LATRODEX WIND ENERGY FACILITY

ECOLOGICAL IMPACT ASSESSMENT

PREPARED FOR:

Latrodex (Pty) Ltd

PREPARED BY:

Big Thorn Environmental

In association with

Biodiversity Africa

APRIL 2022

The contents of this specialist report complies with the legislated requirements as described in the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (GN R. 320 of 2020).

SPECIALIST REPORT REQUIREMENTS ACCORDING TO GN R. 320			SECTION OF REPORT
3.1	The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:		
	3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page 3
	3.1.2	A signed statement of independence by the specialist;	Page 5
	3.1.3	A statement of the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2.3
	3.1.4	A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Section 2
	3.1.5	A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Section 1.4
	3.1.6	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Section 7
	3.1.7	Additional environmental impacts expected from the proposed development;	Section 8
	3.1.8	Any direct, indirect and cumulative impacts of the proposed development;	Section 8
	3.1.9	The degree to which the impacts and risks can be mitigated;	Section 8
	3.1.10	The degree to which the impacts and risks can be reversed;	
	3.1.11	The degree to which the impacts and risks can cause loss of irreplaceable resources;	
	3.1.12	Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Section 9
	3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a “low” terrestrial biodiversity sensitivity and that were not considered appropriate;	N/A
	3.1.14	A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	Section 9.3
	3.1.15	Any conditions to which this statement is subjected.	Section 9
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.		✓
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.		✓

Authors

Dr Greer Hawley (Author and Environmental and Botanical Specialist) (*Pr.Sci.Nat: 400321/14*)
Dr Greer Hawley completed her BSc degree in Botany and Zoology and a BSc Honours in Botany from the University of Cape Town in 1998 and 1999, respectively. She completed her PhD (Microbiology) at Rhodes University in 2007. Greer's core academic focus has been in the field of taxonomy both in the plant and fungal kingdom although her research experience is diverse, ranging from fresh water and marine algae, estuarine diatoms, plant species classification and fungal species identification and ecology. Greer was employed at Coastal and Environmental Services (CES) for over 13 years where she was involved with, and managed, many projects ranging from:
1) Environmental impact assessments in the aquaculture, waste and renewable energy sectors;
2) Biodiversity impact assessments and biodiversity management projects in South Africa, Sierra Leone, Mozambique, Eswatini and Malawi;
3) Catchment-based mapping and management plan for climate change adaptation (Malawi) and alien invasive plants (Buffalo City Metro); and
4) Environmental Planning projects such as Environmental Management Frameworks, Strategic Environmental Assessments and Environmental Management Plans.

More recently, Greer has become involved with biodiversity planning projects where she managed the review of the gazetted Eastern Cape Biodiversity Conservation Plan (2019) and the revision of the City of Ekurhuleni Bioregional Plan (2020/2021). Through these and the above-mentioned projects, Greer has demonstrated successful co-ordination and management of multi-faceted projects with large teams, meeting deadlines and ensuring the production of high quality deliverables. Stakeholder engagement is a core function in all these projects.

Ms Tarryn Martin (Reviewer: Botanical Specialist) (*Pri. Sci. Nat* 008745)
Tarryn has over ten years of experience working as a botanist, nine of which are in the environmental sector. She has worked as a specialist and project manager on projects within South Africa, Mozambique, Lesotho, Zambia, Tanzania, Cameroon, Swaziland and Malawi. The majority of these projects required lender finance and consequently met both in-country and lender requirements.

Tarryn has extensive experience writing botanical impact assessments, critical habitat assessments, biodiversity management plans, biodiversity monitoring plans and Environmental Impact Assessments to International Standards, especially to those of the International Finance Corporation (IFC). Her experience includes working on large mining projects such as the Kenmare Heavy Minerals Mine, where she monitored forest health, undertook botanical impact assessments for their expansion projects and designed biodiversity management and monitoring plans. She has also project managed Environmental Impact Assessments for graphite mines in northern Mozambique and has a good understanding of the Mozambique Environmental legislation and processes.

Tarryn holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and an MSc with distinction in Botany from Rhodes University. Tarryn's Master's thesis examined the impact of fire on the recovery of C3 and C4 Panicoid and non-Panicoid grasses within the context of climate change for which she won the Junior Captain Scott-Medal (Plant Science) for producing the top MSc of 2010 from the South African Academy of Science and Art as well as an Award for Outstanding Academic Achievement in Range and Forage Science from the Grassland Society of Southern Africa.
Tarryn is a professional member of the South African Council for Natural Scientific Professionals (since 2014).

Ms Amber Jackson (Reviewer: Faunal Specialist) (*Cand. Nat. Sci)*

Amber has over ten years' experience in environmental consulting and has managed projects across various sectors including mining, agriculture, forestry, renewable energy, housing, coastal and wetland recreational infrastructure. Most of these projects required lender finance and therefore met both in-country, lender and sector specific requirements.

Amber completed the IFC lead and Swiss funded programme in Environmental and Social Risk Management course in 2018. The purpose of the course was to upskill Sub-Saharan African environmental consultants to increase the uptake of E&S standards by Financial Institutions.

Amber specialises in terrestrial vertebrate faunal assessments. She has conducted large scale faunal impact assessments that are to international lender's standards in Mozambique, Tanzania, Lesotho and Malawi. In South Africa her faunal impact assessments comply with the protocols for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity and follows the SANBI Species Environmental Assessment Guideline. Her specialist input goes beyond impact assessments and includes faunal opportunities and constraints assessments, Critical Habitat Assessments, Biodiversity related Management Plans and Biodiversity Monitoring Programmes.

Amber holds a BSc (Zoology and Ecology, Environment & Conservation) and BSc (Hons) in Ecology, Environment & Conservation from WITS University and an MPhil in Environmental Management from University of Cape Town. She was awarded the Denzil and Dorethy Carr Prize for her plant collection in 2006. Amber's honours focused on the landscape effects on Herpetofauna in Kruger National Park and her Master's thesis focused on the management of social and natural aspects of environmental systems with a dissertation in food security that investigated the complex food system of informal and formal distribution markets.

Declaration of Independence

Greer Hawley: Botanical Specialist – Field Survey and Reporting

- I, Greer Hawley, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;
- I act as the independent specialist in this application;
- 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 declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, 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 have no, and will not engage in, conflicting interests in the undertaking of the activity;
- 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;
- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

……. ……

SIGNED DATE

Tarryn Martin: Botanical Specialist - Reviewing

- I, Tarryn Martin, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;
- I act as the independent specialist in this application;
- 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;
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- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

…….. ……

SIGNED DATE

Amber Jackson: Faunal Specialist - Reviewing

- I, Amber Jackson, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;
- I act as the independent specialist in this application;
- 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;
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SIGNED DATE

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Non-technical summary

Latrodex (Pty) Ltd propose to install and operate a 5-turbine wind energy facility (WEF) on Farm 456 and 459, north of Marshstrand in the Eastern Cape Province. Ancillary infrastructure associated with the Latrodex WEF includes the following:

- Cabling between the project components, to be lain underground where practical;
- Grid connections for the evacuation of power;
- Internal access roads; and
- A workshop area for maintenance and storage (existing buildings located on the site will be utilised)

Latrodex are also proposing the construction of a 22kVA overhead powerline to either of two alternative substations, Chaba Substation in the west and Rivermouth Substation to the north, via five potential alternative routes.

ECBCP (2019) and management objectives

The Latrodex WEF is located within a Critical Biodiversity Area 1, indicating the presence of an irreplaceable biodiversity feature(s) in the planning unit. The land use objective for CBA1s is to maintain the area in a natural state.

A detailed plant survey of the Latrodex WEF site indicates that the threatened plant species identified in the DFFE screening report and the ECBCP (2019) were not present on site. Further, the faunal species (excluding birds and bats) flagged as important are mostly forest dwelling species, which may be present in the riparian forest/thicket habitats in the surrounding landscape but which will not be impacted by the WEF. The Latrodex WEF will therefore not impact on the biodiversity features for which the CBA was mapped.

Threatened Species and Ecosystems

No threatened plant or faunal (excluding birds and bats) species were observed. None of the terrestrial or aquatic ecosystems associated with either the Latrodex WEF or any of the associated powerline alternatives are threatened.

Site Ecological Importance (SEI) and site sensitivity

The site was mapped into habitat/vegetation communities and assessed individually. The habitat assessment resulted in 'HIGH' and 'LOW' SEI scores. Where turbines and powerline routes impact on HIGH sensitive areas, recommendations to avoid these areas are provided **Site Ecological**

Impact Assessment

In line with best practice and the Species Environmental Assessment Guidelines (SANBI, 2021), the mitigation hierarchy (avoid, minimise impact, restore, offset) needs to be applied. The high rated impacts are associated with the establishment and spread of alien invasive plant species. Mitigation measures are also provided to minimise associated impacts and rehabilitate the area during construction, operation and decommissioning phases. Two of the powerline alternatives (the red and purple lines) that feed into the Rivermouth Substation were found to be associated with high sensitive areas were fatally flawed due to the impact on a Protected Area and forest.

Recommendations

This assessment recommends that the WEF and powerline alternatives avoid areas of HIGH sensitivity. This will require relocation of Turbine 1 and 2 and make minor realignments to powerlines. Mitigation

measures are also provided to minimise associated impacts and rehabilitate the area during construction, operation and decommissioning phases. Also, recommendations for minor powerline line re-alignments to avoid sensitive areas have been provided for the north and south alternative powerlines that evacuate power to the Chaba Substation and the Green powerline that evacuates to Rivermouth Substation.

Acronyms

CBA	Critical Biodiversity Area
CR	Critically Endangered
ECBCP	Eastern Cape Biodiversity Conservation Plan (2019)
EN	Endangered
EIA	Environmental Impact Assessment
LC	Least Concern
NBA	National Biodiversity Assessment (2018)
NEMBA	National Environmental Management Biodiversity Act
PNCO	Provincial Nature Conservation Ordinance
QDS	Quarter Degree Square
SANBI	South African National Biodiversity Institute
TOPS	Threatened and Protected Species
SCC	Species of Conservation Concern
VU	Vulnerable

Glossary

Alien Invasive Species refers to an exotic and invasive species that can spread rapidly and displace native species causing damage to the naturally occurring biodiversity and the environment.

Biodiversity is the term that is used to describe the variety of life on Earth and is defined as "*the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems*" (Secretariat of the Convention on Biological Diversity, 2005).

Protected Area is an area that has been proclaimed for the purposes of conservation and is recognised in terms of the National Environment Management Protected Areas Act.

Section 1. Introduction

1.1. Project description

Latrodex (Pty) Ltd (from now on referred to as Latrodex) propose to install and operate a 5-turbine wind energy facility (WEF) on Farm 456 and 459 (Figure 1.1). A detailed description of the capacity of the facility is provided in the table below.

Component	Specs/Capacity
Wind turbine unit size	3 MW max
Rotor diameter	90m max
Hub height	80m max
Blade tip height	125m max
Number of wind turbines	5 max
Total WEF capacity	15 MW max

Ancillary infrastructure associated with the Latrodex WEF includes the following:

- Cabling between the project components, to be lain underground where practical;
- Grid connections for the evacuation of power;
- Internal access roads; and
- A workshop area for maintenance and storage (existing buildings located on the site will be utilised)

Latrodex are also proposing the construction of a 22kVA overhead powerline to either of two alternative substations, Chaba Substation in the west and Rivermouth Substation to the north, via five potential alternative routes (Figure 1.2).

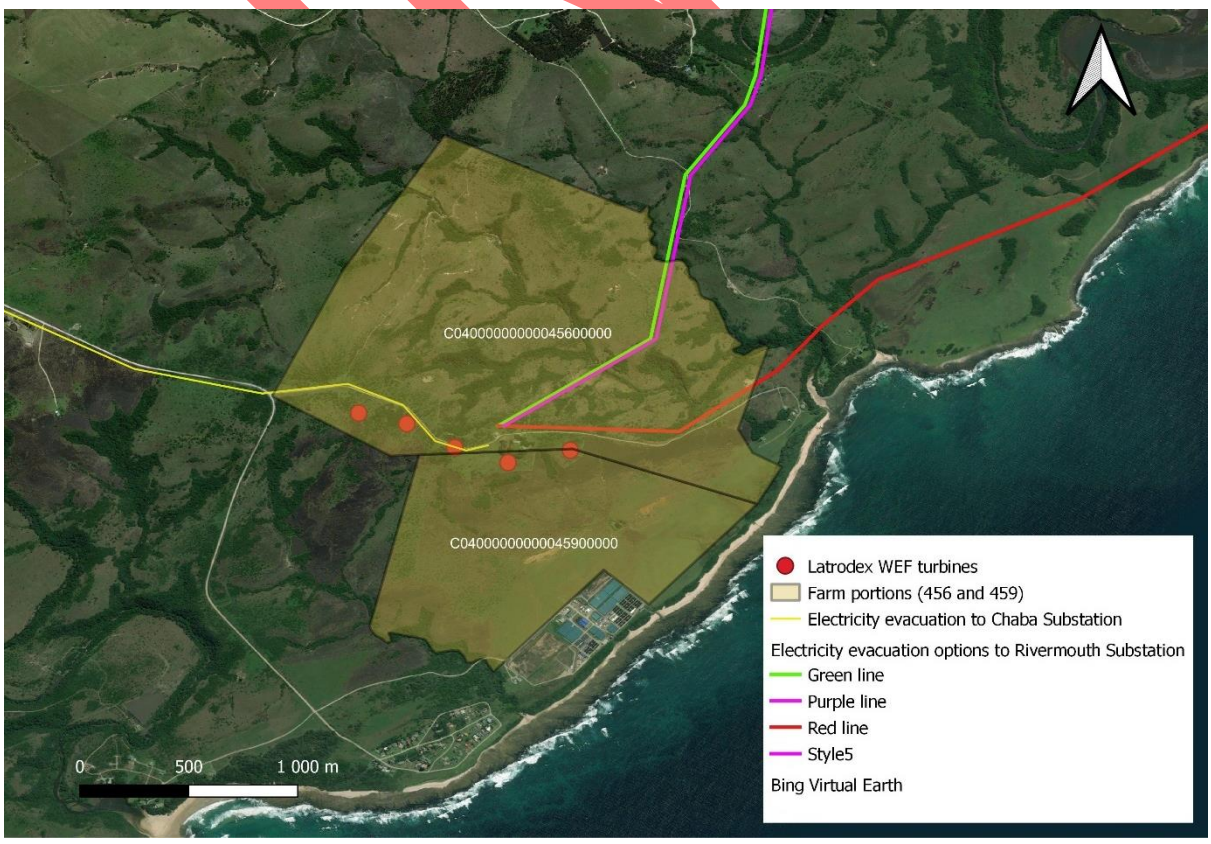

Figure 1.1 The proposed Latrodex WEF

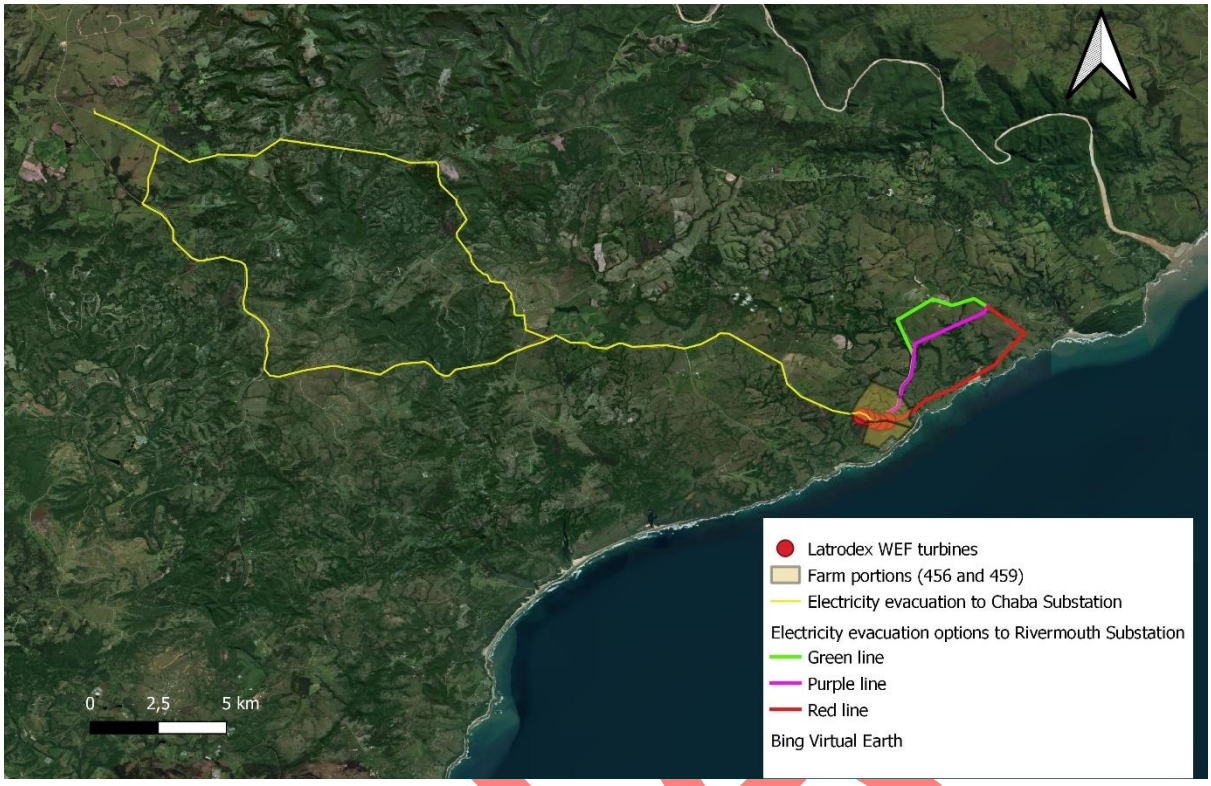

Figure 1.2 The proposed powerline route alternatives to evacuate excess electricity

1.2. Project locality and description of the surrounding area

The site is of the Latrodex WEF is located 1km north of the existing Wild Coast Abalone Facility, 1.4km north of Marshstrand, and 2.8km north-east of the town of Haga Haga (Figure 1.3). The surrounding landscape is predominantly rural engaged with agricultural activities. Access to the site is provided from the R349 arterial road to Kei Mouth, along Haga Haga Road, and then via a secondary road leading to Marshstrand and a servitude which leads to Fish Bay. The turbines are located along the servitude. Therefore, other than laydown areas and turning lanes, no additional road construction is anticipated.

Figure 1.3 Locality of Farm 459 and 456 north of Marshstrand, Eastern Cape Province.

1.3. Objectives and Tasks

The objectives of this project are to characterise the natural ecological resources in the project area of influence to assess the impact of the proposed development activity. To achieve this the study was guided by the Species Assessment Guidelines, and the relevant gazetted Protocols and included the following tasks:

1. Undertake a desktop assessment of the site to determine its sensitivity and species of conservation concern (SCC) that could be present within the site;
2. Undertake a field survey, to:
   - ✓ Record the species observed in the study area.
   - ✓ Identify the species that are either protected (TOPS and PNCO) or considered threatened (CR, EN, VU).
   - ✓ Assess the ecological condition of the site (i.e. intact, near natural, transformed).
3. Assess the sensitivity of each mapped community/ecosystem/habitat type using the sensitivity analysis approach outlined in the Species Environmental Assessment Guideline (2021);
4. In areas of moderate and high sensitivity, assess the impact that the development activity will have on the plant and faunal species and ecosystems present;
5. Where necessary, provide mitigation measures to reduce the impact of the infrastructure on the environment; and
6. Provide a specialist statement/opinion

1.4. Limitations and Assumptions

This report acknowledges the following limitations:

- The report is based on a project description received from the client.
- The site was surveyed twice: once at the end of winter during a period of prolonged drought (October 2018), and again after excellent rains (January 2022). The entire area around turbines were surveyed and therefore all comprehensively surveyed. Despite this, it is still possible that some plant species (such as early flowering geophytes) may not have been detected, although the probability of this is low.
- The powerline routes to Rivermouth Substation were not surveyed, but assessed at a desktop level. Authorisation of any route to this subsation will need to be micro-sited to ensure that any additional sensitive areas (not identified in this assessment) are avoided.
- This assessment does not include a comprehensive invertebrate survey, however comment on suitable habitat in the project area of threatened species is provided.
- The faunal component of the assessment was based on opportunistic observations during the brief surveys, and the combination of database models/recordings and the availability of suitable habitat. No trapping was undertaken.

Section 2. Approach

Since the approach to the Ecological Impact Assessment is determined by the outputs of the DEA (DFFE) Screening Tool and associated gazetted Protocols and Guidelines, the outputs of the Screening Report are provided below. Comment on each of the sensitivities flagged in the report are supplied in the table below and the approach to address each is described.

2.1. DFFE Screening tool

The sensitivity rating of the project area relevant to this ecological impact assessment resulting from the DEA Screening Tool report is summarised as follows:

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity	Comment	Approach to the assessment
Animal Species			X		Medium risk *Cercopithecus albogularis labiatus* (Samango Monkey) (EN) *Ourebia ourebi ourebi* (Oribi) (EN) Medium risk *Aslauga australis* and *Chrysoritis lyncurium*	Mammals were not surveyed, but comments on suitable habitat and likelihood of presence is provided. Invertebrates were not surveyed, but comments on suitable habitat and likelihood of presence is provided.
Aquatic Biodiversity				X		Hydrological specialist opinion letter to confirm.
Plant species			X		Medium risk Sensitive species 378 Sensitive species 319	Assessed in line with the Terrestrial Plant Species Protocol and Environmental Assessment Guideline.
Terrestrial Biodiversity	X				Critical Biodiversity Area 1 Focus Areas for land-based protected areas expansion	The relevant documents and plans were reviewed, and the condition of the project site assessed with respect to the management objectives of ECBCP 2019 (Terrestrial and Aquatic CBAs) and the priority focus areas of the ECPAES.

2.2. Desktop Assessments

A desktop assessment was undertaken to determine the ecosystem types that have been mapped for the project area and their threat status, identify potential species of conservation concern that might occur on site, and assess biodiversity conservation value of the site in terms of relevant plans. The known diversity of the vertebrate fauna in the project area was determined by a literature review. Species known from the region, or from adjacent regions whose preferred habitat(s) were known to occur within the study area, were also included. Key resources that were consulted include:

- The DFFE screening report for the site
- The South African Vegetation Map (Mucina and Rutherford, 2006-2018);

- The Eastern Cape Biodiversity Conservation Plan (2019);
- The Ecosystem Threat Status Assessment (SANBI, 2021);
- The Plants of Southern Africa (POSA) database; and
- Amphibians –FrogMap (ADU, 2021) and Atlas and Red List of Frogs of South Africa, Lesotho and Swaziland (Minter et al., 2004).
- Reptiles – Branch (1996), ReptileMap (ADU, 2021), Atlas and Red List of Reptiles of South Africa, Lesotho and Swaziland (Bates et al., 2014).
- Mammals – Stuart & Stuart (2014), MammalMap (ADU, 2021). Red List of Mammals of South Africa, Swaziland and Lesotho (EWT, XXX).
- Provincial Nature Conservation Ordinance NO. 19 OF 1974.
- NEM:BA 10 OF 2004 - and TOPS.
- CITES Appendix I and II.

A list of threatened plant and faunal species was compiled for the site and the likelihood of occurrence assessed for species listed as critically endangered, endangered and vulnerable (Section 5 &6).

2.3. Field Survey

A one day field survey was undertaken twice over a span of four years. The first was undertaken on 17 October 2018, at the end of the dry season and during a prolonged period of drought. The second survey was undertaken more recently on 28th January 2022. The purpose of the surveys was to assess the habitats and ecological condition within the project area of influence by recording:

- The vegetation cover and community/habitat types;
- All the plant and faunal species observed (both indigenous and alien invasive species);
- Sensitive ecosystems such as rocky outcrops, riparian areas or areas with species of conservation concern; and
- The condition of the ecosystems in terms of current and surrounding land uses of the site.

The survey route of the site is presented in Figure 2.1 below.

While the powerline route alternatives to the Chaba Substation have been driven, the powerline route alternatives to Rivermouth Substation have been assessed at a desktop level. For this reason, the precautionary approach was used to determine habitat sensitivity and inform recommendations.

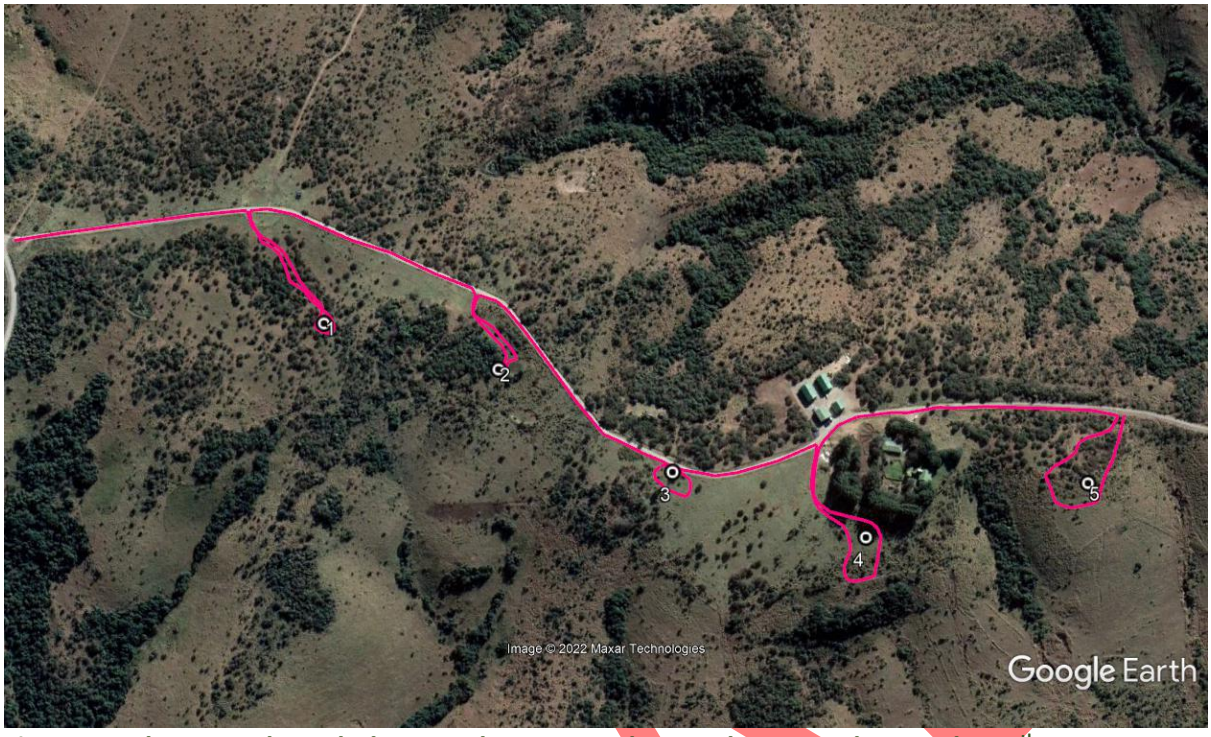

Figure 2.1 The route through the Latrodex WEF study area that was taken on the 28th January 2022.

2.1. Site Sensitivity Assessment

The approach to determine the Site Ecological Importance (SEI) in terms of both species and terrestrial habitat followed the Species Environmental Assessment guideline (SANBI, 2021). The habitats and the species of conservation concern in the project area were assessed based on their conservation importance, functional integrity and receptor resilience The method that was applied is summarised in Appendix A. The combination of these resulted in a rating of SEI and interpretation of mitigation requirements based on the ratings.

The sensitivity map was developed by using available spatial planning tools as well as applying the SEI sensitivity based on the field survey.

2.2. Approach to impact identification and assessment

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 by CES in accordance with the requirements outlined in Appendix 1 of the NEMA EIA Regulations (2014 and subsequent 2017 amendments). The details of this rating scale are included in Appendix B.

Section 3. Biophysical Description

3.1. Climate

The site is located 12 km south-west of Kei Mouth, which experiences mild winters (average low of 14.2°C in July) and warm, humid summers (average high of 25.7°C in February) (Figure 3.1a). Although most of the rainfall is experienced during the summer months, rain falls throughout the year (Figure 3.1b).

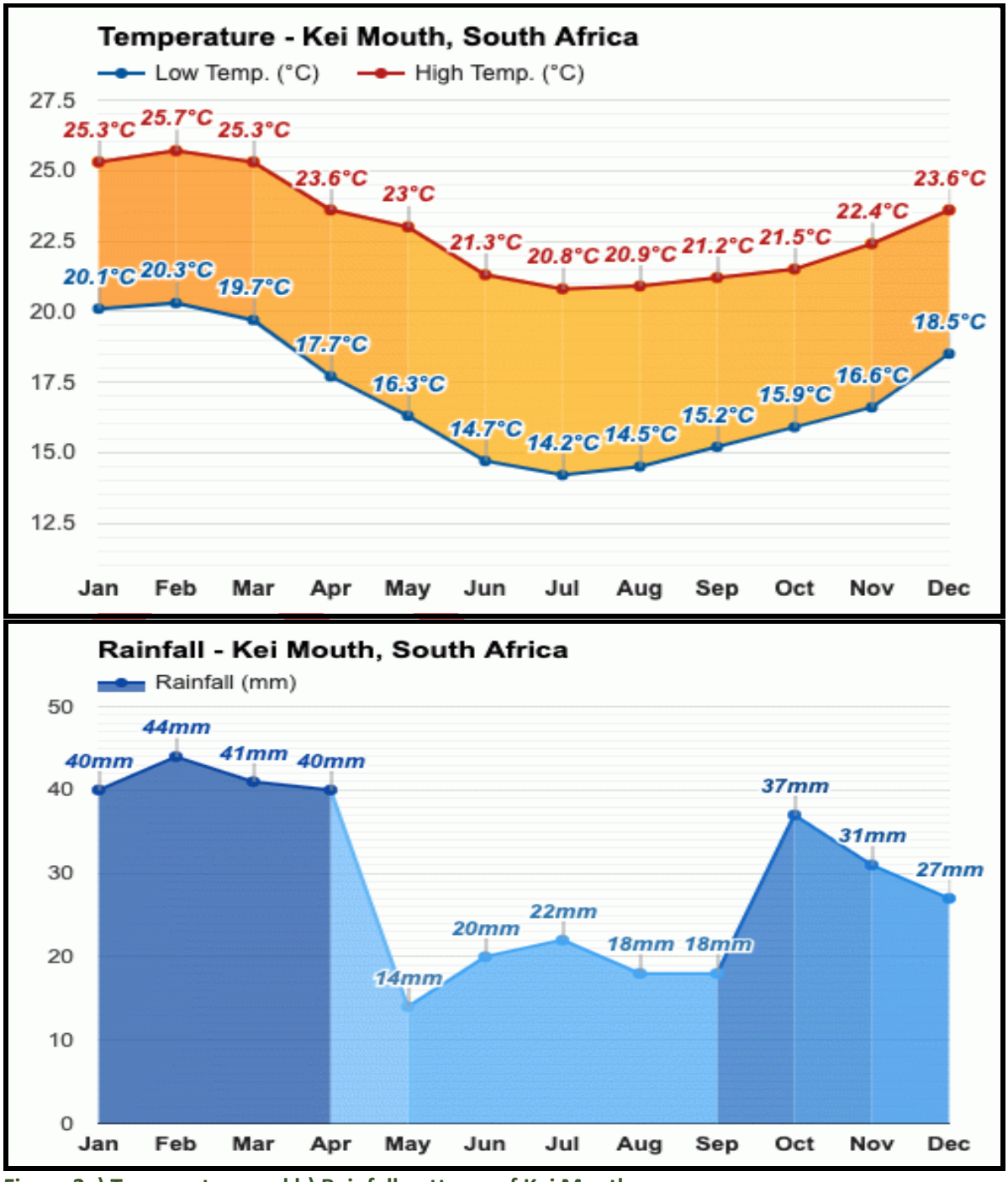

Figure 3a) Temperature and b) Rainfall patterns of Kei Mouth
Source: https://www.weather-atlas.com/en/south-africa/kei-mouth-climate

3.2. Geology and Soils

The geology of an area can influence the vegetation composition and structure and is therefore a factor that is considered when describing the vegetation type(s) and the species that is supports.

The geology underlying the project area is made up of the Middleton formation of the Adelaide Subgroup, Beaufort Group (Permian age) of the Karoo Supergroup (Figure 3.2). Dolerite dyke and sill intrusions into the sedimentary rock are common. The geology gives rise to a lithology that consists of brown-red to green-grey mudstones and subordinate siltstone and sandstone.

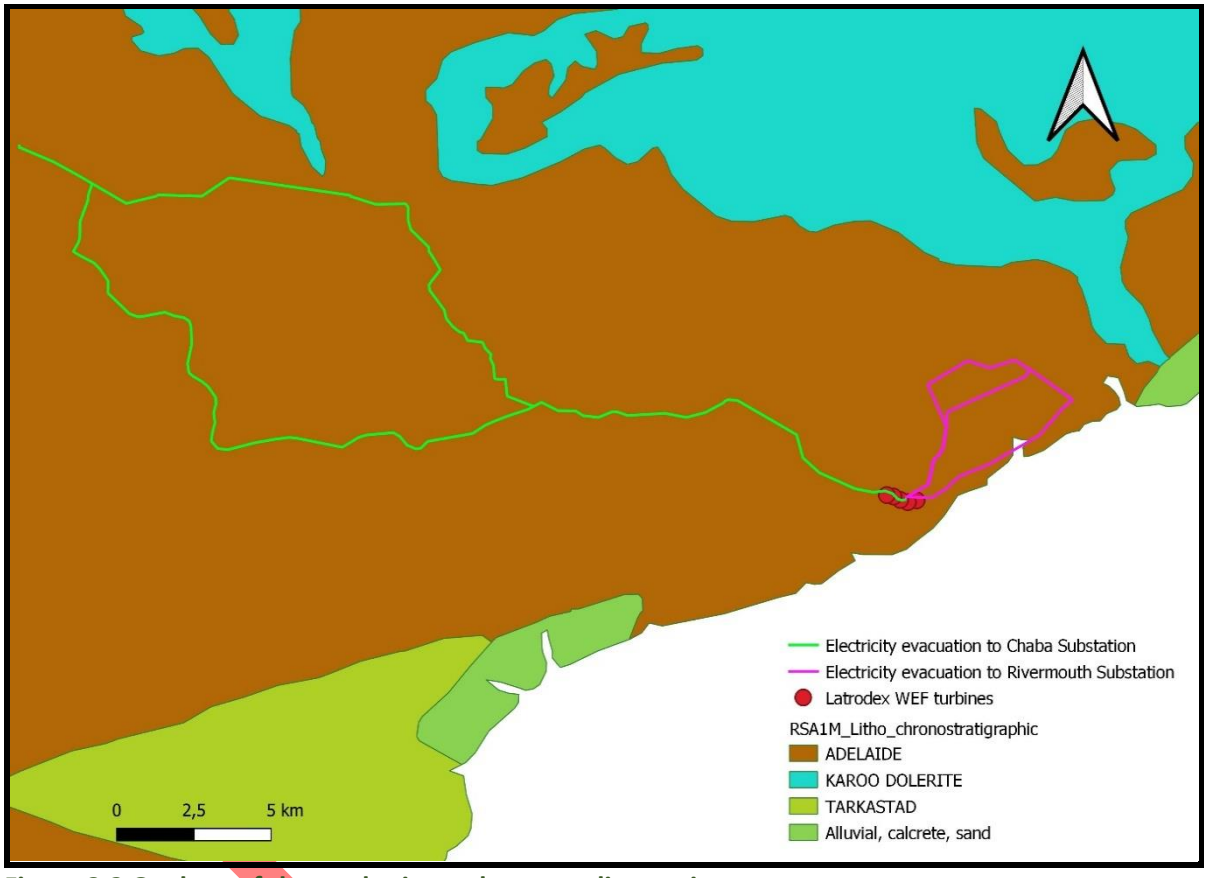

Figure 3.2 Geology of the study site and surrounding project area.
Source (Council for GeoScience: https://maps.geoscience.org.za/portal/apps/sites/#/interactivewebmap/search?collection=App%2CMap&groupIds=5a0cf76f52c64019b85c33134966deaa)

3.3. Hydrology

The Latrodex WEF is located along a ridge line which acts as a watershed between north-flowing and south-flowing non-perennial streams. The north-flowing streams drain in the Mtendwe River. The turbines are currently located south of the access road which fall within the catchment of the south-flowing streams. These streams drain into a) the small river that divides Wild Coast Abalone and Marshtrand and which discharges into the ocean and b) channels and dams that flow in an easterly direction into the ocean.

The powerline alternatives that are routed towards the Rivermouth Substation cross the Mtendwe and Quko Rivers, while the southern powerline alternative routed towards the Chaba Substation will

cross the Kwenxura River (the northern alternative does not cross any major water courses).

In terms of the National Biodiversity Assessment River threat status (2018), none of the mapped rivers are threatened.

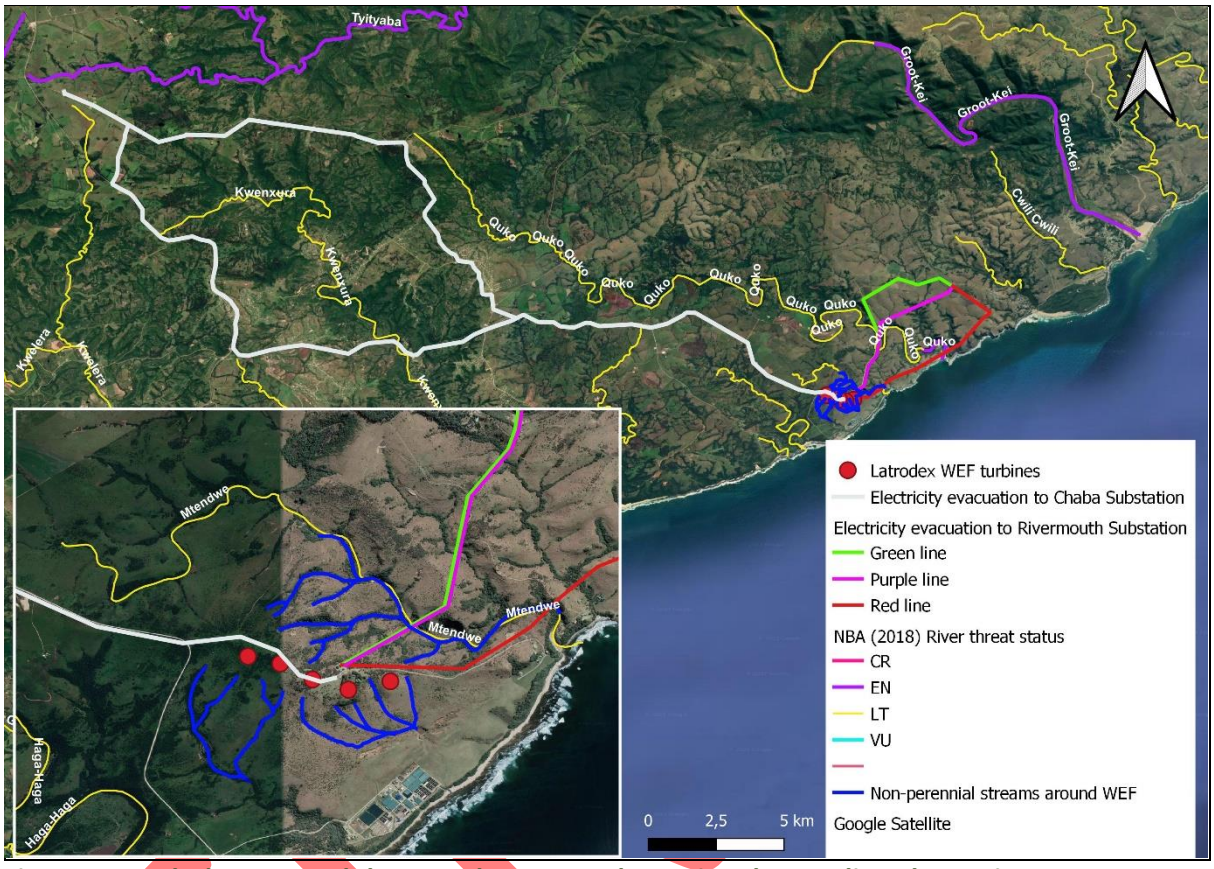

Figure 3.3 Hydrology around the Latrodex WEF and associated powerline alternatives.

3.4. Topography

The topography of Latrodex WEF is located along a ridge, which dips from west to east as the ridge descends to the ocean. The ridge is relatively flat (Figure 3.4).

The three (green, purple and red) powerline alternatives routed towards Rivermouth Substation run along the coast and traverse undulating hills and cuts through deeply incised river valleys (Figure 3.5).

The two powerline alternatives (north and south) that are routed towards Chaba Substation run inland along existing road networks starting at 112 m.a.s.l. and rising to 586 m.a.s.l. at Chaba Substation. As such the topography is varied, but mostly follows a gently ascending gradient (Figure 3.6).

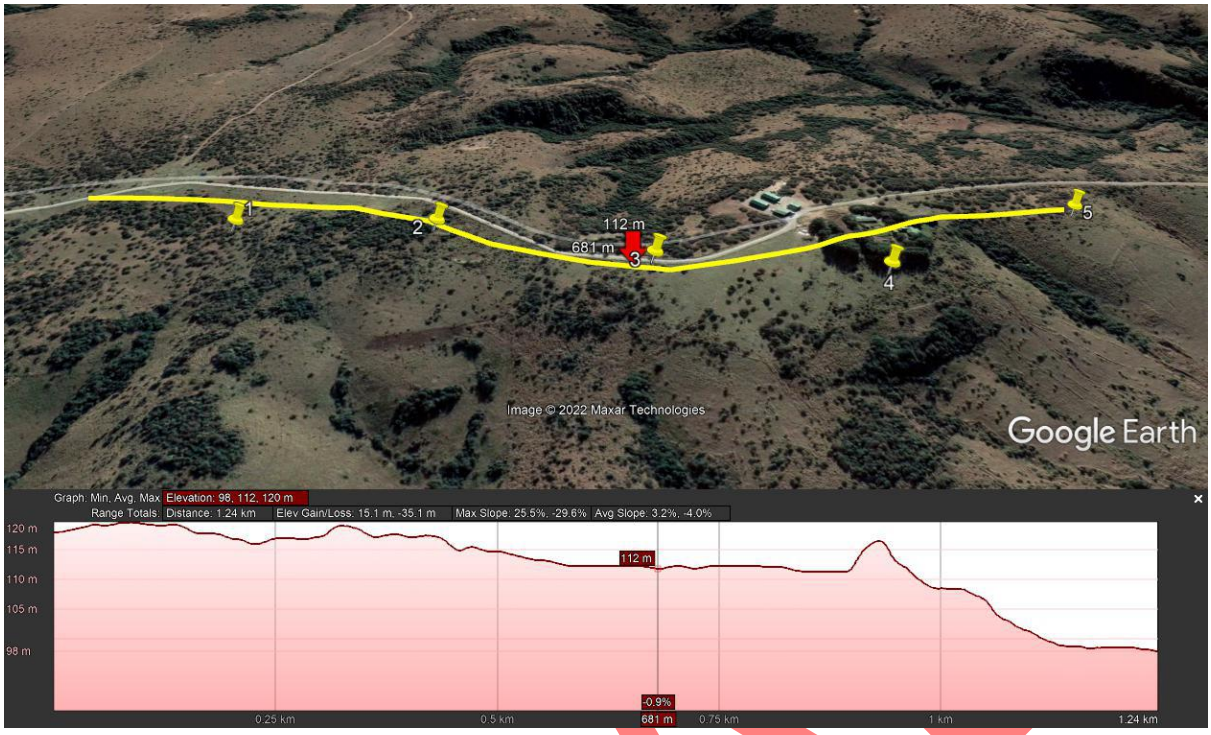

Figure 3.4 Topography of the Latrodex WEF.

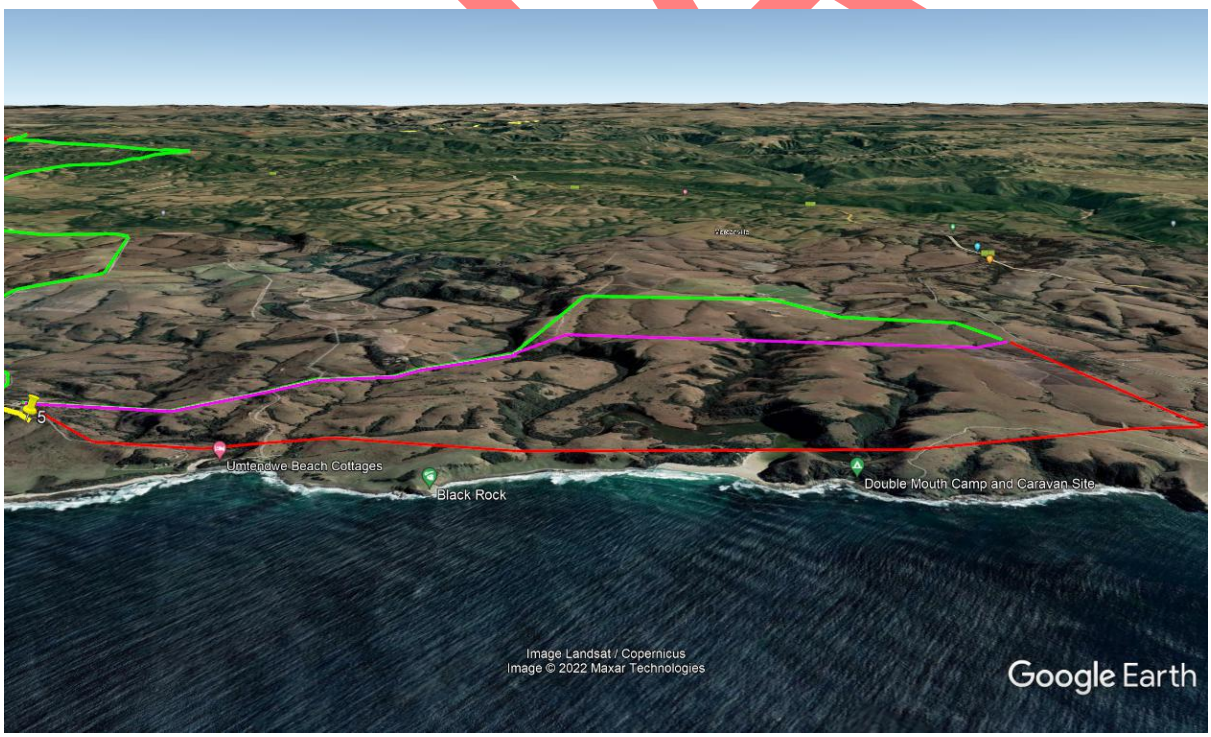

Figure 3.5 Topography of the Rivermouth Substation powerline alternatives.

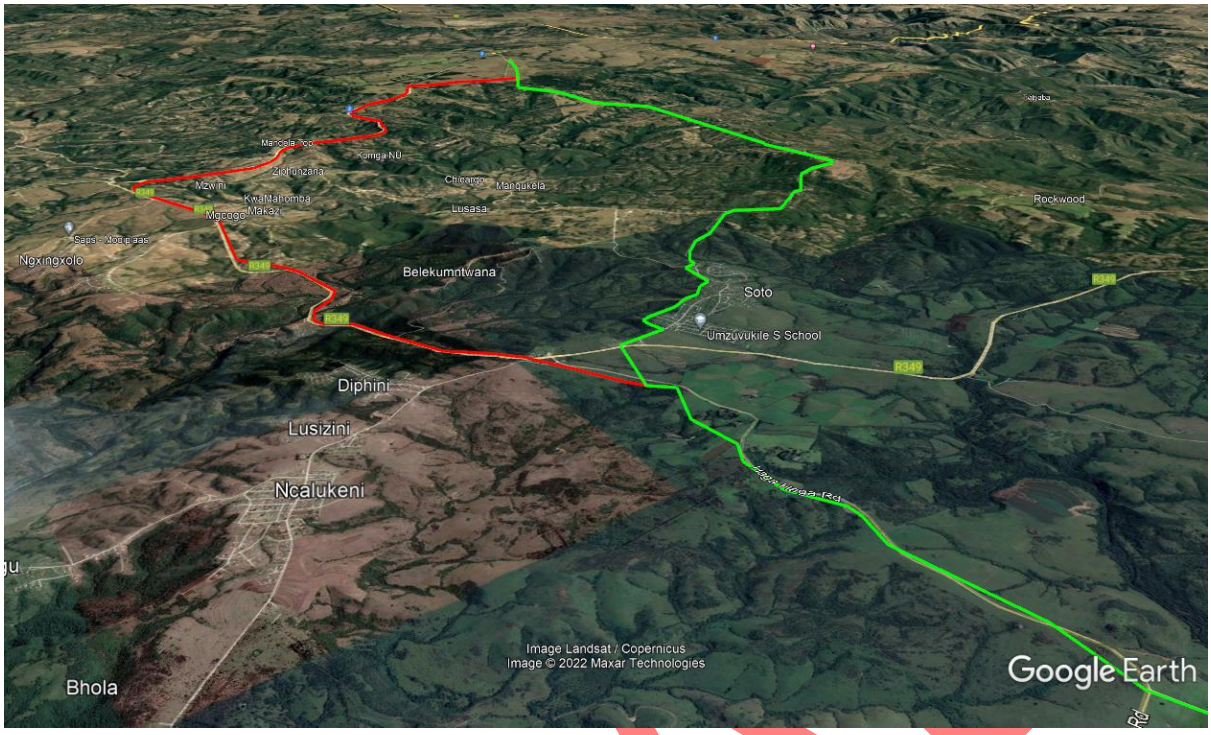

Figure 3.6 Topography of the Chaba Substation powerline alternatives.

Section 4. Biodiversity Planning and Terrestrial ecosystems

4.1. Eastern Cape Biodiversity Conservation Plan Terrestrial CBA map (2019)

The ECBCP (2019) replaces the ECBCP (2007) in its entirety and provides a map of important biodiversity areas, outside of the Protected Areas network, which must be used to inform land use and resource-use planning and decision making. The objectives of the ECBCP (2019) are to:

1) Identify the minimum spatial requirements needed to maintain a living landscape that continues to support all aspects of biodiversity and retain/maintain essential ecological infrastructure. This is achieved through the selection of areas, based on achieving targets, which represent important biodiversity pattern AND ecological processes;
2) Serve as the primary source of biodiversity information for land use planning and decision-making; and
3) Inform conservation and restoration action in important biodiversity areas.

The aim of the ECBCP (2019) was to map biodiversity priority areas through a systematic conservation planning process. The main outputs of the ECBCP include Protected Areas (PA), Critical Biodiversity Areas (CBA), Ecological Support Areas (ESA), Other Natural Areas (ONA) and No Natural Habitat Remaining (NNR) for both terrestrial and aquatic ecosystems.

CBAs are areas that have been "*selected to meet biodiversity targets for species, ecosystems and ecological processes"* (ECBCP, 2019). These areas are recognised as having an irreplaceable biodiversity value and as such must be maintained in a natural state with no further loss of habitat.

The land use objective of an ESA 1 is to "*Maintain ecological function within the localised and broader landscape. A functional state in this context means that the area must be maintained in a semi-natural state such that ecological function and ecosystem services are maintained*" (ECBCP, 2019). In addition, ESAs are areas that are not essential for meeting biodiversity targets but from a terrestrial perspective they are areas that are considered important for ensuring connectivity between CBAs. ESAs typically include riparian areas, coastal corridors and ridges. These areas must be maintained in a semi-natural state, although a natural state is preferable.

The Latrodex WEF study site is mapped as a CBA 1 area (Figure 4.1). The biodiversity features driving the CBA classification of the planning area in which the WEF is located includes the possible presence/use of the site by 4 threatened bird species, 1 threatened mammal species, 1 threatened amphibian species and 1 plant species. Comment on the likely/observed presence of biodiversity features within the actual footprint of the WEF facility is provided in Section 5 and 6. In terms of loss of CBA area within this planning unit, not more than 5ha will be lost. The significance of this will be assessed in the sensitivity analysis in Section 7.

The northern alternative of the Chaba Substation powerline runs through a patch of CBA1 area and along a Protected Area (Figure 4.1, red box). The terrestrial (non-avian) biodiversity features driving the CBA classification include threatened mollusc species, forest vegetation and the presence of climate change refugia. Although the powerline is proposed along an existing road, it may require clearing in forest, which would not be permitted.

The powerline to Chaba Substation closer to the WEF passes through another CBA1 (Figure 4.1, purple box) is driven largely by the presence of 4 threatened bird species and 1 plant species. Similarly, all the powerline alternatives to Rivermouth Substation are classified as CBA1 which is driven by the same biodiversity features.

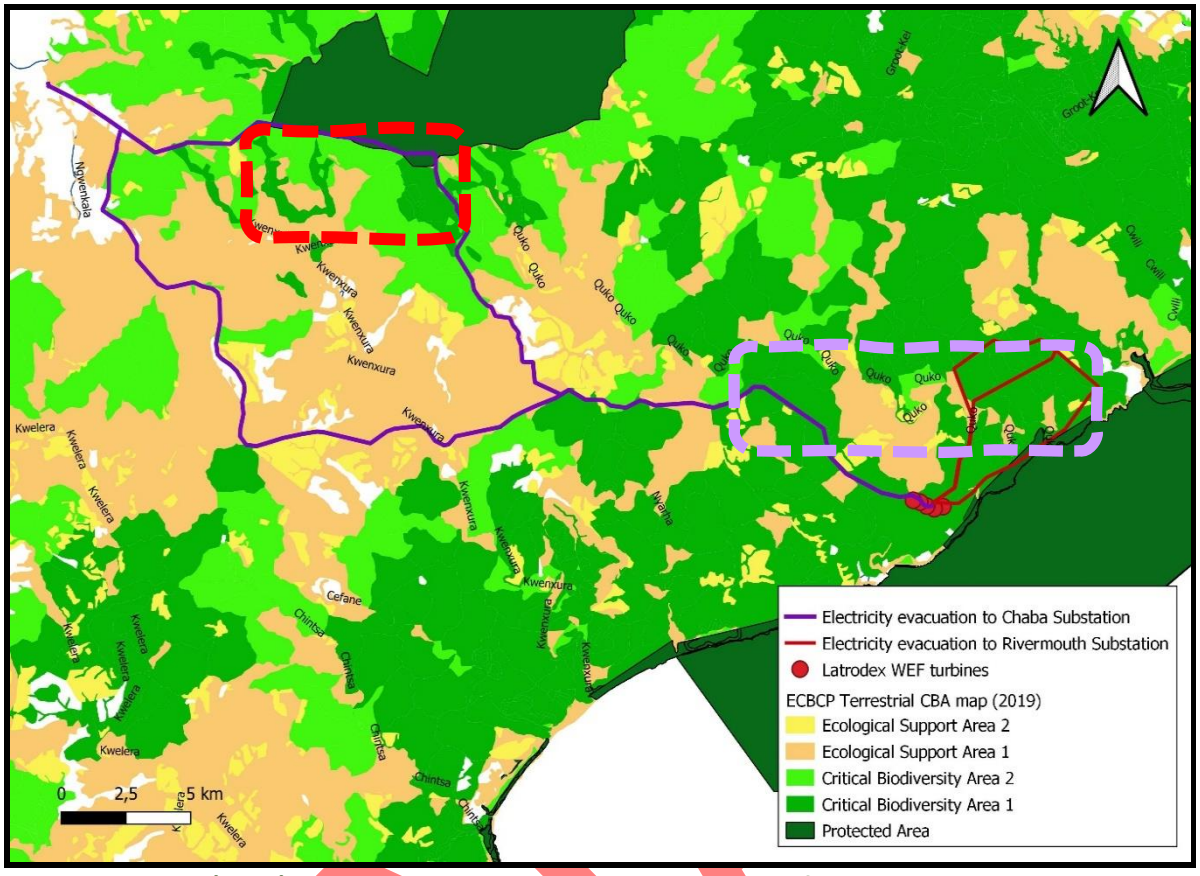

Figure 4.1 ECBCP (2019) Terrestrial Critical Biodiversity Area map of the Latrodex WEF and powerline alternatives.

4.2. Eastern Cape Biodiversity Conservation Plan Aquatic CBA map (2019)

Although this report does not describe in comprehensive detail the freshwater aquatic features within and adjacent to the study site, it is important to note that the ECBCP (2019) Aquatic CBA layer (Figure 4.2), indicates the presence of two CBA 2 rivers, namely the Haga-haga and Mtendwe Rivers. The map classifies the catchment areas of these rivers as Ecological Support Areas, which required to be maintained in a semi-natural state such that ecological function and ecosystem services are maintained. The proposed Latrodex WEF falls within the ESA, however it is important to note that the run-off originating from the facility does not flow into either river system and will therefore not impact the CBA rivers. Run-off will however flow through farm dams and into coastal wetlands before discharging to sea.

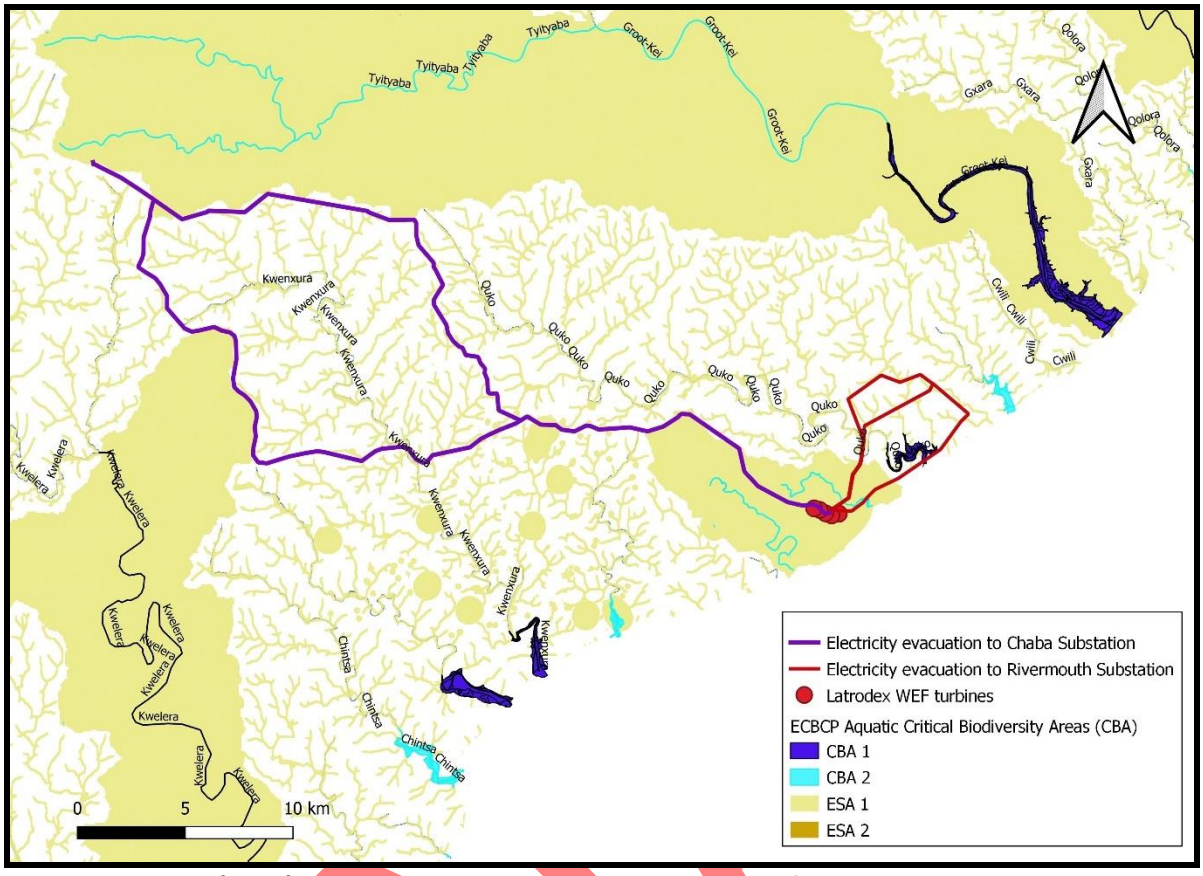

Figure 4.2 ECBCP (2019) Aquatic Critical Biodiversity Area map of the Latrodex WEF and powerline alternatives.

4.3. National Vegetation Map (2006-2018) and Ecosystem Threat Status (2021)

According to the most recent revision of the South African National Vegetation Map (SA VEGMAP 2006-2018), the proposed Latrodex WEF and associated powerline alternatives fall within 5 vegetation types (Figure 4.3), all of which have been classified as 'Least Concern' in terms of the ecosystem threat status (2021) (Figure 4.4). The vegetation types are briefly described below:

Bhisho Thornveld

The vegetation type occurs on dissected hills and low mountains. It is typically associated with undulating to moderately steep slopes and is characterised by an open canopy of small trees of *Vachellia natalita* with a grass understory dominated by *Themeda triandra* when in good condition. Other woody species are typically present and these increase with increased grazing pressure.

The National threat status assessment of all terrestrial ecosystems (2021) listed Bhisho Thornveld as "**Least Concern**".

South Eastern Coastal Thornveld

This vegetation type was described as "a short grassland (*Cynodon dactylon*, *Digitaria* spp., *Eragrostis* spp., *Themeda triandra*) with scattered bush clumps, dominated by small trees and woody shrubs, and with emergent *Euphorbia triangularis* occasional" especially on slopes or within dense woody vegetation.

The National threat status assessment of all terrestrial ecosystems (2021) listed South Eastern Coastal Thornveld as "**Least Concern**".

Eastern Valley Bushveld

This vegetation type can be found in deeply incised river valleys and consists mainly of semi-deciduous savanna dominated by *Vachellia robusta*,*V. natalitia* (cf *karoo*), *Ziziphus mucronata*, *Brachylaena* spp, *Dombeya rotundifolia* and *Hippobromus pauciflorus*. It frequently mosaics with succulent thickets dominated by *Euphorbia* and *Aloe*.

The National threat status assessment of all terrestrial ecosystems (2021) listed Eastern Valley Bushveld as "**Least Concern**".

Hamburg Dune Thicket

This vegetation type occurs on flat to moderately undulating coastal dunes. The vegetation type has been characterised as low to medium, dense thicket dominated by woody shrubs with lianas and vines. These thickets are best developed in dune slacks. This vegetation community was not observed in the Latrodex WEF.

On more open inland slopes Hamburg Dune Thicket occurs as small bush clumps in a matrix of low coastal grassland. Where these grasslands occur on richer soils savanna elements are more common. This community aligns more readily with the observed vegetation in the study area around the turbines.

The National threat status assessment of all terrestrial ecosystems (2021) listed Hamburg Dune Thicket as "**Least Concern**".

Amatole Mistbelt Forest

In terms of the National Forest Classification (2004), the indigenous forest associated with the northern alternative of the powerline to Chaba Substation is Amatole Mistbelt Forest. This small patch of forest is located in lowlands and is considered a short-medium forest.

The National threat status assessment of all terrestrial ecosystems (2021) listed this forest type as "**Least Concern**", it must however be noted that all forests in South Africa are protected and may not be destroyed or disturbed save in exceptional circumstances.

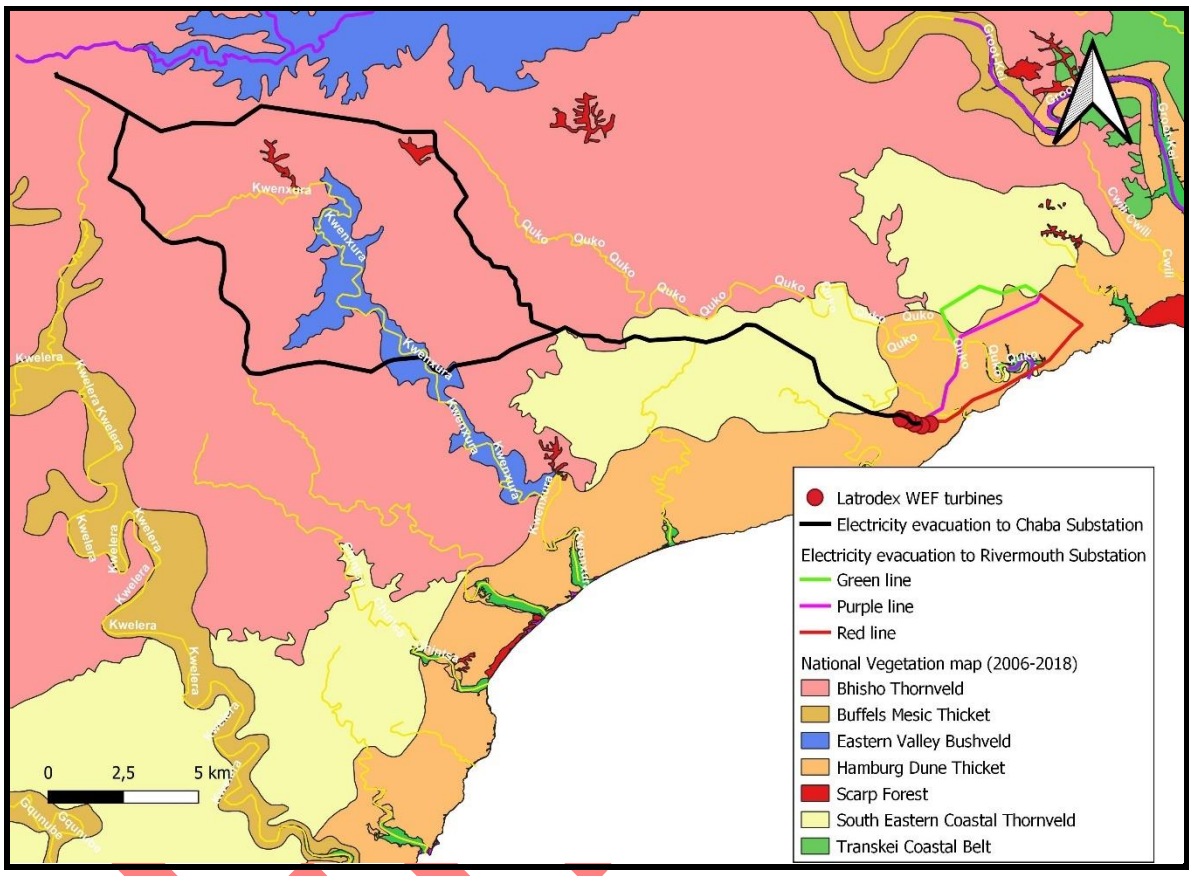

Figure 4.3 The vegetation type of the Latrodex WEF and powerline alternatives.

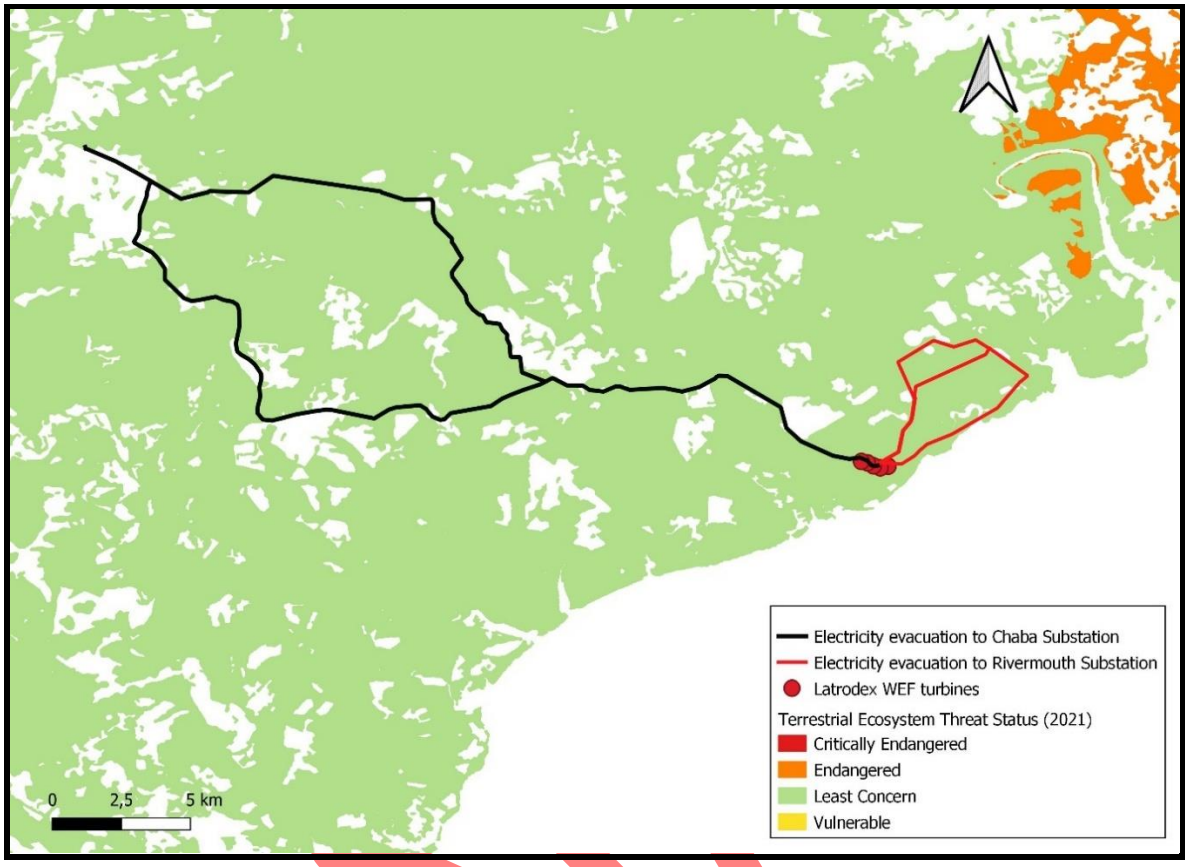

Figure 4.4 Ecosystem threat status of the vegetation types associated with the Latrodex WEF and associated powerline route alternatives.

4.4. Eastern Cape Protected Area Expansion Strategy

The proposed Latrodex WEF and associated powerline alternatives fall within a focus area for protected area expansion in the Eastern Cape (Figure 4.5). The strategy for protected expansion includes a course map of areas for priority, primarily building on to the existing network of protected areas. The map consists of large blocks or hexagons which require further refinement. The Latrodex WEF falls within a block on the very edge of an expansion focus area and is unlikely to impact on future protection initiatives. The powerline alternatives to the Rivermouth Substation are routed through the focus area.

It must be noted that most of the western portion of the focus area has been subjected to an EIA for a large wind farm, the Haga-haga WEF, which has been authorised.

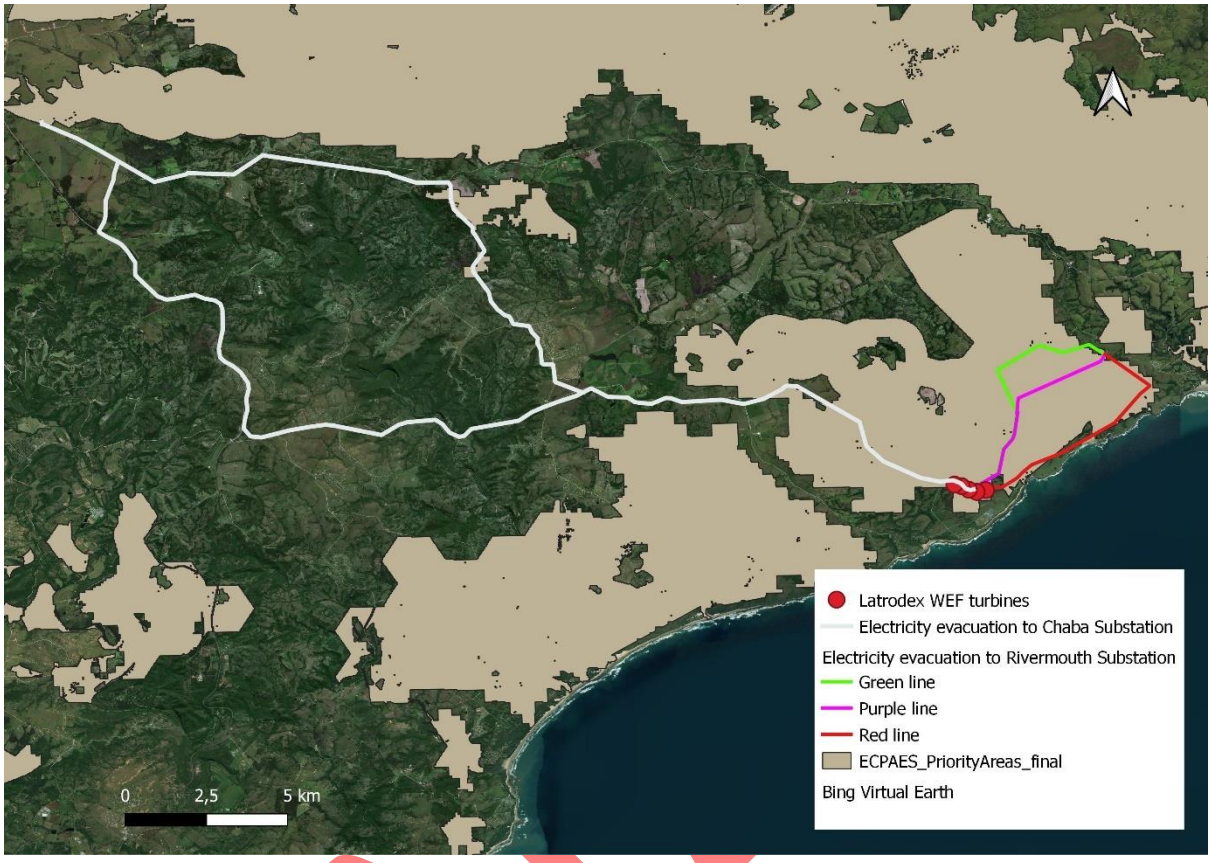

Figure 4.5 Eastern Cape Protected Area Expansion Strategy (ECPAES) priority areas.

Section 5. Site Floristics

5.1. Plant species

The potential plant species (extracted from the SANBI POSA website) and observed species are listed below. In total, 16 indigenous dominant plant species (excluding grasses) were observed in the study site, 4 of which are protected. Although 3 vulnerable species potentially occur in the project area, none of the threatened species were observed in the Latrodex WEF study area.

Table 5.1 Plant species that may occur on site and observed (*). LC = least concern, VU = Vulnerable

Family	Taxon	Threat status	Protected Species	Observed
APOCYNACEAE	*Orbea verrucosa*	LC	PNCO	
ANACARDIACEAE	*Searsia chirindensis*	LC		*
APOCYNACEAE	*Ceropegia rubella*	Not assessed	PNCO	
APOCYNACEAE	*Carissa bispinosa*	LC		*
APOCYNACEAE	*Pachycarpus grandiflorus*	LC		*
ARECACEAE	*Phoenix reclinata*	LC	National Forest Act	*
ASPODELACEAE	*Bulbine narcissifolia*	LC		*
ASTERACEAE	*Berkheya decurrens*	LC		*
CAMPANULACEAE	*Prismatocarpus campanuloides*	Not evaluated		*
CARYOPHYLLACEAE	*Spergularia media*	Not evaluated		
CONVOLVACEAE	*Convolvulus natalensis*	LC		*
CYPERACEAE	*Eleocharis limosa*	LC		
ERYTHROXYLACEAE	*Erythroxylum pictum*	LC		
FABACEAE	*Chamaecrista capensis*	LC		
	Vachellia karoo	LC		*
ICACINACEAE	*Apodytes dimidiata*	LC		*
IRIDACEAE	*Tritonia atrorubens*	DDD		
IRIDACEAE	*Tritonia gladiolaris*	LC		
IRIDACEAE	*Bobartia gracilis*	LC		
IRIDACEAE	*Gladiolus sp*	n/a		*
LAURACEAE	*Cryptocarya woodii*	LC		
MALVACEAE	*Hibiscus pusillus*	LC		*
MALVACEAE	*Hibiscus trionum*	Not assessed		*
MALVACEAE	*Grewia occidentalis*	LC		*
MORACEAE	*Ficus sur*	LC		*
MYRSINACEAE	*Rapanea melanophloeos*	LC		*
RANUNCULACEAE	*Anemone bracteata*	VU		
RUBIACEAE	*Canthium inerme*	LC		*
RUBIACEAE	*Psychotria capensis*	Not evaluated		*
RUTACEAE	*Vepris lanceolata*	LC		*
RUTACEAE	*Zanthoxylum capense*	LC		*
SAPOTACEAE	*Sideroxylon inerme*	LC	National Forest Act	*
Sensitive species 378		VU		
Sensitive species 319		VU	PNCO	

5.2. Alien Plant species

The following alien and invasive plant species were observed in the Latrodex WEF study area and powerline alternatives.

Table 5.2 Alien species observed in the Latrodex WEF study area.

Alien species observed	*Species*	Category
Fabaceae	*Senna sp*	1b
Fabaceae	*Acacia mearnsii*	2
Solanaceae	*Solanum mauritianum*	1b
Verbenaceae	*Lantana camara*	1b

Lantana camara, *Solanum mauritianum* and *Senna sp* are listed as a category 1b species. Of relevance to this project is that allowing the spread of a category 1b species is prohibited. An alien invasive management plan for the removal of this species in impacted areas will thus be required.

Acacia mearnsii is listed as Category 2 species. For species listed in this category, allowing the spread of these species requires a permit otherwise they need to be removed. Permits are typically linked to plantations.

5.3. Vegetation community around the WEF development site

The vegetation throughout the WEF site can be described as grassland/savanna with scattered woody species dominated by *Vachellia karoo* (Thornwood trees) (Table 5.1a and Figure 5.1). Occasional additional woody species within the turbine footprint areas were observed such as *Zanthoxylum capense* (Knobwood) and *Searsia chirindensis*. Although the vegetation is described as Hamburg Dune Thicket by Mucina *et al*., 2006-2018), the vegetation is more representative of species-poor open savanna.

Within the study area, particularly in drainage areas and steeper slopes, patches of dense woody vegetation comprised of higher species diversity was observed (Table 5.1b and Figure 5.1). These are likely to act as refugia for many faunal species. Turbine 2 is currently located adjacent/within a small water depression and within a patch of dense woody vegetation. It has been recommended that Turbine 2 is moved to avoid this community (See Section 7).

Table 5.1a Examples of open Savanna vegetation in the Latrodex WEF project area.

Examples of the vegetation associated with the Turbine development area. The site is comprised of open grassland with scattered Thornwood trees.

Table 5.1a Examples of open riparian bush-clump thicket vegetation in the Latrodex WEF project area.

Dense woody vegetation with higher tree species diversity.

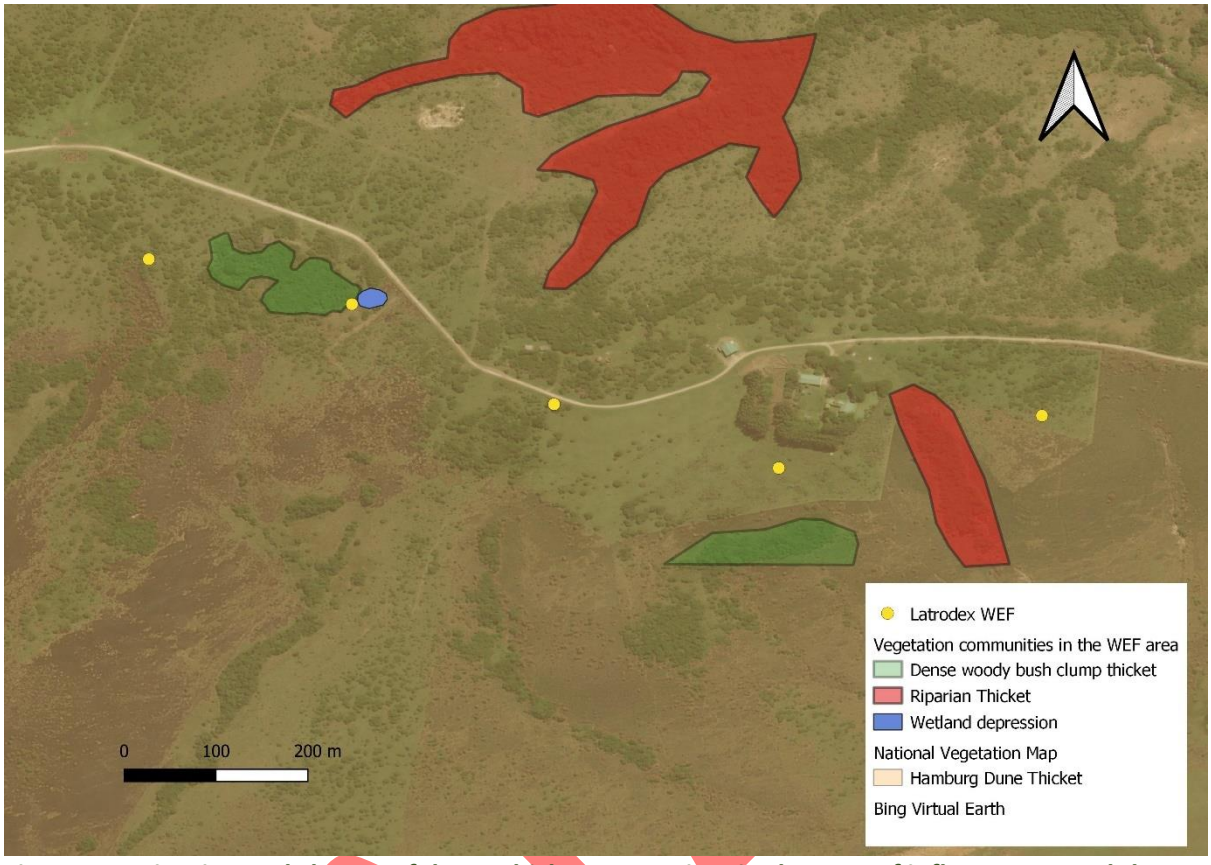

Figure 5.1 Riparian and clumps of dense thicket vegetation in the area of influence around the Latrodex WEF.

Section 6. Site Fauna

A full list of potential faunal species is presented in Appendix C. General comment on each of the faunal groups, as well as specific comment on the likelihood of threatened species in the project area is provided below.

6.1. Amphibians

This assessment identified 21 amphibian species that have a distribution range that intersects with the Latrodex WEF (Minter *et al.*, 2004, du Preez and Carruthers, 2017). A neighbouring project confirmed the presence of 10 of these species. No threatened or provincial endemic amphibian species have a distribution which includes the project area, however the Eastern Leopard Toad (Sclerophrys pardalis) is range restricted to the east coastline.

The ECBCP (2019) indicates the potential presence of a threated amphibian species (*Afrixalus spinifrons spinifrons*). Since the ECBCP analysis, the threat status of the species has been down-graded to Least Concern.

6.2. Reptiles

This assessment identified 26 reptile species that have a distribution range that intersects with the Latrodex WEF (ADU FrogMap and Bates *et al*., 2014). One reptile SCC with a distribution that includes the project area is the Kentani Dwarf Chameleon (*Bradypodion kentanicum*) listed as Near Threatened. This species inhabits wooded watercourses and forest-like habitats. This species is not likely to occur in the Latrodex WEF site due to the absence of suitable habitat, but suitable habitat does occur along the proposed route of some of the powerlines that traverse densely wooded/forested areas. The chameleon is likely to be impacted directly by mortalities and indirectly through loss and fragmentation of habitat as a result of tree clearing for the powerline. Recommendations with regards to the powerline alternatives and realignments to avoid impacting the chameleon are provided in Section 7 and 9.

6.3. Invertebrates

The DFFE Screening report flagged two threatened invertebrates as potentially occurring in the project area. These are briefly described below (Source: Southern African Lepidoptera Conservation Assessment (SALCA). Red List of South African Species. South African Biodiversity Institute).

Southern Purple Butterfly (*Aslauga australis*)

The Southern Purple is Endangered. This taxon occupies two habitat types: coastal bush adjacent to dune-forests, and grasslands adjacent to forest. The life history of *Aslauga australis* is unrecorded and the reasons for its extremely patchy and localized distribution are currently unknown. The Latrodex WEF is not associated with any forest in the immediate vicinity and is therefore less likely to occur in the site, but suitable habitat does occur along the proposed powerlines that traverse densely wooded/forested areas (http://speciesstatus.sanbi.org/assessment/last-assessment/204/). Recommendations with regards to the powerline alternatives and realignments to avoid impacting the butterfly are provided in Section 7 and 9.

Tsomo River Copper *Chrysoritis lyncurium*

The Tsomo River Copper is Vulnerable. This species inhabits rocky slopes and hillsides in grassland where its host plants *Diospyros* species or *Myrsine* species grow in bush clumps amongst the rocky outcrops. This species is not likely to inhabit the Latrodex WEF site due to the absence of the host

plant (no *Diospyros* or *Myrsine* plants were observed) but may occur along powerlines that support the host species (http://speciesstatus.sanbi.org/taxa/detail/330/).

6.4. Mammals (excluding bats)

It is necessary to note that a distinction between mammals that historically inhabited the site and those that may feasibly still inhabit the site must be made. Large mammals such as giraffe, elephant and buffalo are exclusively limited to game/nature reserves in the area and do not occur on WEF site where turbines are proposed. The WEF site is still likely to support a range of small to medium sized mammals such as antelope and rodents.

Although the DFFE Screening tool flags Oribi (*Ourebia ourebi ourebi*) as a sensitive species, the species has never been recorded in the region. The DFFE screening tool which flagged this species, has modelled the potential presence of the species based on suitable habitat. The only known population in the Eastern Cape is located at Kasouga. While other smaller populations have been introduced by private landowners in other parts of the Eastern Cape, these attempts have had mixed success. No Oribi populations (natural or introduced) have been recorded in the project area and this species has therefore not been considered in this assessment.

This assessment identified 43 possible mammal species (**excluding bat species**) that have a distribution range that are most probably still extant in the Latrodex WEF (Stuart and Stuart, 2007, ADU MammalMap) site and along the powerline line routes. Two species (Giant Golden Mole and Southern Tree Hyrax) are Endangered, five species (White-tailed Rat, Sensitive species 7, Samango Monkey, Dark-Footed Shrew and Leopard) are Vulnerable and three species (Honey badger, African Striped Weasel and Spectacled Dormouse) is Near Threatened on the Global IUCN Red List (not in South Africa). The Giant Golden Mole is endemic to the Eastern Cape.

The threatened mammal species are described further in Table 6.1 below in terms of their Global (IUCN) and National (Child *et al.,* 2016) threat status, habitat needs/preferences and the likelihood of the species being present in the developmental area of the WEF and powerlines.

With respect to the Latrodex WEF, the following threatened species may be present in the project area:

- African Striped Weasel
- Leopard (less likely but not impossible)

The alternative powerline routes extend some distance beyond the WEF development footprint and run through a wider range of habitats that will support numerous additional threatened species. In terms of the powerline alternatives to Chaba and Rivermouth Substations, the following threatened species may be present in:

- Forest areas:
  - Giant Golden Mole
  - Dark-footed Forest Shrew
  - Samango Monkey
  - South Tree Hyrax (Dassie)
  - Sensitive species 7
- Aquatic habitats:
  - African (Cape) Clawless Otter
- Rocky out-crops:
  - Spectacled Dormouse
  - Leopard

- ❖ Grassland/savanna habitats:
  - White-tailed Rat
- ❖ Generalist:
  - African Striped Weasel

During the site survey only Impala, which have been introduced, were observed. However Bushbuck, Common Duiker and Vervet Monkeys are regular visitors.

Table 6.1 Mammal SCC that have a distribution which includes the project area and likelihood of occurring at habitats available in the project area.

Species	Threat status		Habitat preference	Likelihood of occurrence at each site (Probable, possible, unlikely, none)	
	Global	National		Wind Energy Facility	Along powerline routes
Giant Golden Mole (*Chrysospalax trevelyani)*	EN	EN	Transkei Coastal Scarp forests and Amathole Mistbelt forests and occasionally marginally into adjacent grassland habitats. Restricted to larger forest patches, preferring areas in forest patches with soft soils, well-developed undergrowth, and deep leaf litter layers. (Bronner, 2015)	**Unlikely** *due to absence of sufficient forest habitat in the area of activity.*	**Possible** *Three routes are adjacent to or run through patches of forest habitat.*
White-tailed Rat *(Mystromys albicaudatus)*	VU	VU	Associated with calcrete soils within grassland. They do not inhabit soft, sandy substrate, rocks, wetlands or riverbanks. In the Eastern Cape Province, it was found in habitats with crests and ridges and on bare patches with sparse vegetation. Appear to be dependent on vegetation post fire. (Avenant**,** *et al*., 2019)	**Unlikely** *No representative habitat in the area of activity.*	**Possible** *Suitable habitat may be present along the powerline routes.*
Dark-footed Forest Shrew (*Myosorex cafer)*	VU	VU	Moist, densely vegetated forests and grasslands. In the Eastern Cape Province they can be the dominant small mammal species in Afromontane forest. (Baxter, *et al*., 2020)	**Unlikely** *No representative habitat in the area of activity.*	**Possible** *Three routes are adjacent to or run through patches of forest habitat.*
Samango Monkey (*Cercopithecus albogularis labiatus)*	LC	VU	Distribution is closely correlated with forest, including Scarp, Mistbelt and Coastal and riverine forest. They are primarily arboreal in high-canopy, evergreen forests. (Lawes, 1990)	**Unlikely** *due to absence of natural and connected forest habitat.*	**Possible** *Three routes are adjacent to or run through patches of forest habitat.*

Species	Threat status		Habitat preference	Likelihood of occurrence at each site (Probable, possible, unlikely, none)	
	Global	National		Wind Energy Facility	Along powerline routes
Southern Tree Hyrax *(Dendrohyrax arboreus)*	LC	EN	Forested and well-wooded areas where it shelters in dense matted forest vegetation, epiphytes, or tree cavities. Its main threat is loss of structure within habitat, rather than forest size. (Butynski, *et al*., 2015)	**Unlikely** *No representative habitat in the area of activity.*	**Possible** *Three routes are adjacent to or run through patches of forest habitat.*
Leopard (*Panthera pardus)*	VU	VU	Has a wide habitat tolerance, including woodland, grassland savannah and mountain habitats but also occur widely in coastal scrub, shrubland and semidesert but prefers densely wooded and rocky areas. (Stein, *et al*., 2020; Swanepoel, *et al*., 2016).	**Possible** *Known from game reserves along the Kei River, but occasionally some individuals may pass through the area*.	**Possible** *Known from game reserves along the Kei River, but occasionally some individuals may pass through the area*.
Sensitive Species 7	LC	VU	*Inhabits forested and wooded habitats, including primary and secondary forests, gallery forests, dry forest patches, coastal scrub farmland and regenerating forest. The species requires permanent concealment. Within the assessment region, they occur mainly within scarp and coastal forests, thickets or dense coastal bush although they can occupy modified habitats. They frequent forest glades and open areas but need dense underbrush to rest or take cover. They are selective foragers which mainly feed on fruit, dicots and a small percentage of monocots.* (Venter, *et al*., 2016)	**Unlikely** *No representative habitat in the area of development activity.*	**Probable** *Three routes are adjacent to or run through patches of forest habitat.*
African Clawless Otter (*Aonyx capensis)*	NT	NT	Predominantly aquatic and seldom found far from permanent water.	**Unlikely** *No representative habitat in the area of activity.*	**Probable** *All powerline routes cross water courses*

Species	Threat status		Habitat preference	Likelihood of occurrence at each site (Probable, possible, unlikely, none)	
	Global	National		Wind Energy Facility	Along powerline routes
			Prefers riverine habitat characterised by reed beds, boulders and overhanging vegetation, particularly rocks covered with dense vegetation and large areas of undisturbed long grasses and dense bushes. (Okes, *et al.*, 2016)		*that possibly support otters.*
African Striped Weasel (*Poecilogale albinucha)*	LC	NT	Wide habitat tolerance includes lowland rainforest, semi-desert grassland, fynbos, pine plantations, pastures, and cultivated fields. (Stuart, *et al.*, 2015)	**Possible** *Suitable habitat is present.*	**Possible** *Suitable habitat is present.*
Spectacled Dormouse (*Graphiurus ocularis)*	LC	NT	Shelters and nests in rock cracks and crevices. (Cassola, 2016).	**Unlikely** *No representative habitat in the area of development activity.*	**Probable** *Suitable habitat is present along the powerline routes to the Chaba substation. Could inhabit the cliff faces along Kwenxura River.*

Section 7. Assessment of Site Sensitivity

In terms of the method outlined in the Species Environmental Assessment guidelines to determine the Site Ecological Importance (SEI), Riparian thicket, dense thicket and forest have been mapped as HIGH SEI (Table 7.1 and Figure 7.1-7.3). The reasons for this include: a MEDIUM classification of conservation importance as these habitats have the potential to support species of conservation concern, HIGH functional integrity. These habitats are not resilient to disturbance and in unlikely to recover to its original state over a long (>15 years) period of time. Conversely, the remainder of the vegetation on site

Table 7.1 Evaluation of Site Ecological Importance (SEI) of habitat and SCC

	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor resilience	Site Ecological Importance
Wetland Depression	Medium	High	Medium	Low	High
Riparian thicket	Medium	High	Medium	Low	High
Dense thicket/forest	Medium	High	Medium	Low	High
Natural - Ecosystem threat status	Medium	High	Medium	High	Low
Surrounding grassland and savanna	Medium	High	Medium	High	Low

The SEI or sensitivity assessment of the Latrodex WEF study area (Figure 7.1) indicates that Turbine 2 is located within an area of HIGH sensitivity. It is recommended that the turbine be moved north and westwards. In order to maintain the appropriate distance between turbines, Turbine 1 will also need to be moved.

In terms of the powerline route alternatives:

Powerlines to Chaba Substation (Figure 7.2)

- Before the powerline line splits into the northern and southern alternatives, small sections along the powerline are routed through sensitive areas. Minor realignments can be made to avoid these areas. The northern powerline alternative follows an existing road network all the way to the Chaba Substation. A small section of the powerline is routed through a forest, which will likely support threatened plants and animals. The powerline needs to be realigned to the opposite side (eastern side) of the road to avoid the forest.
- The southern powerline alternative follows the R349 and N2 highway all the way to the Chaba Substation. The only sensitivity associated with this route is the where the powerline crosses the Kwenxura River. Minor realignment will need to be considered in order to avoid the cliff face in this area.

Powerlines to Rivermouth Substation (Figure 7.3)

- The red line is routed through a Protected Area and across an estuary. This is an undesirable and ecologically unacceptable option and has not been assessed further.
- The purple line is routed through dense thicket/forest, which may support several threatened plants and animal species. Clearance of this vegetation for the powerline, which is of high sensitivity, is therefore considered a HIGH impact. In addition, there is a section of HIGH sensitivity where the powerline crosses the Quko River, where riparian vegetation may be affected. This is an undesirable and ecologically unacceptable option. Applying and processing

a permit to remove forest is unlikely to be successful. Therefore this route alternative has not been assessed further.

- The green line crosses the Quko River and where this will impact the riparian vegetation, it has been deemed a HIGH sensitivity region. Amendments to alignment will reduce the impact on the riparian vegetation. These have been discussed in Section 9. Should the powerline be routed to the Rivermouth Substation, this is the preferred route.

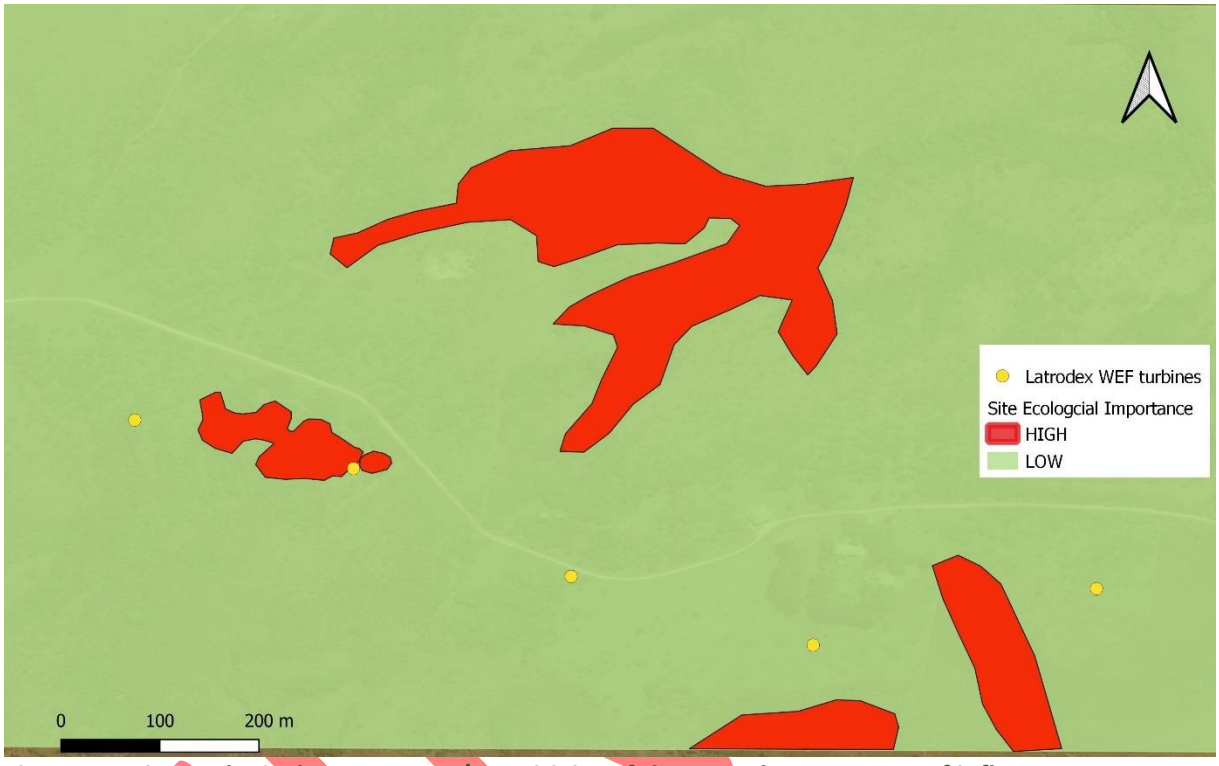

Figure 7.1 Site Ecological Importance / Sensitivity of the Latrodex WEF area of influence.

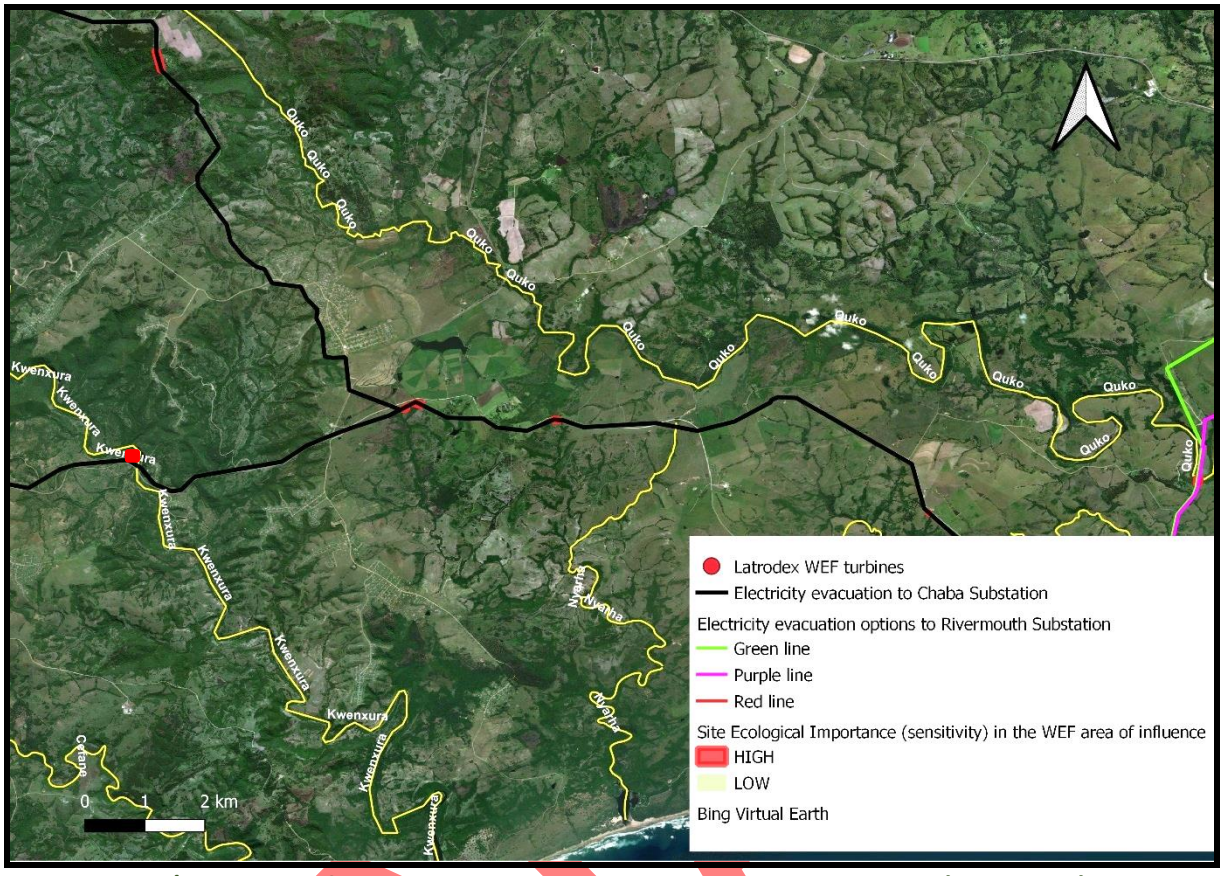

Figure 7.2 SEI/sensitivity of the Chaba Substation powerline line alternatives (black lines).

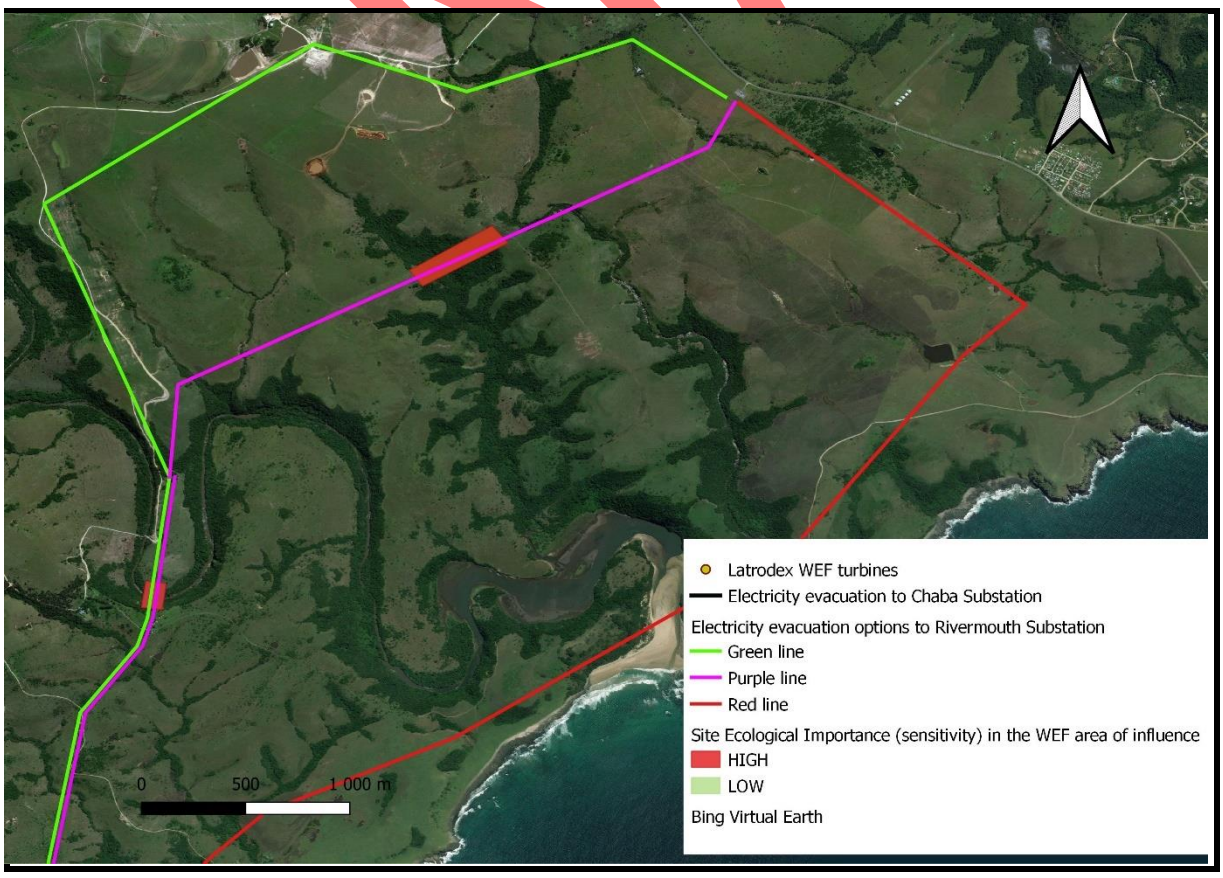

Figure 7.3 SEI / sensitivity of the Rivermouth Substation powerline alternatives.

Section 8. Impact Assessment

8.1. Construction, Operational and Decommissioning Phase Impacts

Several impacts associated with loss of species of conservation concern and ecosystems and alien plants species were considered. All impacts, with the exception of the potential to facilitate the establishment and spread of alien invasive plant species could be mitigated to a LOW significance (Table 8.1 below).

Table 8.1 Assessment of construction- and operation-related impacts

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE														
Loss of Natural Vegetation	Loss of natural Hamburg Dune Thicket associated with the Latrodex WEF and surrounding infrastructure	The Latrodex WEF and the associated infrastructure will result in the permanent loss of a maximum of 5ha (including construction layout down areas and roads) of Hamburg Dune Thicket. This is equivalent to 1% of the remaining extent of this vegetation type.	Negative	Direct	Slight	Localised	Permanent	Definite	Reversible	Resource partially lost	Achievable	**LOW**	• Construction vehicles and machinery must not encroach into areas outside the project footprint. • 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. • Employees must be prohibited from making open fires during the construction phase. • A Search and Rescue for fauna and flora should be conducted prior to vegetation clearance. • Plant translocation to adjacent suitable habitat may only be done for species that are not range restricted and for populations that have not been quantified as regionally significant. • Permits to translocate TOPS and Protected species must be applied for prior to vegetation clearing. • Post-construction rehabilitation must be undertaken in line with a Rehabilitation Management Plan.	**LOW**

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
	Loss of dense thicket/forest vegetation Powerline route to the Rivermouth Substation Alternative – Red and Purple line	The red line is routed through a Protected Area and across an estuary. This is an undesirable and ecologically sensitive option and has not been assessed further as it is fatally flawed. The purple line is routed through dense thicket/forest, which may support several threatened plants and animal species. Clearance of this vegetation for the powerline, which is of high sensitivity, is therefore considered a HIGH impact. In addition, there is a section of HIGH sensitivity where the powerline crosses the Quko River, where riparian vegetation may be affected. This is an undesirable and ecologically sensitive option and securing permits to remove forest is unlikely. This alternative has not been assessed further as it is fatally flawed.	-	-	-	-	-	-	-	-	-	**Fatally Flawed**	•	

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
	Loss of dense thicket/forest vegetation Powerline route to the Rivermouth Substation Alternative – Green Line	This alternative is routed along grasslands which will not require extensive vegetation removal for installation. The powerline route crosses minor water courses with sparse riparian trees, which is a low impact. However the powerline also crosses the Quko River, which has a significant riparian tree cover of approximately 50 metres. Assuming that trees will need to be removed for powerline installation, it is recommended that the powerline is realigned as per recommendation in Section 9. The use of an existing break in the riparian vegetation due to a river crossing will mitigate this impact.	Negative	Direct	Severe	Localised	Permanent	Definite	Reversible	Resource partially lost	Achievable	**HIGH**	• The alignment of the Green Line to Rivermouth Substation must be re-aligned to join and follow and existing track across the Quko River. This will avoid the loss of potential forest and/or riparian vegetation along the river. • For all water course crossing, no poles/towers to be placed within the water course, nor in riparian vegetation. A buffer of 20 metres on either side of streams and 50 metres on either side of rivers must be applied. • Bush-clearing for the erection and maintenance of the powerline must be kept to a minimum. • Construction vehicles and machinery must not encroach into areas outside the project footprint. • Permits to translocate TOPS and Protected species must be applied for prior to vegetation clearing.	**LOW**
	Loss of riparian thicket/forest vegetation Powerline route to the Chaba Substation North and South alternatives	The north and south powerline alternatives to the Chaba Substation may result in localised woody vegetation loss due to clearing of vegetation below the powerline. are associated with small patches of HIGH sensitive areas associated with riparian thicket/forest. With minor revision to the alignment, these areas can be avoided to avoid the loss of woody vegetation.	Negative	Direct	Moderately severe	Localised	Permanent	Definite	Reversible	Resource partially lost	Achievable	**MODERATE**	• Riparian thicket/forest at headwaters of streams must be avoided. There are 3 small areas that are affected along the route to the Chaba Substation, and the powerline route could easily be adjusted to avoid these areas (see Section 7). • For all water course crossing, no poles/towers to be placed within the water course, nor in riparian vegetation. A buffer of 20 metres on either side of streams and 50 metres on either side of rivers must be applied. • Bush-clearing for the erection and maintenance of the powerline must be kept to a minimum. • Construction vehicles and machinery must not encroach into areas outside the project footprint. • Permits to translocate TOPS and Protected species must be applied for prior to vegetation clearing.	**LOW**

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
	Cumulative	The Latrodex WEF needs to be assessed in conjunction with the authorised Haga-haga WEF as well as the proposed Wild Coast Abalone Expansion, in the event that either of these developments proceed, in the context of the threat to the ecosystem and ecological processes. Considering the limited extent of the Latrodex WEF physical footprint it unlikely to contribute significantly to the cumulative impact on the vegetation types.	Negative	Direct	Slight	Localised	Permanent	Definite	Irreversible	Resource partially lost	Difficult	**LOW**	No mitigation measures provided.	**LOW**
	No-Go	Under the no-go alternative, no further loss of vegetation will occur and will therefore have no impact.	N/A									**None**	N/A	N/A
Loss of Plant Species of Conservation Concern	Loss of SCC plants	Although no threatened plant species were observed in the Latrodex WEF study site; several protected species in terms of the PNCO were recorded.	Negative	Direct	Moderately Severe	Localised	Permanent	Possible	Irreversible	Resource partially lost	Difficult	**MODERATE**	• Prior to finalising the WEF layout, undertake a micro-siting assessment to avoid protected species, where this is practical and feasible. • Prior to construction a botanist must undertake a thorough survey of the final footprint and laydown areas to determine which species will require a permit for transplanting/destruction.	**LOW**
	Cumulative	The plant species recorded in the published databases as well as during the site visits are not range restricted or threatened. The cumulative impact of the loss of plant SCC as a result of this development is therefore slight.	Negative	Direct	Slight	Localised	Permanent	Possible	Irreversible	Resource partially lost	Difficult	**MODERATE**	It is difficult to implement mitigation measures specific to the cumulative impacts as the applicant only has jurisdiction over their development and not over other developments or farming activities in the area.	**LOW**
	No-Go	Under the no-go alternative, species will not be removed.	N/A									**None**	N/A	N/A

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
Disturbance to faunal species and potential reduction in abundance and mortality of faunal species	Impact on faunal SCC (excluding birds and bats)	Clearing of 5 ha of Hamburg Dune Thicket would create disturbance (noise, dust, activity) to faunal species using the site for foraging, shelter and breeding. Although no faunal SCC were observed during the site surveys and are unlikely to permanently inhabit the Latrodex WEF site, several species such as leopard could be transient and use the site to move through the landscape. These species may be forced to use alternative corridors to move or migrate.	Negative	Direct	Moderately severe	Localised	Permanent	Definite	Irreversible	Resource partially lost	Difficult	**MODERATE**	• The workers must be explicitly made aware through Toolbox talks to stay in the work areas only and not venture in the bush for any reason. • A clause must be included in contracts stating that: "no wild animals will be hunted, killed, poisoned or captured. No wild animals will be imported into, exported from or transported in or through the Province. No wild animals will be sold, bought, donated and no person associated with the development will be in possession of any live wild animal, carcass or anything manufactured from the carcass." • A clause relating to fines, possible dismissal and legal prosecution must be included should any of the above transgressions occur. • Vehicles and machinery must meet best practice standards. • Staff and contractors' vehicles must comply with speed limits of 40km/hr • Project must start and be completed within the minimum timeframe. i.e. may not be started and left incomplete. • ECO to walk ahead of clearing construction machinery and move slow moving species e.g. tortoises out of harm's way and into suitable neighbouring habitat. • Any faunal species that may die as a result of construction must be recorded (photographed, gps co-ord) and if somewhat intact preserved and donated to SANBI. • Any faunal species observed onsite must be recorded (photographed, gps co-ord) and loaded onto iNaturalist. • Staff and contractors are not permitted to capture, collect or eat any faunal species onsite. • In the event that a threatened faunal species is observed, the ECO must be alerted and a faunal specialist must be engaged to determine the necessary course of action (such as translocation to neighbouring sites, etc).	**LOW**
	Cumulative	Minor portions of habitat will be lost because of the Latrodex WEF. Given the small footprint, the impact of the additional loss of habitat will have a low cumulative impact on faunal SCC.	Negative	Direct	Slightly severe	Localised	Permanent	Definite	Irreversible	Resource partially lost	Difficult	**LOW**	It is difficult to implement mitigation measures specific to the cumulative impacts as the applicant only has jurisdiction over their development and not over other developments or farming activities in the area.	**LOW**

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
	No-Go	If the project does not go ahead, there would be no loss of habitat or disturbance of faunal species within the proposed project area and the impact under the no-go alternative would be negligible.	N/A									N/A	N/A	N/A
Establishment of Alien Plant Species	Alien Invasive Plant establishment and spread	Several alien plant species were identified during the field survey. Construction activities disturb the soil and provide an opportunity for alien species to spread. Once established, alien invasive plants are very difficult to eradicate and may then invade surrounding undisturbed areas, posing a threat to the neighbouring ecosystem. This impact is likely to be exacerbated if constant rehabilitation and alien invasive plant eradication is not implemented during construction.	Negative	Direct	Severe	Study Area	Longo Term	Definite	Reversible	Alien plant species are already present and established in the study site.	Achievable	HIGH	The Alien Invasive Plant Monitoring and Eradication programme designed for the Latrodex WEF and associated powerline must be implemented throughout construction and as an ongoing activity post-construction.	MODERATE
	Cumulative	Within the context of the significant alien invasive plant cover in the general region of the study site, the cumulative impact of the spread of alien plant species is not significant.	N/A									Negligible	N/A	N/A
	No-Go	Alien plant species are already present and established in the study site.	Negative	Direct	Severe	Study Area	Longo Term	Definite	Reversible	Alien plant species already present in the study site.	Achievable	HIGH	An alien monitoring and eradication plan needs to be implemented throughout the region.	N/A
Operational Phase														

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
Infestation of Alien Plant Species	Alien Invasive Plant establishment and spread	Poor rehabilitation and the lack of implementation of an alien invasive plant eradication during the operation phase of the Latrodex WEF will favour the establishment and spread of alien invasive plant species.	Negative	Direct	Severe	Study Area	Longo Term	Definite	Reversible	Alien plant species are already present and established in the	Achievable	HIGH	The Alien Invasive Plant Monitoring and Eradication programme designed for the Latrodex WEF must be implemented throughout construction and as an ongoing activity post-construction.	MODERATE
	Cumulative	Within the context of the significant alien invasive plant cover in the general region of the study site, the cumulative impact of the spread of alien plant species is not significant.	N/A									Negligible	N/A	N/A
	No-Go	Alien plant species are already present and established in the study site.	Negative	Direct	Severe	Study Area	Longo Term	Definite	Reversible	Alien plant species already present in the study site.	Achievable	HIGH	An alien monitoring and eradication plan needs to be implemented throughout the region.	N/A
Decommissioning Phase														
Infestation of Alien Plant Species	Alien Invasive Plant establishment and spread	Poor rehabilitation and the lack of implementation of an alien invasive plant eradication during the decommissioning phase will favour the establishment and spread of alien invasive plant species.	Negative	Direct	Severe	Study Area	Longo Term	Definite	Reversible	Alien plant species already present in the study site.	Achievable	HIGH	An Alien Invasive Plant Monitoring and Eradication programme designed for the decommissioning of the Latrodex WEF in conjunction with a Rehabilitation Plan must be implemented and continue until natural vegetation has established and for at least 1 year post rehabilitation.	MODERATE
	Cumulative	Within the context of the significant alien invasive plant cover in the general region of the study site, the cumulative impact of the spread of alien plant species is not significant.	N/A									Negligible	N/A	N/A

POTENTIAL ISSUES	IMPACT	SOURCE OF ISSUE/IMPACT	NATURE	TYPE	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
	No-Go	Alien plant species are already present and established in the study site.	Negative	Direct	Moderate	Study Area	Longo Term	Definite	Reversible	Alien plant species already present in the study site.	Achievable	HIGH	An alien monitoring and eradication plan needs to be implemented throughout the region.	N/A

Section 9. Conclusions and Recommendations

9.1. Concluding remarks

The total footprint area to be used by the proposed Latrodex WEF will be a maximum of 5 ha. This assessment has considered published plans and has incorporated published literature and site survey data. Using the Species Environmental Assessment Guidelines (SANBI, 2021) this assessment has mapped the different habitats/vegetation communities and has applied the criteria outlined in the guidelines to determine Site Ecological Importance which indicates site sensitivity.

The findings of this assessment are summarised in the conclusions below:

ECBCP (2019) and management objectives for the study site

The Latrodex WEF is located within a Critical Biodiversity Area 1, indicating the presence of an irreplaceable biodiversity feature(s) in the planning unit. The land use objective for CBA1s is to maintain the area in a natural state.

To verify the CBA status, the biodiversity features responsible for the CBA classification were investigated. The MARXAN look-up table indicated that several plant and faunal species (already flagged in the DFFE screening tool) were the primary concern. These species may occur in within the larger planning unit (specifically the coastal forest along the shoreline), but they do not utilise the area that is proposed for the WEF development. The Latrodex WEF will therefore not impact on the biodiversity features for which the CBA was mapped.

Ecosystem threat status

None of the terrestrial or aquatic ecosystems associated with either the Latrodex WEF or any of the associated powerline alternatives are threatened.

Threatened Plant and Faunal Species

No threatened plant or animal species were observed in the Latrodex WEF study site. The threatened species flagged by the DFFE Screening Tool report for the WEF are either forest dwelling (and therefore unlikely to use the site due a lack of forest) or have not been recorded in the surveys for the project. The confidence in findings in this report regarding the unlikely presence of threatened faunal species is high.

Conversely, the powerline route alternatives are routed through or adjacent to habitats that may support threatened plant and faunal species. These habitats have been mapped and flagged as sensitivite, with recommendations for powerline realignment to avoid them.

Several protected plant species were noted. A permit to remove/transplant these species must be in place prior to construction.

Site Ecological Importance (SEI) and site sensitivity

The method provided in the Species Environmental Assessment Guidelines (SANBI, 2021) was used to calculate SEI of the study site. The site was mapped into habitat/vegetation communities and assessed individually. The habitat assessment resulted in a 'HIGH' and 'LOW' SEI scores. In instances where turbines or powerlines impacted on HIGH sensitive areas, recommendations to avoid these areas have been provided in Section 9.2 below.

Alien invasive species

As previously mentioned, several alien invasive plant species have established throughout the study site. During and after construction, disturbed areas will be prone to aggressive alien plant establishment. An Alien Plant Monitoring and Eradication Programme will need to be implemented throughout the construction and operation phases to ensure that rehabilitated areas return to natural vegetation rather than alien thicket.

Impact Assessment

In line with best practice and the Species Environmental Assessment Guidelines (SANBI, 2021), the mitigation hierarchy (avoid, minimise impact, restore, offset) needs to be applied. The high rated impacts are associated with the establishment and spread of alien invasive plant species. Mitigation measures are also provided to minimise associated impacts and rehabilitate the area during construction, operation and decommissioning phases.

9.2. Recommendations

The assessment identified infrastructure that is located in sensitive areas. Recommendations to avoid these areas area provided below:

Latrodex WEF Turbine 2

Turbine 2 is located adjacent to a depression/dam and very dense thicket, which could support important plant and animal species. It is recommended that the turbine be moved north and west towards a more open area nearer to the road. To maintain an appropriate distance between turbines, Turbine 1 will need to be moved. It is recommended that it is also moved north and west (Figure 9.1).

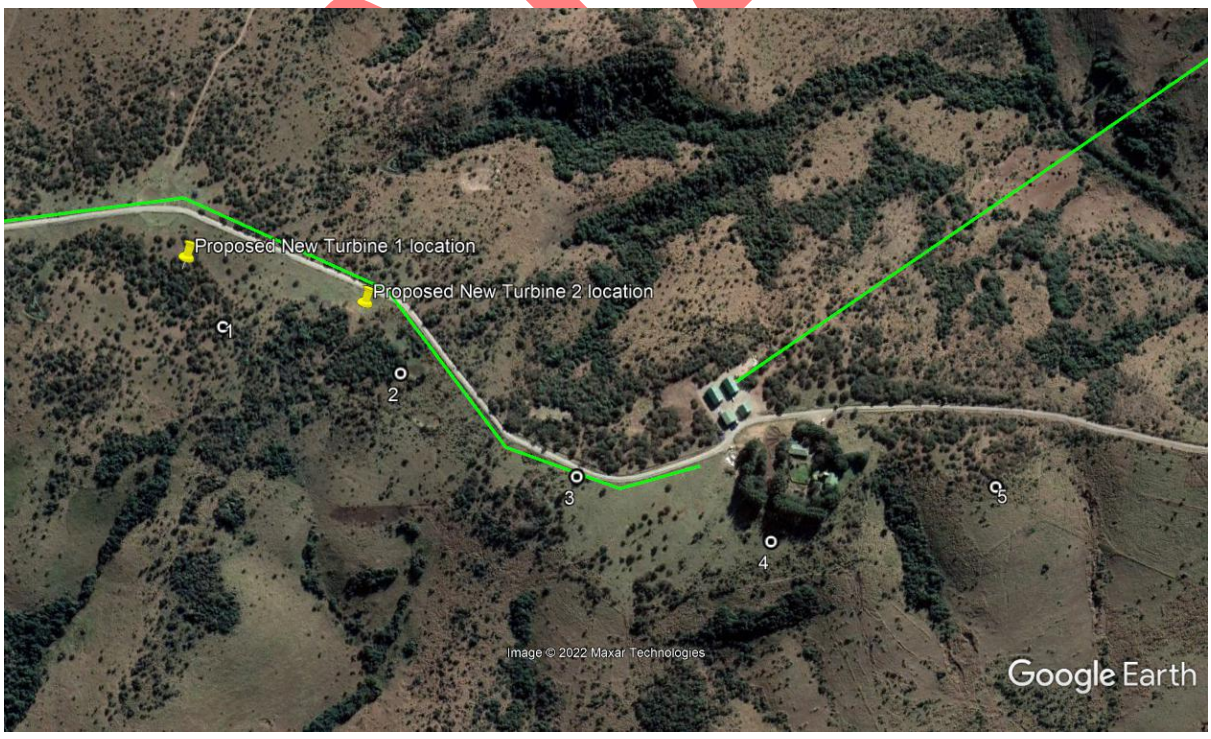

Figure 9.1 Recommended turbine relocation.

Rivermouth Substation powerline alternatives

The red line alternative is routed through a Protected Area and over an estuary. This is considered highly undesirable (fatally flawed) and has not been assessed for the purposes of this study.

The purple line alternative is routed through dense thicket/riparian forest, which is likely to support

threatened plant and animal species. Clearance of this vegetation is associated with unacceptably high impacts. This alternative is therefore NOT recommended as an option and has not been assessed for the purposes of this study.

The green line has been assessed and follows farms roads. Minor realignment is required where the powerline crosses the Quko River to minimise the need for vegetation clearing across the river. The proposed realignment is provided in Figure 9.2 below.

Figure 9.2 Rivermouth Substation Green line realignment to minimise riparian vegetation clearing.

Chaba substation powerline line alternatives

Both the north and south route alternatives run along existing road infrastructure.

The southern alternative is routed through the Kwenxura River at a sensitive site. It is recommended that if this alternative is used, micro-siting is conducted to ensure that powerline is routed such that the vegetation on the cliff is not impacted (Figure 9.3).

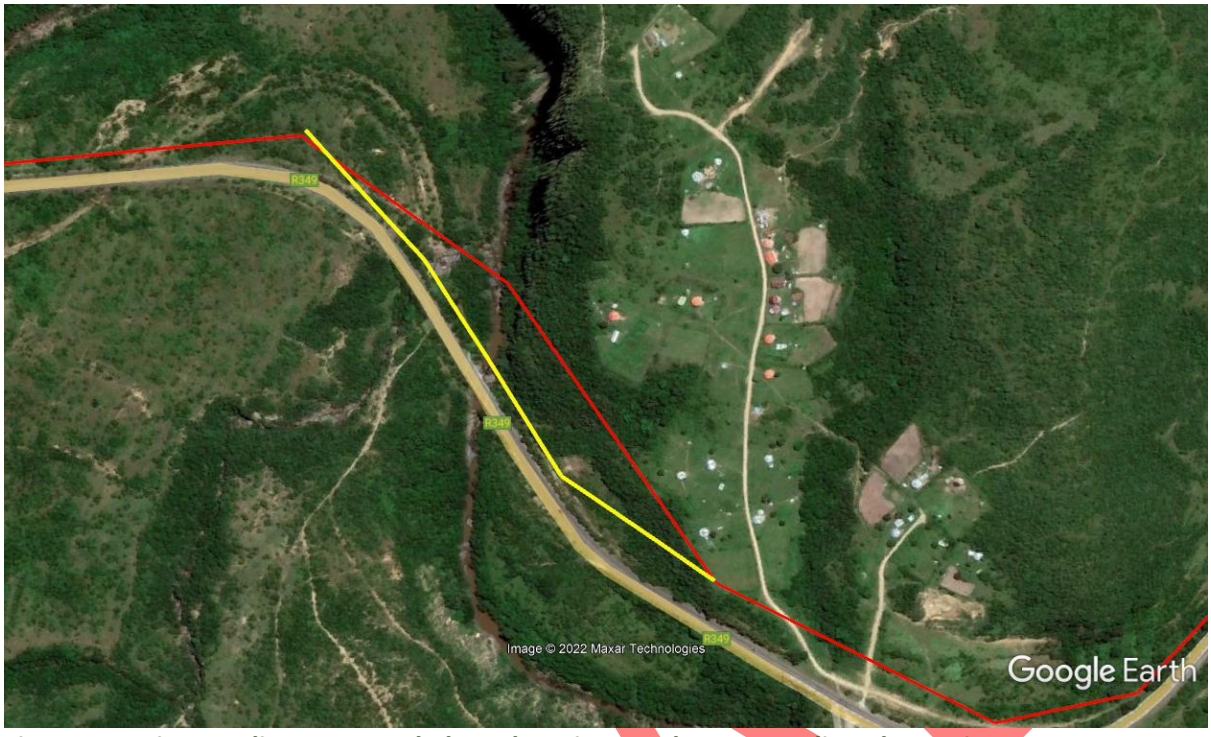

Figure 9.3 Minor realignment to Chaba Substation southern powerline alternative.

The northern line alternative runs adjacent to a forest. From the satellite imagery, an existing powerline is routed through the forested area and the new powerline will need to be erected parallel to this line and further into the forest. This is not an acceptable route alignment and the powerline would either need to be moved to the east of the road or eliminated as a route alternative (Figure 9.4)

Figure 9.4 Minor realignment to Chaba Substation northern powerline alternative.

9.3. Ecological Statement and Opinion of the Specialist(s)

The ecological impacts of the Latrodex WEF were assessed and considered to be ecologically acceptable provided the mitigation measures outlined in this report are implemented.

The Chaba Substation north and south powerline alternatives are acceptable provided that minor realignments are made to avoid high sensitive areas. The only acceptable powerline alternative for the evacuating electricity to Rivermouth Substation is the green line, which will require the consideration for a minor realignment to avoid impacting the riparian vegetation where it crosses the Quko River.

An Alien invasive monitoring and eradication programme and Rehabilitation Management Plan must be developed and implemented throughout the life of the project.

Section 10. References

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Appendix A Site Ecological Important Criteria

Table A.1 Criteria for establishing Site Ecological importance and description of criteria

Criteria	Description
Conservation Importance (CI)	*The importance of a site for supporting biodiversity features of conservation concern present e.g. populations of Threatened and Near-Threatened species (CR, EN, VU & NT), Rare, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.*
Functional Integrity (FI)	*A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.*
Biodiversity Importance (BI) is a function of Conservation Importance (CI) and the Functional Integrity (FI) of a receptor.	
Receptor Resilience (RR)	*The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.*
Site Ecological Importance (SEI) is a function of Biodiversity Importance (BI) and Receptor Resilience (RR)	

Appendix B CES Impact rating scale

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 1 of the EIA Regulations (2014 and subsequent 2017 amendments).

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 D1: 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 D2: 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.*
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 impacts 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 D3: 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).

Appendix C Full lists of faunal species

List of potential mammals

Scientific name	Common name	Threat status
Amblysomus hottentotus	Golden mole	DD
Myosorex cafer	Dark footed frest shrew	DD
Myosorex varius	Forest shrew	LC
Crocidura cyanea	Reddish grey musk shrew	DD
Crocidura flavescens	Greater red musk shrew	DD
Suncus infinitesimus	Least Dwarf shrew	LC
Papio cynocephalus ursinus	Baboon	LC
Cercopithecus pygerythrus	Vervet Monkey	LC
Cercopithecus albogularis labiatus	Samango monkey	VU
Lepus saxatilis	Scrub hare	LC
Pronolagus repestris	Smiths Red Rock Rabbit	LC
Graphiurus murinus	Woodland dormouse	LC
Cryptomys hottentotus	Common mole-rat	LC
Georychus capensis	Cape mole-rat	LC
Hystrix africaeaustralis	Porcupine	LC
Mystromus albicaudatus	White-tailed rat/mouse	EN
Dendromus melanotis	Climbing mouse	LC
Dendromus mesomelas	Climbing mouse	LC
Thryonomys swinderianus	Greater cane rat	LC
Micaelamys namaquensis	Namaqua rock mouse	LC
Rhabdomys pumilio	Four-striped Grass Mouse	LC
Mus minutoides	Pygmy mouse	LC
Mastromys natalensis	Natal Multimammate Mouse	LC
Otomys irroratus	Vlei Rat	LC
Canis mesomelas	Black backed Jackal	LC
Aonyx capensis	Cape clawless otter	LC
Mellivora capensis	Honey badger	NT
Poecilogale albinucha	African Striped Weasel	DD
Ictonyx striatus	Striped polecat	LC
Galerella pulverulenta	Small Grey Mongoose	LC
Herpestes ichneumon	Large Grey Mongoose	LC
Atilax paludinosus	Water Mongoose	LC
Otomys auratus	Honey badger	LC (NT IUCN)
Genetta tigrina	South African Large Spotted Genet	LC
Proteles cristatus	Aardwolf	LC
Felis silvestris lybica	African Wild Cat	LC
Caracal caracal	Caracal	LC
Orycteropus afer	Aardvark	LC
Procavia capensis	Rock dassie	LC
Dendrohyrax arboreus	Tree dassie	VU
Tragelaphus scriptus	Bushbuck	LC
Sensitive species 7		VU

Sylvicapra grimmia	Common duiker	LC

List of potential reptiles

Scientific name	Common name	Threat status
Agama atra	SOUTHERN ROCK AGAMA	LC
Acontias plumbeus	GIANT LEGLESS SKINK	LC
Afrotyphlops bibronii	BIBRON'S BLIND SNAKE	LC
Bitis arietans arietans	PUFF ADDER	LC
Bradypodion kentanicum	KENTANI DWARF CHAMELEON	Near Threatened
Bradypodion ventrale	EASTERN CAPE DWARF CHAMELEON	LC
Causus rhombeatus	RHOMBIC NIGHT ADDER	LC
Chamaesaura anguina anguina	CAPE GRASS LIZARD	LC
Cordylus cordylus	CAPE GIRDLED LIZARD	LC
Dasypeltis inornata	SOUTHERN BROWN EGG-EATER	LC
Duberria lutrix lutrix	SOUTH AFRICAN SLUG-EATER	LC
Hemidactylus mabouia	COMMON TROPICAL HOUSE GECKO	LC
Homoroselaps lacteus	SPOTTED HARLEQUIN SNAKE	LC
Lycodonomorphus inornatus	OLIVE HOUSE SNAKE	LC
Lycophidion capense capense	CAPE WOLF SNAKE	LC
Pachydactylus maculatus	SPOTTED GECKO	LC
Pelomedusa galeata	SOUTH AFRICAN MARSH TERRAPIN	Not evaluated
Pelomedusa subrufa	AFRICAN HELMETED TURTLE	LC
Philothamnus occidentalis	WESTERN NATAL GREEN SNAKE	LC
Philothamnus semivariegatus	SPOTTED BUSH SNAKE	LC
Psammophis brevirostris	SHORT-SNOUTED GRASS SNAKE	LC
Psammophylax rhombeatus rhombeatus	SPOTTED GRASS SNAKE	LC
Pseudaspis cana	MOLE SNAKE	LC
Trachylepis capensis	EASTERN CAPE SKINK	LC
Trachylepis varia	VARIABLE SKINK	LC
Varanus niloticus	WATER MONITOR	LC

List of all potential amphibians

Scientific name	Common name	Threat status
Afrana angolensis	Common River Frog	LC
Afrixalus spinifrons	Natal Leaf-folding Frog	LC
Amietia delalandii	Delalande's River Frog	LC
Cacosternum boettgeri	Common Caco	LC
Cacosternum nanum	Bronze Caco	LC
Hyperolius marmoratus verrucosus	Painted Reed Frog (subsp. verrucosus)	LC
Hyperolius pusillus	Water Lily Frog	LC
Hyperolius semidiscus	Yellowstriped Reed Frog	LC
Kassina senegalensis	Bubbling Kassina	LC
Phrynobatrachus mababiensis	Dwarf Puddle Frog	LC
Phrynobatrachus natalensis	Snoring Puddle Frog	LC
Ptychadena oxyrhynchus	Sharpnosed Grass Frog	LC
Ptychadena porosissima	Striped Grass Frog	LC
Sclerophrys capensis	Raucous Toad	LC
Sclerophrys gutturalis	Guttural Toad	LC
Sclerophrys pardalis	Eastern Leopard Toad	LC
Semnodactylus wealii	Rattling Frog	LC
Strongylopus fasciatus	Striped Stream Frog	LC
Strongylopus grayii	Clicking Stream Frog	LC
Tomopterna natalensis	Natal Sand Frog	LC
Xenopus laevis	Common Platanna	LC

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ECONOMIC DEVELOPMENT, ENVIRONMENTAL AFFAIRS & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of 6 January 2021.

PROJECT TITLE

Latrodex (Pty) Ltd Wind Energy Facility, Marshstrand, Eastern Cape.

SPECIALIST [1]	Big Thorn Environmental CC		
Contact person:	Greer Hawley-McMaster		
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Project Consultant:	Coastal and Environmental Services		
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E-mail:	a.carter@cesnet.co.za		

4.2 The SPECIALIST

I, **Greer Hawley-McMaster** , declare that –

General declaration:

- I act as the independent Specialist in this application
- 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 declare that there are no circumstances that may compromise my objectivity in performing such work;
- 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 have no, and will not engage in, conflicting interests in the undertaking of the activity;
- 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;
- All the particulars furnished by me in this form are true and correct;
- I realise that a false declaration is an offence and is punishable in terms of section 24F 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 Amendments to Environmental Impact Assessment Regulations, 2014 as amended.

Undertaking under oath/affirmation

I, Greer Hawley-McMaster , 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 Specialist:

Big Thorn Environmental CC

Name of company:

15 July 2022

Date:

Signature of the Commissioner of Oaths:

15TH July 2022

Date:

Commissioner of Oaths

Designation:

[1] Curriculum Vitae (CV) attached

Official stamp (below).

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

Annexure 1

CV