznwildlife.com; andyb@kznwildlife.com; schutter@kznwildlife.com; skruger@kznwildlife.com; ianr@kznwildlife.com; martindg@kznwildlife.com; athol@kznwildlife.com; petrosn@kznwildlife.com; amafaddps@amafapmb.co.za; amafahq@mweb.co.za; advocacy@birdlife.org.za; daniel.marnewick@birdlife.org.za; iba@birdlife.org.za; conservation@birdlife.org.za; energy@birdlife.org.za; yolanf@ewt.co.za; harrietd@ewt.org.za; kerryn@ewt.org.za; glennr@ewt.org.za; tanyas@ewt.org.za; lourensl@ewt.org.za; jenny@wessakzn.org.za; chris@wessa.co.za; gbarnes@wessanorth.co.za; egtproject@mweb.co.za; aburns@wwf.org.za; wendy@batskzn.co.za; carol@batskzn.co.za; utrechtfarmer@gmail.com; micjohn@telkomsa.net; jfsm@mweb.co.za; christoffj@megaweb.co.za; djdbv1905 @gmail.com; vlsk@lantic.net; route@battlefields.org.za; pieta.fourie@gmail.com; danisabp@gmail.com; marinatheron@gmail.com; sheliatheron@gmail.com; jtosio@gmail.com; joantheron@gmail.com; jacquestheron7@yahoo.com; l.theron.88 @gmail.com; crossmaloof@gmail.com; eastwoodfarming@yebo.co.za; pluysboerdery@gmail.com; inusdavel@gmail.com; info@waterloofarm.co.za; inusdavel@gmail.com; hennie@sizamekaar.co.za; jdube@worldonline.co.za; crossmaloof@gmail.com; eastwoodfarming@yebo.co.za; pjclaassen@polka.co.za; jjuys@telkomsa.net; Stoney@tiscali.co.za; oldeani@webmail.co.za; marinatheron@gmail.com; vtosio@gmail.com; sheliatheron@gmail.com; joantheron@gmail.com; jacquestheron7@yahoo.com; pieta.fourie@gmail.com; oldeani@webmail.co.za; bestons@transnet.co.za; pjclaassen@forka.co.za; 0834605797 @mtnloaded.co.za; mngunis@live.com; lourens@crazyweb.co.za; rugevers@crazyweb.co.za; jdube@worldonline.co.za; cklandman@vodamail.co.za; stuart@dbmlaw.com; hennie@sizamekaar.co.za; lourens@crazyweb.co.za; gwhanekom@gmail.com; chris.sibisi@sasol.com; mngunis@live.com; pieta.fourie@gmail.com; 0834605797@mtnloaded.co.za; hennie@sizamekaar.co.za; phillip.shozi@dpw.gov.za; lourens@crazyweb.co.za; moses.cele@dpw.gov.za; gwhanekom@gmail.com; kpkhuleh@gmail.com; mngunis@live.com; rugevers@crazyweb.co.za; lourens@crazyweb.co.za; boshoffdavel@gmail.com; robbie.gleimius@exxaro.com; 0834605797@mtnloaded.co.za; Stoney@tiscali.co.za; hennie@sizamekaar.co.za; mngunis@live.com; MKabasa@environment.gov.za; JMpelane@environment.gov.za; CMusemburi@environment.gov.za; AEssop@environment.gov.za; mgalimberti@sahra.org.za; Patrick.Maqabangqa@drdlr.gov.za; Zama.Mbanjwa@kznedtea.gov.za; Bonginkosi.Dlamini@kznedtea.gov.za; Bhekumuzi.Mathenjwa@kznedtea.gov.za; Samuel.Ngcobo@kznedtea.gov.za; smunzhedzi@environment.gov.za;

1

To:	inusdavel@gmail.com; bradleyg@ewt.org.za; BiancaT@L28.co.za; garyusher@lantic.net; ajmans@mweb.co.za; mac@mcatt.co.za; naudeboerdery999@gmail.com; ejrichardson@worldonline.co.za; bnkontwana@salga.org.za; Thembinkosi.Shongwe@concogrp.com; biancaw@l2b.co.za; danisabp@gmail.com; cklandman@vodamail.co.za; dave.stock@natchix.co.za; kobusinmontana@gmail.com; jjuys@telkomsa.net; phillip.shozi@dpw.gov.za; moses.cele@dpw.gov.za; naidooso@dws.gov.za; makwabasan@dws.gov.za
Cc:	Greer Hawley Mcmaster; Alan Carter; Rebecca Thomas; Aniqah Misbach; Liza Janse van Vuuren; Eugene Marais
Subject:	NOTIFICATION OF INTENTION TO SUBMIT AN APPLICATION FOR ENVIRONMENTAL AUTHORISATION AND NOTIFICATION OF AVAILABILITY OF THE DRAFT BASIC ASSESSMENT REPORT FOR PUBLIC REVIEW
Attachments:	BID_Waaihoek BESS and reservoir.pdf; Letter of notification.pdf

Dear Stakeholders, Landowners and I&APs,

PROPOSED WAAIHOEK BATTERY ENERGY STORAGE SYSTEM AND RESERVOIR, SOUTH EAST OF UTRECHT, EMADLANGENI LOCAL MUNICIPALITY, KWAZULU NATAL PROVINCE:

This notification serves to inform you of the intention to submit an application for Environmental Authorisation (EA) to National DEFF for the proposed Waaihoek Battery Energy Storage System (BESS) and reservoir, associated with the Waaihoek Wind Energy Facility (WEF) and Powerline, previously authorized under the 2010 and 2014 EIA Regulations (DEFF ref: 14/12/16/3/3/2/655 and 14/12/16/3/3/2/654). The proposed development is located south of Utrecht, in the eMadlangeni Local Municipality, Amajuba District Municipality, KwaZulu Natal Province. Please refer to the attached Letter of Notification and Background Information Document (BID) for more information regarding the proposed development.

This email also serves to notify you of the availability of the Draft Basic Assessment Report (BAR) for the proposed Waaihoek BESS and reservoir for a 30-day public review period commencing on the 13 November 2020 until the 13 December 2020. An electronic copy of the Draft BAR can be downloaded from the CES website at: http://www.cesnet.co.za/proposed-waaihoek-battery-energy-storage or requested via the contact details provided below.

For more information or submission of written comments on the Draft BAR, please contact by post, phone, fax or e-mail, as provided below:

Attention: Ms Caryn Clarke
Postal: PO Box 8145, East London, 5214;
Tel: 087 830 9804; Fax: 086 410 7822
E-mail: c.clarke@cesnet.co.za

Kind regards

ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES
Caryn Clarke - M.Sc., *Cand.Sci.Nat.*
Senior Environmental Consultant
CES - Environmental and social advisory services
6 Stewart Drive, Baysville, 5241
East London | Eastern Cape | South Africa
Tel: +27 87 830 9804 | Cell: +27 (72) 118 6684

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APPENDIX E6: PROOF OF SMS NOTIFICATIONS

(SEPARATE ATTACHMENT)

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APPENDIX E7: WAAIHOEK STAKEHOLDER & I&AP DATABASE (WAAIHOEK WEF DATABASE - UPDATED)

STAKEHOLDER DATABASE	NAME	EMAIL
SANRAL	Ms Nanna Gouws	GouwsJ@nra.co.za
Department of Agriculture Forestry & Fisheries (DAFF)	Ms Thoko Buthelezi	thokob@daff.gov.za
	Ms Mashudu Marubini	MashuduMa@daff.gov.za
Eskom: Renewable Energy	Mr John Geerigh	john.geeringh@eskom.co.za
Eskom	Ms Tshililo Nekhalali	nekhalt@eskom.co.za
	Mr Eddie Leach	eddie.leach@eskom.co.za
Eskom: Land & Rights Section	Ms Michelle Nicol	NicolM@eskom.co.za
SKA	Dr Adrian Tiplady	atiplady@ska.co.za
Department of Water Affairs: KZN	Ms Zethu Makwabasa	makwabasan@dwa.gov.za
Department of Water Affairs: KZN	Mr Shaun Naidoo	naidooso@dws.gov.za
Department of Energy	Ms Mokgadi Mathekgana	mokgadi.mathekgana@energy.gov.za
Department of Environment, Forestry and Fisheries (DEFF)	Mmamohale Kabasa	MKabasa@environment.gov.za
Department of Environment, Forestry and Fisheries (DEFF)	Jay Jay Mpelane	JMpelane@environment.gov.za
Department of Environment, Forestry and Fisheries (DEFF)	Constance Musemburi	CMusemburi@environment.gov.za
Department of Environment, Forestry and Fisheries (DEFF)	Azrah Essop	AEssop@environment.gov.za
Department of Environmental Affairs: Biodiversity & Conservation	Mr Shonisani Munzhedzi	smunzhedzi@environment.gov.za
Department of Rural Development and Land Reform	Mr Patrick Maqabangqa	Patrick.Maqabangqa@drdlr.gov.za
KZN Department of Economic Development & Tourism and Environmental Affairs: EIA	Ms Zama Mbanjwa	Zama.Mbanjwa@kznedtea.gov.za
KZN Department of Economic Development & Tourism and Environmental Affairs: Director: Environmental Management Head Office	Mr Bonginkosi Dlamini	Bonginkosi.Dlamini@kznedtea.gov.za
KZN Department of Economic Development & Tourism and Environmental Affairs: Director: Environmental Management Head Office	Mr Bhekumuzi Mathenjwa	Bhekumuzi.Mathenjwa@kznedtea.gov.za
KZN Department of Economic Development & Tourism and Environmental Affairs: Southern Region	Mr Samuel Ngcobo	Samuel.Ngcobo@kznedtea.gov.za
Amajuba DM Manager	Mr Linda Africa	lindaa@amajuba.gov.za

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STAKEHOLDER DATABASE	NAME	EMAIL
Emadlangeni LM Manager	Ms GP Ntshangase	gugum@emadlageni.gov.za; utrechtmun@telkomsa.net
Emadlangeni Technical Services	Mr Khumbulani Gwala	gwala.khu@gmail.com
Emadlangeni Ward 1 councillor	Cllr V. Ndlovu	ndlovuv@emadlangeni.gov.za
Emadlangeni Ward 3 councillor	Cllr B.M Phenyane	ndlovuv@emadlangeni.gov.za
Renewable energy forum in KZN: Chairperson	Ms Abigail Knox	Abigail.knox@gmail.com
Telkom	Mr Raymond Couch	CouchRA@telkom.co.za
Sentech	Ms Alishea Viljoen	viljoena@sentech.co.za; radebej@sentech.co.za
Vodacom	Mr Andre Barnard	andre.barnard@vodacom.co.za
Civil Aviation Authority	Ms Lizelle Stroh	StrohL@caa.co.za
Air Traffic and Navigation Services (ATNS): Vryheid and Newcastle airports	Mr Dylan Fryer	camu@atns.co.za
Ezemvelo KZN Wildlife	Mr Dominic Wieners	Dominic.Wieners@kznwildlife.com
Ezemvelo KZN Wildlife	Ms Dinesree Thambu	dinesree.thambu@kznwildlife.com
Ezemvelo KZN Wildlife	Ms Felicity Elliott	felicity.elliott@kznwildlife.com
Ezemvelo KZN Wildlife: Integrated Environmental Management	Mr Andy Blackmore	andyb@kznwildlife.com
Ezemvelo KZN Wildlife: District Conservation Officer, Underberg Region	Mr Richard Schutte	schutter@kznwildlife.com
Ezemvelo KZN Wildlife: Regional Ecologist	Ms Sonja Kruger	skruger@kznwildlife.com
Ezemvelo KZN Wildlife: Ecological Advice Division	Mr Ian Rushworth	ianr@kznwildlife.com
Ezemvelo KZN Wildlife: KZN Biodiversity Stewardship Programme	Mr Greg Martindale	martindg@kznwildlife.com
Ezemvelo KZN Wildlife: Avifaunal unit	Mr Athol Marchant	athol@kznwildlife.com
Ezemvelo KZN Wildlife: District Ecologist	Mr Petros Ngwenya	petrosn@kznwildlife.com
AMAFA / Heritage KwaZulu Natal	Ms Annie van der Venter	amafaddps@amafapmb.co.za
AMAFA / Heritage KwaZulu Natal	Mr James van Vuuren	amafahq@mweb.co.za
SAHRA	Mariagrazia Galimberti	mgalimberti@sahra.org.za
Birdlife South Africa	Mr Simon Gear	advocacy@birdlife.org.za
Birdlife South Africa	Mr Daniel Marnewick	daniel.marnewick@birdlife.org.za; iba@birdlife.org.za
Birdlife South Africa	Dr Hanneline Smit-Robinson	conservation@birdlife.org.za
Birdlife South Africa: Birds and Renewable Energy Manager	Ms Samantha Ralson	energy@birdlife.org.za
Endangered Wildlife Trust: CEO	Ms Yolan Friedman	yolanf@ewt.co.za

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STAKEHOLDER DATABASE	NAME	EMAIL
Endangered Wildlife Trust: Head of Conservation Science	Dr Harriet Davies-Mostert	harrietd@ewt.org.za
Endangered Wildlife Trust: African Crane Conservation Programme Manager	Ms Kerryn Morrison	kerryn@ewt.org.za
Endangered Wildlife Trust: African Crane Conservation Programme Field Officer	Ms Glenn Ramke	glennr@ewt.org.za
Endangered Wildlife Trust: Senior Field Officer KZN	Ms Tanya Smith	tanyas@ewt.org.za
Endangered Wildlife Trust: Wildlife & Energy Programme	Mr Lourens Leeuwner	lourensl@ewt.org.za
WESSA KZN Region	Ms Jenny Duvenage	jenny@wessakzn.org.za
WESSA KZN Region: Conservation Project Manager	Mr Chris Galliers	chris@wessa.co.za
WESSA KZN Region: Conservation Director	Mr Garth Barnes	gbarnes@wessanorth.co.za
WWF: Enkangala Grasslands Project South Africa	Mr Angus Burns	egtproject@mweb.co.za; aburns@wwf.org.za
The Bat Interest Group of KwaZulu-Natal	Ms Wendy White	wendy@batskzn.co.za; carol@batskzn.co.za
Utrecht Farmers Association	Ms Michelle van Staden	utrechtfarmer@gmail.com
Ingogo Farmers Association	Mr Jan Smit	micjohn@telkomsa.net; jfsm@mweb.co.za
Groenvlei Farmers Association	Mr Christoff Joubert	christoffj@megaweb.co.za
Dejagersdrift Farmers Association	Mrs Patricia Strauss	djdbv1905@gmail.com
Vryheid Farmers Association	Ms Lurien Jacobsz	vlsk@lantic.net
Battlefields Route Association KZN	Mr Dave Sutclifft	route@battlefields.org.za

WAAIHOEK BESS AND RESERVOIR LANDOWNERS			
Farm number	**Contact person**	**Postal/email address**	**Telephone**
173/9 Waaihoek 173/11 Waaihoek 152/1 Groothoek	**Waaihoek Community Trust** Busisiwe Danisa	danisabp@gmail.com	082 839 8788
17068/5 Wijdgelegen	**Fanie Landman Familie Trust-Trustees** Karel Landman	cklandman@vodamail.co.za	(082) 375 9045

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WAAIHOEK BESS AND RESERVOIR ADJACENT LANDOWNERS			
Farm number	**Contact person**	**Postal/email address**	**Telephone**
152/2 Groothoek 152/10 Groothoek 173/3 Waaihoek 173/6 Waaihoek	**Waaihoek Community Trust: Busisiwe Danisa**	danisabp@gmail.com	082 839 8788
17068/2 Wijdgelegen	**Fanie Landman Familie Trust-Trustees** Karel Landman	cklandman@vodamail.co.za	(082) 375 9045
17068/3 Wijdgelegen	Mr David Stock; Mr Kobus vd Bank (Knights Farm Pty Ltd)	dave.stock@natchix.co.za; kobusinmontana@gmail.com	082 419 6503 (David); 082 653 3445 (Kobus)
182/1 Weltevreden	Mr Koos Uys (Jurust EDMS BPK Pty Ltd.)	jjuys@telkomsa.net	083 463 0740

WAAIHOEK WEF LANDOWNERS			
Farm Number/Portion	**Farm Name**	**Name**	**Email**
180/1	Goedgeloof	Mr Charles Johan de Villiers	082 334 1877
173/9	Waaihoek	Waaihoek Community Trust: Busisiwe Danisa	danisabp@gmail.com
173/11	Waaihoek		
173/3	Waaihoek		
173/4	Waaihoek		
173/5	Waaihoek		
173/6	Waaihoek		
152/1	Groothoek		
152/3	Groothoek		
152/2	Groothoek		
152/5	Groothoek		

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WAAIHOEK WEF LANDOWNERS			
Farm Number/Portion	**Farm Name**	**Name**	**Email**
152/7	Groothoek		
152/10	Groothoek		
152/13	Groothoek	Mr Petrus Stephanus Fourie	pieta.fourie@gmail.com
180/RE	Goedgeloof		
177/3	Goede Hoop	Ms Marina Theron (Goedehoop Number 177 Farming)	marinatheron@gmail.com; sheliatheron@gmail.com; jtosio@gmail.com; joantheron@gmail.com; jacquestheron7@yahoo.com; l.theron.88@gmail.com
177/6	Goede Hoop	Mr Craig de Oliviera (Counterpoint Trading 402 BK)	crossmaloof@gmail.com; eastwoodfarming@yebo.co.za
182/2	Weltevreden	Mr Koos Uys (Jurust EDMS BPK Pty Ltd.)	jjuys@telkomsa.net
17068/1	Wijdgelegen	Mr Karel Landman (Fanie Landman Family Trust)	cklandman@vodamail.co.za
17068/2	Wijdgelegen		
17068/5	Wijdgelegen		
17068/3	Wijdgelegen	Mr David Stock; Mr Kobus vd Bank (Knights Farm Pty Ltd)	dave.stock@natchix.co.za; kobusinmontana@gmail.com
17068/4	Wijdgelegen	Mr Lafras Uys (Jutein EDMS BPK)	pluysboerdery@gmail.com
77/RE	Paardepoort	Mr Inus Davel (Davelhoek Trust)	inusdavel@gmail.com
77/1	Paardepoort		
17069/9	Bloedrivier	Mr Robert Stannard	info@waterloofarm.co.za

Grid Connection Landowners			
Farm Number/Portion	**Farm Name**	**Name**	**Email**
Powerline Alternative 1			
177/3	Goede Hoop	Ms Marina Theron (Goedehoop Number 177 Farming)	marinatheron@gmail.com; vtosio@gmail.com; sheliatheron@gmail.com; joantheron@gmail.com; jacquestheron7@yahoo.com
180/RE	Goedgeloof	Mr Petrus Stephanus Fourie	pieta.fourie@gmail.com
435/RE	Oldeani	Mr Dieter Louis Muhl	oldeani@webmail.co.za

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Grid Connection Landowners			
Farm Number/Portion	**Farm Name**	**Name**	**Email**
435/1	Oldeani	Transnet	bestons@transnet.co.za
150/RE	Spartelspruit	Mr Koot Smit (Spartelspruit Trust)	pjclaassen@forka.co.za
460		Mr Gunther August Wolters Muhl	0834605797@mtnloaded.co.za
150/1	Spartelspruit		
150/3	Spartelspruit	Mr TL Mnguni (Siyanqobaazwelethu Community Trust)	mngunis@live.com
119/4	Roodekoppe		
150/2	Spartelspruit	Mr Lourens Greyling (Baltus Spruit Eiendomme Cc)	lourens@crazyweb.co.za
150/5	Spartelspruit		
119/7	Roodekoppe	Mr Ulrich Gevers	rugevers@crazyweb.co.za
119/16	Roodekoppe	Eskom Finance Co Pty Ltd	
Powerline Alternative 2			
173/4	Waaihoek	Waaihoek Community Trust	danisabp@gmail.com
173/6	Waaihoek		
173/9	Waaihoek		
173/11	Waaihoek		
152/1	Groothoek		
17068/5	Wijdgelegen	Mr Karel Landman (Fanie Landman Family Trust)	cklandman@vodamail.co.za
152/9	Groothoek	Ms Nelisiwe Elsie Dhlamini	stuart@dbmlaw.com
83/3	Vlakplaats	Mr Hennie Boshoff (LAM Boerdery Trust)	hennie@sizamekaar.co.za
83/10	Vlakplaats		
83/6	Vlakplaats	Mr Andries De Villiers	
83/9	Vlakplaats	RSA Government: Moses Cele	phillip.shozi@dpw.gov.za; moses.cele@dpw.gov.za
83/5	Vlakplaats		
66/7	Grootvlei	Mr Lourens Greyling (Baltus Spruit Eiendomme CC)	lourens@crazyweb.co.za
66/0	Grootvlei	Mr Moshaedi Hendry Motloung	
66/12	Grootvlei	Mr Gert Willem Hanekom	gwhanekom@gmail.com

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Grid Connection Landowners			
Farm Number/Portion	**Farm Name**	**Name**	**Email**
66/13	Grootvlei	Umndeni Nyandeni Trust: Khule Zungu	081 556 1592
150/3	Spartelspruit	Siyanqobaazwelethu Community Trust	074 414 3704
119/5	Roodekoppe		
119/4	Roodekoppe		
66/6	Grootvlei		
83/8	Vlakplaats		
119/2	Roodekoppe	Ulrich Gevers	rugevers@crazyweb.co.za
119/7	Roodekoppe		
119/16	Roodekoppe	Eskom Finance Co Pty Ltd	
Powerline Alternative 3			
152/13	Groothoek	Waaihoek Community Trust	jdube@worldonline.co.za
180/0	Goedgeloof	Mr Petrus Stephanus Fourie	pieta.fourie@gmail.com
180/1	Goedgeloof	Mr Charles Johan de Villiers	
180/2	Goedgeloof	Mr Nhlanhla Nhleko (Masibambani Communal Land)	
434	Rusthof	Mr Andries De Villiers	
83/6	Vlakplaats		
180/4	Goedgeloof	Mr Gunther August Wolters Muhl	0834605797@mtnloaded.co.za
180/3	Goedgeloof		
83/10	Vlakplaats	Mr Hennie Boshoff (Lam Boerdery Trust)	hennie@sizamekaar.co.za
83/9	Vlakplaats	Mr Lourens Greyling (Baltus Spruit Eiendomme Cc)	lourens@crazyweb.co.za
66/7	Grootvlei		
83/5	Vlakplaats		
66/0	Grootvlei	Mr Moshaedi Hendry Motloung	
66/12	Grootvlei	Mr Gert Willem Hanekom	gwhanekom@gmail.com
66/13	Grootvlei	Mr Christopher Subonelo Sibisi	chris.sibisi@sasol.com
150/3	Spartelspruit	Mr TL Mnguni (Siyanqobaazwelethu Community Trust)	mngunis@live.com

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Grid Connection Landowners			
Farm Number/Portion	**Farm Name**	**Name**	**Email**
119/5	Roodekoppe		
119/4	Roodekoppe		
66/6	Grootvlei		
83/8	Vlakplaats		
119/2	Roodekoppe	Ulrich Gevers	rugevers@crazyweb.co.za
119/7	Roodekoppe		
119/16	Roodekoppe	Eskom Finance Co Pty Ltd	

WEF ADJACENT LANDOWNERS			
Farm Number/Portion	**Farm Name**	**Name**	**Email / Contact details**
17064	Stuurmanskraal	Mr Inus Davel (Davelshoek Trust)	inusdavel@gmail.com
160/3	Twijfelfontein	Mr Graystock Rudolf Naude	082 802 1248
17071/4	Tigerfontein		
17069/3	Bloedrivier	Mr Robert Stannard	info@waterloofarm.co.za
17069/2	Bloedrivier		
17069/4	Bloedrivier		
17069/10	Bloedrivier		
78/2	Blaauwstroom	Blaauwstroom Trust	PO Box 477 Utrecht, 2980
78/3	Blaauwstroom		
159/1	Vryheid		
107/2	Vergenoegd	Mr Johannes Davel	082 655 9099
107/3	Vergenoegd		
122/RE	Weltevreden	Ms Susanna Margaretha Hunter	Agstestraat 100, Orange Grove, Johannesburg, 2119
122/2	Weltevreden	Government of South Africa	
123/7	Holdkrans		
152/12	Groothoek	Mr Hennie Boshoff (LAM Boerdery Trust)	hennie@sizamekaar.co.za

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WEF ADJACENT LANDOWNERS			
Farm Number/Portion	**Farm Name**	**Name**	**Email / Contact details**
173/3	Waaihoek	Waaihoek Community Trust Mr Job Dube Mr Greyling	jdube@worldonline.co.za
173/4	Waaihoek		
173/5	Waaihoek		
173/12	Waaihoek		
173/13	Waaihoek		
160/1	Twijfelfontein		
160/2	Twijfelfontein		
17274/RE	Gumtree Grove		
122/1	Weltevreden	Mr Willem Adriaan Human	034 9221790
177/RE	Goede Hoop		
177/1	Goede Hoop		
177/2	Goede Hoop	Mr Moses Mahlinza	084 515 4956
177/7	Goede Hoop		
177/5	Goede Hoop	Mr Craig de Oliviera (Counterpoint Trading 402 BK)	crossmaloof@gmail.com; eastwoodfarming@yebo.co.za
177/8	Goede Hoop	Mr William Peter Fogarty	923 Florianne Street, Pretorius Park, Pretoria, 0081
180/2	Goedeloof	Mr Nhlanhla Nhleko (Masibambani Communal Land)	073 372 3119
150/RE	Spartelspruit	Mr Koot Smit (Spartelspruit Trust)	pjclaassen@polka.co.za
182/RE	Weltevreden	Mr Koos Uys (Jurust EDMS BPK Pty Ltd)	jjuys@telkomsa.net
424/1	Gumstreespruit	Mr Jan Harm Steenkamp	Stoney@tiscali.co.za
177/4	Goede Hoop	Mr Andries de Villiers	082 334 1877
434	Rusthof		
152/6	Groothoek		
435/RE	Oldeani	Mr Dieter Louis Muhl	oldeani@webmail.co.za

WAAIHOEK WEF REGISTERED I&APS		
Stakeholder	**Name**	**Email**
Endangered Wildlife Trust	Mr Bradley Gibbons	bradleyg@ewt.org.za

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WAAIHOEK WEF REGISTERED I&APS		
Stakeholder	**Name**	**Email**
Leads 2 Business	Ms Bianca Torré	BiancaT@L2B.co.za
Ngcobo Bros. Property Holdings C.C	Mr G Usher	garyusher@lantic.net
Ngcobo Bros. Property Holdings C.C	Mr LM Ngcobo	079 032 5172
Independent	Mrs AJ Mans	ajmans@mweb.co.za
McCarthy Cruywagen Attorneys	Mr Dennis McCarthy	mac@mcatt.co.za
Naudé Boerdery	Mr GR Naudé	naudeboerdery999@gmail.com
Richardson & Peplow Environmental	Ms Kate Richardson	ejrichardson@worldonline.co.za
South African Local Government Agency	Mr B Nkontwana	bnkontwana@salga.org.za
Consolidated Power Maintenance (Pty) Ltd	Mr Thembinkosi Shongwe	Thembinkosi.Shongwe@concogrp.com
Leads 2 Business	Bianca Warwick	biancaw@l2b.co.za

I&AP SMS DATABASE			
180/1	Goedgeloof	Mr Charles Johan de Villiers	082 334 1877
160/3	Twijfelfontein	Mr Graystock Rudolf Naude	082 802 1248
17071/4	Tigerfontein		
107/2	Vergenoegd	Mr Johannes Davel	082 655 9099
107/3	Vergenoegd		
177/2	Goede Hoop	Mr Moses Mahlinza	084 515 4956
177/7	Goede Hoop		
180/2	Goedeloof	Mr Nhlanhla Nhleko (Masibambani Communal Land)	073 372 3119
177/4	Goede Hoop	Mr Andries de Villiers	082 334 1877
434	Rusthof		
152/6	Groothoek		
83/6	Vlakplaats	Mr Andries De Villiers	082 334 1877
66/0	Grootvlei	Mr Moshaedi Hendry Motloung	082 471 1881

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I&AP SMS DATABASE			
180/1	Goedgeloof	Mr Charles Johan de Villiers	082 334 1877
66/0	Grootvlei	Mr Moshaedi Hendry Motloung	082 471 1881
83/2	Vlakplaats	Ms Annie Jacoba Mans	083 443 9883
61/2	Waterhoek	Mr Cornelis Moll	0829462241
152/9	Groothoek	Ms Nelisiwe Elsie Dhlamini	083 528 9429
53/4	Wydgelegen	Mr Johannes Adam Wilken	083 282 6437
107/5	Vergenoegd	Mr Johannes Davel	082 655 9099
107/6	Vergenoegd		
6/1	Hammar		
6/2	Hammar		
66/RE	Grootvlei	Mr Moshaedi Hendry Motloung	082 471 1881
66/10	Grootvlei	Mr Nicolaas Smuts	083 661 0816
66/16	Grootvlei		
124/12	Klipspruit	Mr Pieter Breytenbach	082 419 0034
86/1	Zoetmelksrivier	Ms Senta Klingenberg	082 652 3782
124/RE	Klipspruit	Mr Thomas Frederick Klopper	084 4680625
160/3	Twijfelfontein	Mr Graystock Rudolf Naude	082 802 1248
17071/3	Tigerfontein		
180/5	Goedeloof	Mr Pieter Carel Hanekom	083 631 9747
17071/1	Tigerfontein	Ms Cornelia Albertha Johanna Hatting	082 859 4857
17071/2	Tigerfontein		
		Mr LM Ngcobo - Ngcobo Bros. Property Holdings C.C	079 032 5172

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APPENDIX F: COMMENT & RESPONSE REPORT (CRT)

THIS SECTION WILL BE UPDATED ONCE THE WAAIHOEK BESS DRAFT BAR HAS UNDERGONE PUBLIC REVIEW FOR A 30-DAY PERIOD.

Initial Notification: Notification of EA Application process and notification of availability of the Draft BAR for public review.		
Date	Consultant	Notification
13.11.2020 Email Notification	CES- Caryn Clarke	*Dear Stakeholder and I&APs,* *This notification serves to inform you of the intention to submit an application for Environmental Authorisation (EA) to National DEFF for the proposed Waaihoek Battery Energy Storage System (BESS) and reservoir, associated with the Waaihoek Wind Energy Facility (WEF) and Powerline, located south-east of Utrecht, previously authorized under the 2010 and 2014 EIA Regulations (DEFF ref: 14/12/16/3/3/2/655 and 14/12/16/3/3/2/654). The proposed development is located south of Utrecht, in the eMadlangeni Local Municipality, Amajuba District Municipality, KwaZulu Natal Province. Please refer to the attached Letter of Notification and Background Information Document (BID) for more information regarding the proposed development.* *This email also serves to notify you of the availability of the Draft Basic Assessment Report (BAR) for the proposed Waaihoek BESS and reservoir for a 30-day public review period commencing on the 13 November 2020 until the 13 December 2020.* *An electronic copy of the Draft BAR can be downloaded from the CES website at: http://www.cesnet.co.za/proposed-waaihoek-battery-energy-storage or requested via the contact details provided below.* *For more information or submission of written comments on the Draft BAR, please contact by post, phone, fax or e-mail, as provided below:* *Attention: Ms Caryn Clarke* *Postal: PO Box 8145, East London, 5214;* *Tel: 087 830 9804; Fax: 086 410 7822* *E-mail: c.clarke@cesnet.co.za*
13.11.2020	CES- Caryn Clarke	*Dear Stakeholders, this serves to notify you of the intention to submit an application for Environmental Authorisation to National DEFF for the proposed Waaihoek Battery Energy Storage System (BESS) and water reservoir, associated with*

Initial Notification: Notification of EA Application process and notification of availability of the Draft BAR for public review.		
Date	Consultant	Notification
SMS Notifications		*the authorized Waaihoek Wind Energy Facility (WEF). Please note that the Waaihoek BESS & reservoir Draft Basic Assessment Report is available for 30day public review from 13 Nov – 13 Dec 2020, which can be accessed online at: http://www.cesnet.co.za/public-documents . Regards, Caryn Clarke (c.clarke@cesnet.co.za / 087 830 9804).*

I&AP comments during 30-day public review period			
Date	I&AP	I&AP Comment	CES Response
TO BE UPDATED AFTER THE COMPLETION OF THE 30-DAY DRAFT BAR PUBLIC REVIEW PERIOD			

AUTHORITY PRE-APPLICATION MEETINGS		
Date	Authority	Meeting Minutes
13.10.2020	DEFF	Refer to the DEFF Pre-Application Meeting Minutes provided below

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DEFF PRE-APPLICATIION MEETING MINUTES:

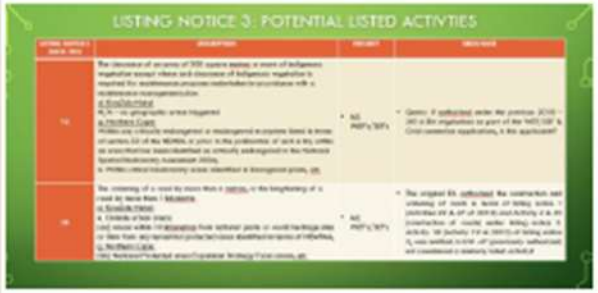
Meeting record

Project number	0	Meeting date	2020-10-13
Project name	Proposed Mainstream BESS BARs	Recorded by	AS
Meeting/subject	Pre-Application Meeting	Total pages	5

Present	Apology	Copy	Name	Organisation	Contact details
☑	☐	☐	Andrea Siebritz (AS)	Zutari	Andrea.Siebritz@Zutari.com
☑	☐	☐	Patrick Killick (PK)	Zutari	Patrick.Killick@Zutari.com
☑	☐	☐	Caryn Clarke (CC)	CES	c.clarke@cesnet.co.za
☑	☐	☐	Liandra Scott-Shaw (LSS)	SiVest	LiandraS@sivest.co.za
☑	☐	☐	Stephan Jacobs (SJ)	SiVest	StephanJ@sivest.co.za
☑	☐	☐	Rebecca Thomas (RT)	Mainstream	Rebecca.Thomas@mainstreamrp.com
☑	☐	☐	Eugene Marais (EM)	Mainstream	Eugene.Marais@mainstreamrp.com
☑	☐	☐	Rafeeqah Kamish (RK)	Mainstream	Rafeeqah.Kamish@mainstreamrp.com
☑	☐	☐	Adre Taillard (AT)	Mainstream	Adre.Taillard@mainstreamrp.com
☑	☐	☐	Jay Jay Mpelane (JM)	DEFF	JMpelane@environment.og.za
☑	☐	☐	Constance Musemburi (CM)	DEFF	CMusemburi@environment.gov.za
☑	☐	☐	Azrah Essop (AE)	DEFF	AEssop@environment.gov.za
☑	☐	☐	Lerato Mokoena (LM)	DEFF	LMokoena@environment.gov.za

No	Slide	Person	Comment
1		CC	Welcomed everyone to the meeting.
			Each Individual introduced themselves.
2		CC	Presented on the objectives of the meeting and the discussion topics.
3		CC	Presented the project description.

No	Slide	Person	Comment
4		CC	Presented the potential listed activities for the Basic Assessment Process being undertaken
		CC	Questioned if LN1: Activity 1 should be applied for, is the Battery Energy storage associated with the generation of electricity.
		CM	It is difficult to confirm at this time because we don't have all the information which we will see in the draft reports. We can discuss the activity, but we cannot confirm if it is applicable. Once we receive the Draft Bar, we will provide comment on the listed activities.
		CC	Stated her understanding is that the BESS is storage of energy not the generation thereof, but this needs to be confirmed by DEFF.
		AE	There is a current query with IQ regarding these types of questions, I will send it through to you to see if it answers any of your questions.
		RT	Stated that it must be remembered the BESS is being added to the renewable facility that already has this listed activity, so do we need to know if these activities need to be authorized again.
5		LSS	Reiterated that the wind facilities received authorization already. The listed activities were included in the original Environmental Authorisation. The BESS is associated with wind energy facility therefore would it be required for activity 1 or 11 to be reapplied for or are they covered in the previous listed activities that have been approved already.
		JM	Answered that the BESS was not part of the original assessment, therefore the listed activities for the BESS must be identified and applied for.
		CC	Used the example of clearance of vegetation. It was approved for the development footprint and stated that the BESS falls within in the same footprint. Will the previous authorization cover the clearance of vegetation for the BESS or is there a need to reapply?
		JM	The clearance of vegetation that was applied for previously was not meant for the storage facility. He suggested that all related activities should be applied for and elaborated that listed activities cannot be confirmed at this stage, Comments will be provided once the draft reports are submitted.
		CM	There is currently an IQ query regarding a BESS, but it is linked to an Eskom powerline. The IQ response was if it is just a BESS facility to be added onto an existing development that was approved already, that facility it will not trigger generation of electricity. However, we are not sure with regards to wind energy facilities. She suggested before an application is submitted, a scenario should be submitted to IQ to confirm which activities are triggered.
		CC	Confirmed that will be done.
		PK	Regarding Activity 11, the BESS will be located adjacent to the substation with a small interconnector powerline connecting it. Would the small connector (for eg less than 100m) trigger this activity?
6		CC	Stated that there is an exclusion for anything less thank 2km in length. The understanding is that it would not be applicable if the threshold are not exceeded.

No	Slide	Person	Comment
		AE	Confirmed if the length is shorter than the threshold it is part of the exclusion. Look at thresholds and confirm if it triggers. It is difficult for DEFF to confirm at this stage.
		CC	Stated in previous communications with DEFF it was understood that the Listed activity 14: storage of dangerous goods is dependent on battery type. She added that solid state batteries in containers are likely not to trigger but the redox flow with electrolyte storage tanks may trigger. She asked if DEFF can provide comment on the storage of dangerous goods.
		AE	Responded that she noticed in the Public Participation Plan (For the project that she was assigned) that for the activity it only mentions the storage of dangerous goods. It must be proven without a doubt that at any stage of the Lifecyle of the BESS (assembly, operation and decommission), it will not trigger. It must be motivated that it won't be triggered.
		CM	Stated the department has no comment at the moment with regards to that.
7		CC	Presented on the Risk Assessment Matrix and asked for feedback from DEFF if the understanding of how this should be handled is correct.
		CM	Stated the department has no comment at the moment with regards to that.
		CC	Clarified if the department has discussed a standardized approach for the high level battery types, or should the consultants assess it and use their own methodologies and put it forward that way.
		LM	Responded that he is not aware of any standardized approach.
		PK	Stated that the EAPs would like to include in the report all the information required by DEFF. He continued to say that if specialist are required this needs to be done prior to the report being submitted so confirmation on this matter is needed. Should the EAP do the assessment or should it be outsourced to a specialist. He added that in a different application Muhammed has indicated that the EAP can do the assessment.
		CC	Agreed that her understanding is that the EAP can undertake the assessment but the actual management plans that is recommended or needed must be done by the relevant specialist.
		JM	Stated that there are no comments at the moment regarding this.
		AE	Suggested that everything be confirmed through IQ
8		CC	Stated that the PP Plan was submitted with the Pre-app forms and asked if the department is happy with the approach.
		EA	Stated the PP Plans have been received. The department will approve the plans via email.

No	Slide	Person	Comment
9		CC	Presented on the specialist studies.
		AE	Mentioned that the minimum age of specialist's studies are 3-5 years. If the specialist were recently on site a letter would be accepted. The original study should also be included, along with the letter.
		CC	Confirmed the original reports will be included. She further questioned if the studies are older than 5 years will a letter not be accepted or do the studies need to be redone.
		AE	Stated the Environment changes in 5 years but it depends on the areas. If the site is in a remote are with harsh conditions, it is unlikely that the environment has changed. The specialist would need to confirm and motivate why only a letter is submitted but we would advise against it.
		CC	Responded that the EAPs will rely on the specialist to make the call.
10		CC	Stated that queries will be submitted to IQ and the Minutes will be circulated for approval.
			ALL EAPs and Client confirmed there are no further questions.
		CC	Thanked all for participating.

APPENDIX G: DEFF SCREENING TOOL REPORT

(SEPERATE ATTACHEMENT)

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