FINAL

PROPOSED LATRODEX WIND ENERGY FACILITY AND OVERHEAD POWERLINE NEAR GREAT KEI LOCAL MUNICIPALITY, EASTERN CAPE	
DEDEAT Reference Number: **EC/25/A/LN1/LN3/M/22-12**	
FINAL BASIC ASSESSMENT REPORT	
PREPARED FOR:	
	LATRODEX (PTY) LTD Wild Coast Abalone, Portion 1 Farm 259, Haga-Haga, Eastern Cape, 5272 South Africa Tel.: +27 (0)43 841 1999
PREPARED BY:	
CES ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES	**COASTAL AND ENVIRONMENTAL SERVICES (PTY) LTD (TRADING AS "CES")** Nahoon, East London, 5241 Tel: +27 (0)43 726 7809 www.cesnet.co.za
JULY 2022	

Province of the
EASTERN CAPE
ECONOMIC DEVELOPMENT,
ENVIRONMENTAL AFFAIRS & TOURISM

BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:	**EC/25/A/LN1/LN3/M/22-12**
NEAS Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014 as amended, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority **unless indicated otherwise by the Department**.
7. No faxed or e-mailed reports will be accepted **unless indicated otherwise by the Department**.
8. The report must be compiled by an independent environmental assessment practitioner (EAP).
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? YES [redacted]

If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

LATRODEX WIND ENERGY FACILITY IN THE GREAT KEI LOCAL MUNICIPALITY, EASTERN CAPE.

PROJECT DESCRIPTION

Latrodex (Pty) Ltd is proposing the construction of 15MW Wind Energy Facility consisting of five 5 (five) x3MW turbines to be located near Marshstrand, Great Kei Local Municipality, Eastern Cape. The power generated from the WEF will be used to provide electricity to the existing Wild Coast Abalone facility and excess electricity to be fed into the Eskom grid. The proposed WEF is to be located on the ridge overlooking the existing Wild Coast Abalone Facility.

Turbine Design Specifications	
Number of turbines	5
Power output per turbine	3MW
Facility output	15MW
Turbine hub height	Up to 105m
Turbine rotor diameter	Up to 90m
Turbine blade length	Up to 45m
Turbine tip height	150m (maximum height)
Turbine foundation area	400m^2
Crane hardstand area	3 500m^2
Turbine road width	14m to be rehabilitated to 8m

Each wind turbine is made up of a tower, a nacelle and rotor blades. The proposed 3MW wind turbine model will have a hub height of up to 105m and 90m rotor diameter.

Other infrastructure associated with the proposed WEF will be:

- Concrete foundations to support the wind towers;
- Access roads to each turbine;
- Underground cables connecting each turbine to the other and to the mini substation;
- Control room and maintenance facilities; and
- An onsite mini-substation to facilitate interconnection of the WEF with the Wild Coast Abalone Facility and Eskom grid; and
- Two 22 kV powerlines connecting the facility to two existing Eskom substations:
- Chaba sub-station; and
- Rivermouth sub-station
- Temporary infrastructure including a site camp and a laydown area of approximately 30m^2 per turbine (all to be rehabilitated post construction).

Wind energy is a form of solar energy. Winds are caused by the uneven heating of the atmosphere by the sun, the irregularities of the earth's surface, and rotation of the earth. Wind flow patterns are modified by the earth's terrain, bodies of water, and vegetation. This wind flow or motion energy (kinetic energy) can be used for generating electricity. The term

"wind energy" describes the process by which wind is used to generate mechanical power or electricity. Wind turbines convert the kinetic energy in the wind into mechanical power and a generator can then be used to convert this mechanical power into electricity. A detailed description or the components of a typical wind turbine subsystem is provided below and shown in Figure 1:

- A rotor, or blades, which are the portions of the wind turbine that collect energy from the wind and convert it into rotational shaft energy to turn the generator. The speed of rotation of the blades is controlled by the nacelle, which can turn the blades to face into the wind ('yaw control) and change the angle of the blades ('pitch control') to make the most use of the available wind. The maximum rotor diameter for the Latrodex WEF turbines is approximately 90m.
- A nacelle (enclosure) containing a drive train, usually including a gearbox (some turbines do not require a gearbox) and a generator. The generator converts the turning motion of a wind turbine's blades (mechanical energy) into electricity. Inside this component, coils of wire are rotated in a magnetic field to produce electricity. The nacelle is also fitted with brakes, so that the turbine can be switched off during very high winds, such as during storm events. This prevents the turbine from being damaged. All this information is recorded by computers and is transmitted to a control centre, which means that operators don't have to visit the turbine very often, but only occasionally for a mechanical check.
- A tower, to support the rotor and drive train; The tower on which a wind turbine is mounted is not only a support structure, but it also raises the wind turbine so that its blades safely clear the ground, and so that it can reach the stronger winds which are at higher elevations. The tower must also be strong enough to support the wind turbine and to sustain vibration, wind loading, and the overall weather elements for the lifetime of the turbine. The maximum hub height of the Latrodex WEF turbines is approximately 105m.
- Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.

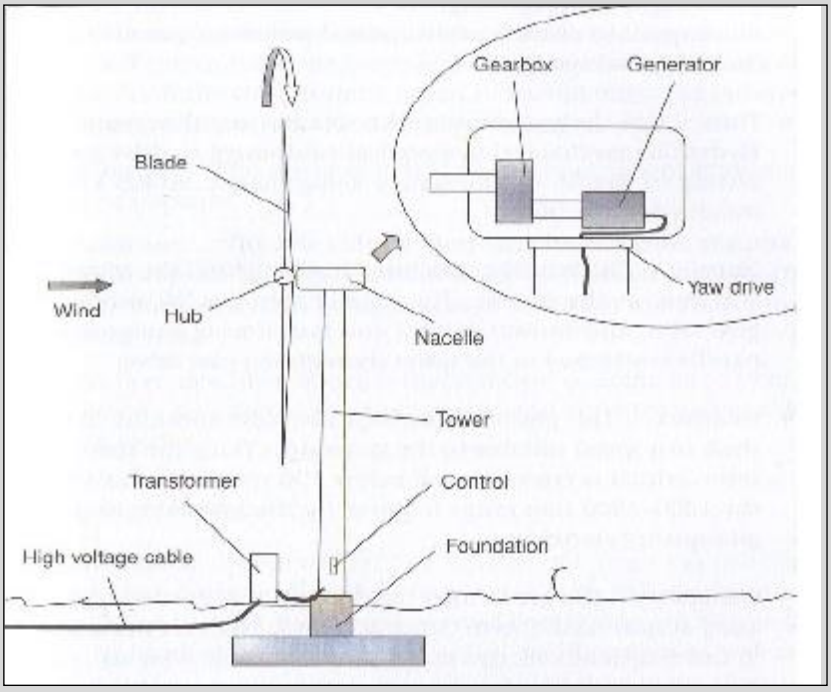

Figure 1 illustration of the main components of a typical wind turbine. Source: www.powernaturally.org

Stages of Wind Energy Facility Development

Typically, building a wind farm is divided into four phases namely:-

- Preliminary civil works
- Construction
- Operation
- Decommission

PRELIMINARY CIVIL WORKS

Prior to the commencement of the main construction works, the Contractor will undertake vegetation clearance and site establishment works. The site establishment works may include the construction of one, or more, temporary construction compounds and laydown areas and the connection of services such as power and water to these compounds.

CONSTRUCTION

The construction footprint will include the platforms, or "crane pads" required to construct the wind turbines, new or upgraded access roads, lay-bys, component storage areas, turning heads and a substation to evacuate the electricity generated to the municipal or national grid.

A typical platform for the assembly of the crane and construction of the turbine is shown in Figure 2. These platforms will be connected by access roads with the following specifications:-

- Minimum of 8m width (5m running width and 1.5 m verge either side) on straight sections with widening required on corners.
- Should a "crawler" type crane be used, then road widths of up to 14m on straight sections may be required, of which 8m would be retained for the life of the wind farm.
- Typical 300mm deep road section
- Maximum 10% vertical gradient on gravel roads
- Turning heads provided within 200m of each crane pad.
- Passing places of c. 50m length and 5m width located approximately every 1km

The construction footprint required will be greater than the dimensions specified above to allow for construction of the WEF infrastructure. These areas are used temporarily over the construction period – including temporary construction compound and road verges – and will be rehabilitated at the end of construction works to reduce the footprint on the land.

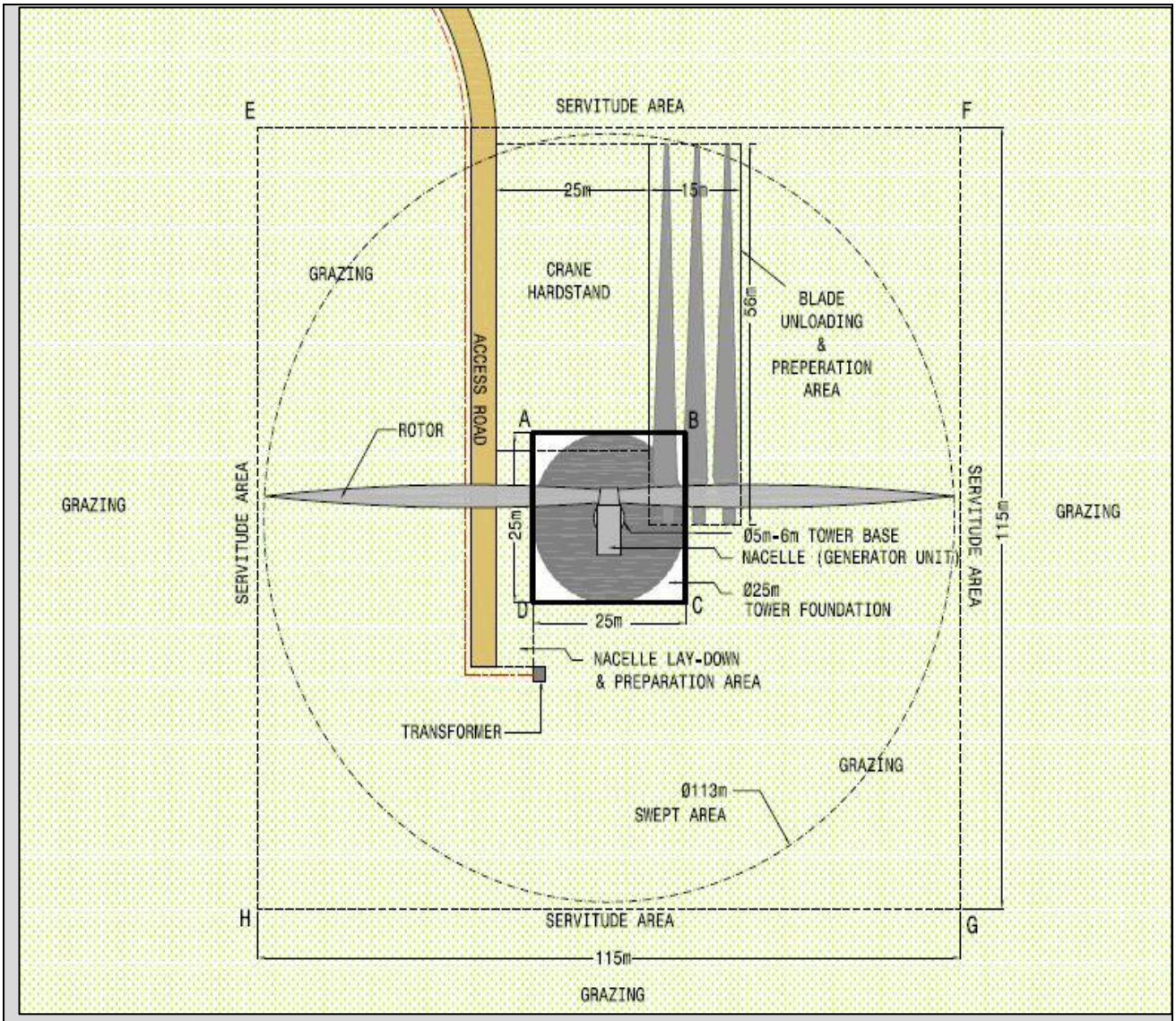

Figure 2: Typical construction phase platform

A platform needs to be laid down during the preliminary phase of a typical wind farm for access to the site during the construction phase by machines (bulldozers, trucks, cranes etc.).

Other works during the construction phase include:

- Geotechnical studies and foundation works

A geotechnical study of the area is undertaken for safety purposes. This comprises drilling, penetration, and pressure assessments. For the purpose of the foundations, approximately 1 500m^3 of soil would need to be excavated for each turbine. These excavations are then filled with steel-reinforced concrete (typically 45 tons of steel reinforcement per turbine including a "bolt ring" to connect the turbine foundation to the turbine tower). Foundation design will vary according to the type and quality of the soil.

- Electrical cabling

Electrical and communication cables are laid approximately 1m deep in trenches which run alongside the access roads. All previous farming activities can continue unhindered on the ground above the cables during the operational phase.

- Establishment of hard standing surfaces and laydown areas

Laydown and storage areas will be required for the contractor's construction equipment and turbine components on site.

- Site preparation

If not carried out in the preliminary works phase, this will include clearance of vegetation over the access roads, platforms, lay-bys, substation and any other laydown or hard-standing areas. These activities will require the stripping of topsoil which will be stock-piled, back-filled and/or spread on site.

- Establishment of substation and ancillary infrastructure

The establishment of these facilities/buildings will require the clearing of vegetation and levelling of the development site and the excavation of foundations prior to construction. A laydown area for building materials and equipment associated with these buildings will also be required.

- Turbine erection

Weather permitting; the erection of the turbines can be completed swiftly and erection rates generally average 1-2 turbines per week. This phase is the most complex and costly.

- Undertake site remediation

Once construction is completed and all construction equipment is removed, the site must be rehabilitated. On full commissioning of the facility, any access points to the site which are not required during the operational phase must be closed and rehabilitated.

Electrical Connection

Each turbine is fitted with its own transformer that steps up the voltage to 22kV. The entire wind farm is then connected to the "point of interconnection" which is the electrical boundary between the wind farm and the municipal grid.

OPERATIONAL PHASE

During the period when the turbines are up and running, on-site human activity drops to a minimum, and includes routine maintenance requiring only light vehicles to access the site. Only major breakdowns would necessitate the use of cranes and trucks.

- Facility re-powering

The Wind turbines are expected to have a lifespan of approximately 25 years (with appropriate maintenance). The infrastructure would only be decommissioned once it has reached the end of its economic or technological life. If economically feasible, the disassembly and replacement of the individual components with more appropriate technology/infrastructure available at the time may take place.

DECOMMISSIONING OF THE WIND FARM

The infrastructure would only be decommissioned once it has reached the end of its economic or technological life. If economically feasible, the decommissioning activities would comprise the disassembly and replacement of the individual components with more appropriate technology/infrastructure available at the time. This operation is referred to as 'facility re-powering'. However, if not deemed so, then the facility would be completely decommissioned which would include the following decommissioning activities.

- Site preparation

Activities would include confirming the integrity of the access to the site to accommodate the required equipment and the mobilisation of decommissioning equipment.

- Disassemble all individual components

The components would be disassembled and reused and recycled or disposed of in accordance with regulatory requirements.

DESCRIPTION OF THE POWERLINE OPTIONS CONNECTING THE WEF SUBSTATION TO THE ESKOM TWO SUBSTATIONS

CHABA SUBSTATION

Powerline Corridor Option 1 (preferred alternative)

- Extent of powerline within corridor: 453 052 m^2 (12 m width x 37.73 km length)

- Location: connecting the WEF to the Chaba Substation. This route follows the Haga Haga gravel road, turns right on the R349 and then left onto the gravel road past Soto settlement reaching the Chaba substation approximately 1.5 km from the N2.

Powerline Corridor Option 2

- Extent of powerline within corridor: 466 800 m^2 (12 m width x 38.90 km length)
- Location: connecting the WEF to the Chaba Substation. This route follows the Haga Haga gravel road, turns left onto the R349 and then right onto the until it reaches the Chaba substation approximately 1.5 km off the N2.

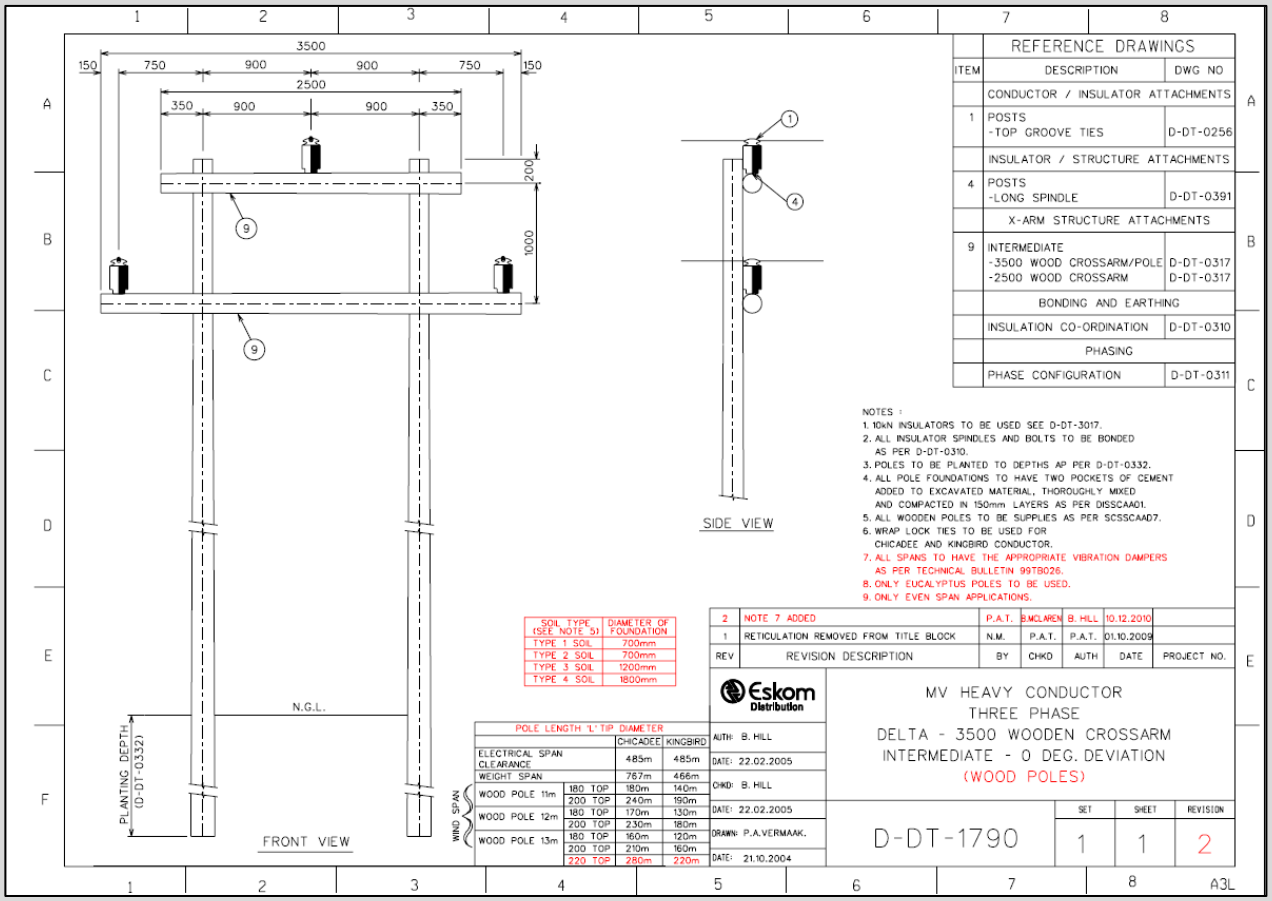

Figure 3 Proposed typical intermediate structure (Chaba)

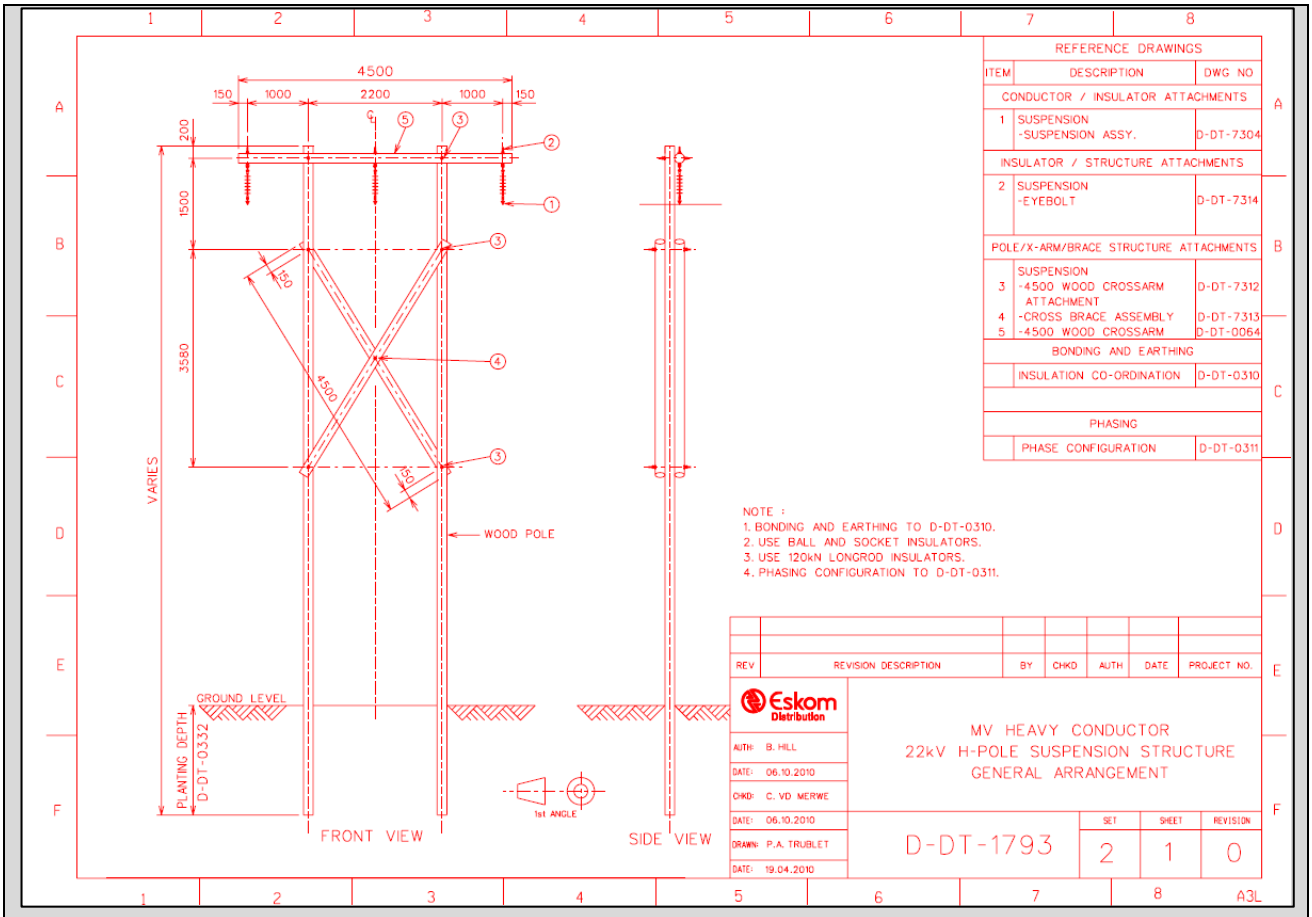

Figure 4 Proposed typical strain structure (Chaba)

RIVERMOUTH SUBSTATION

Powerline Corridor Option 1 (preferred alternative)

- Extent of powerline within corridor: 103 245 m^2 (12 m width x 8.59 km length)
- Location: connecting the WEF to the Rivermouth Substation. This route follows a path in a north easterly direction, crossing the Quko River and meeting up with an existing gravel road. It then follows the road in a northerly direction for 1.5 km before turning right onto an existing gravel road. After 2 km the route deviates off the road and meets up with the Rivermouth substation.

Powerline Corridor Option 2

- Extent of powerline within corridor: 82 692 m^2 (12 m width x 6.89 km length)
- Location: connecting the WEF to the Rivermouth Substation. This route follows a path in a north easterly direction, crossing the Quko River. It then follows a route in a north easterly direction for 3 km before and meets up with the Rivermouth substation. **This route is fatally flawed and will not be assessed further in this assessment.**

Powerline Corridor Option 3

- Extent of powerline within corridor: 103 543 m^2 (12 m width x 8.68 km length)
- Location: connecting the WEF to the Rivermouth Substation. This route follows the existing powerline along the coast across the Quko Estuary. **This route is fatally flawed and will not be assessed further in this assessment**.

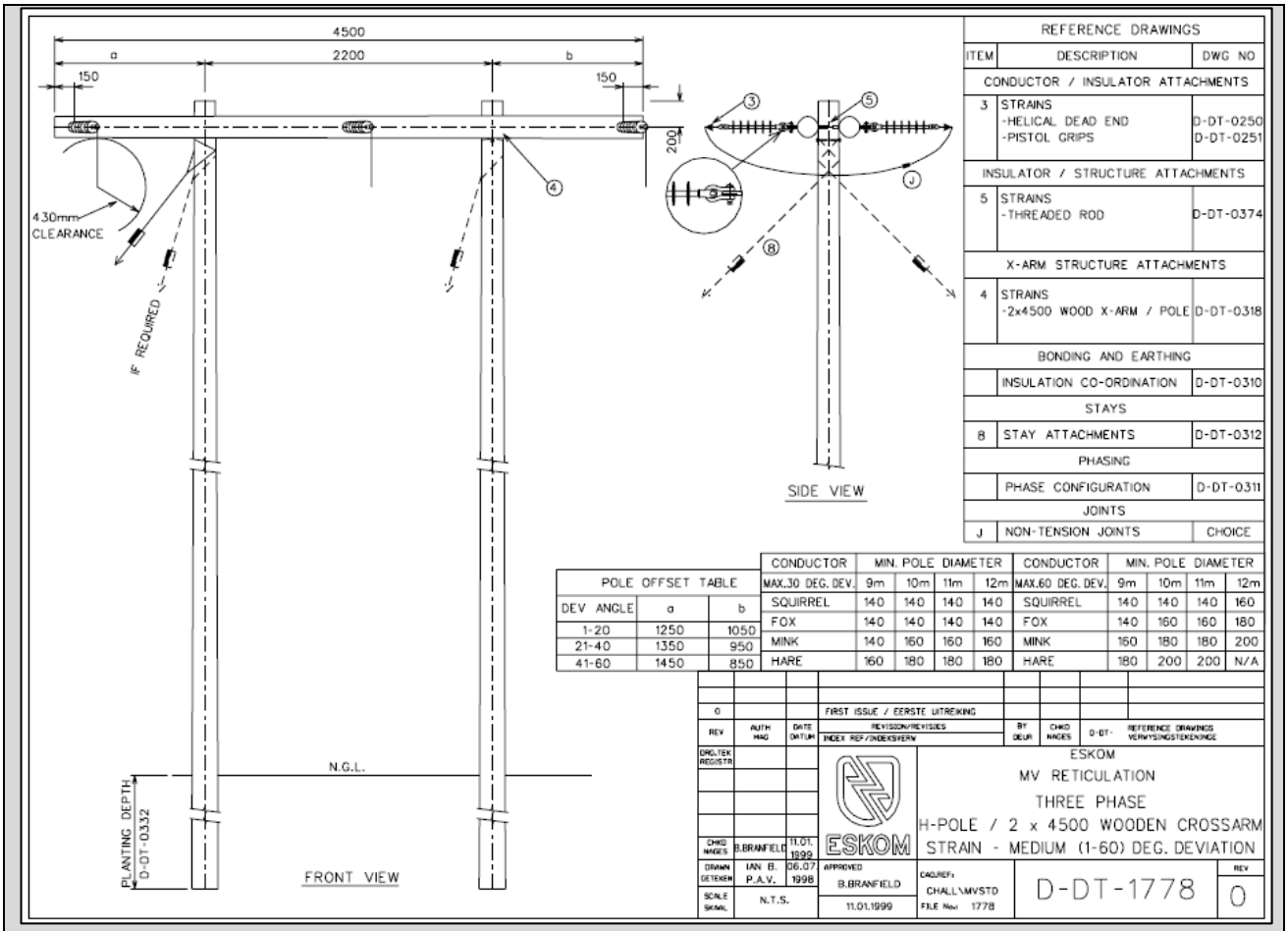

Figure 5 Proposed typical structure (Rivermouth)

PRELIMINARY CIVIL WORKS

Prior to the commencement of the main construction works, the Contractor will undertake vegetation clearance and site establishment works.

CONSTRUCTION

The construction footprint will include the powerline servitude (12m in width) in which the pylons, including any guy wires, will be erected.

OPERATIONAL PHASE

During the period when the powerline is operating as the connection point between the WEF and the municipal grid, on-site human activity drops to a minimum, and includes routine maintenance requiring only light vehicles to access the site. Only major breakdowns would necessitate the use of cranes and trucks.

Locality

The proposed development is located near Fish Bay, Marshstrand and Haga Haga towns, in the Great Kei Local Municipality within the Amathole District Municipality in the Eastern Cape Province. Access to the site is via, the existing provincial road to Fish Bay (Figure 6).

The table below list the properties affected by the proposed Latrodex WEF and associated infrastructure:

FARM NAME	21- DIGIT SURVEYOR GENERAL CODE
Turbines	
Farm 459	C04000000000045900000

Farm 456	C04000000000045600000
Powerlines	
RIVERMOUTH OPTION 1	
FARM 120	C04000000000012000000
FRASER 111	C04000000000011100000
FARM 112	C04000000000011200000
FARM 113	C04000000000011300000
FARM 456	C04000000000045600000
FARM 93	C04000000000009300000
FARM 122	C04000000000012200000
FARM 119	C04000000000011900000
MECHAUS REQUEST 114	C04000000000011400000
RIVERMOUTH OPTION 2	
FARM 109	C04000000000010900000
FARM 113	C04000000000011300000
UITVLUG B 92	C04000000000009200000
FARM 93	C04000000000009300000
FARM 110	C04000000000011000000
MECHAUS REQUEST 114	C04000000000011400000
RIVERMOUTH OPTION 3	
WOODSTOCK 91	C04000000000009100000
FARM 456	C04000000000045600000
FARM 121	C04000000000012100000
FARM 123	C04000000000012300000
UITVLUG B 92	C04000000000009200000
FARM 93	C04000000000009300000
FARM 108	C04000000000010800000
FARM 122	C04000000000012200000
UITVLUG 90	C04000000000009000000
CHABA OPTION 1	
FARM 151	C04000000000015100000
FARM 152	C04000000000015200000
FARM 254	C04000000000025400000
HAGAHAGA EXTENSION 265	C04000000000026500000
FARM 456	C04000000000045600000
FARM 256	C04000000000025600000
EVERSLEY ANNEXE 160	C04000000000016000000
WESTBURY 162	C04000000000016200000
FARM 61	C04000000000006100000
GOLDEN SLOPES 288	C04000000000028800000
FARM 291	C04000000000029100000
FARM 161	C04000000000016100000
FARM 150	C04000000000015000000
LEATHERLANDS 282	C04000000000028200000
FARM 446	C04000000000044600000
FARM 447	C04000000000044700000
FARM 58	C04000000000005800000
FARM 155	C04000000000015500000
FARM 257	C04000000000025700000
FARM 292	C04000000000029200000

FARM 476	C04000000000047600000
FARM 290	C04000000000029000000
FARM 149	C04000000000014900000
FARM 213	C04000000000021300000
FARM 449	C04000000000044900000
CHABA OPTION 2	
BOSCH HOEK 312	C04000000000031200000
MOOIPLAATS SHOP 318	C04000000000031800000
WESTBURY 162	C04000000000016200000
FARM 203	C04000000000020300000
PAARDEN VLEI 202	C04000000000020200000
FARM 209	C04000000000020900000
FARM 317	C04000000000031700000
FARM 320	C04000000000032000000
MOOIPLAATS HOTEL 319	C04000000000031900000
FARM 159	C04000000000015900000
SKUINSHOOGTE 206	C04000000000020600000
FARM 468	C04000000000046800000
FARM 292	C04000000000029200000
REDCLIFF 313	C04000000000031300000
FARM 314	C04000000000031400000
HEATHERCLIFF 311	C04000000000031100000

TURBINE COORDINATES				
NO	**LATITUDE (S) (DMM)**		**LONGITUDE (E) (DMM)**	
Reference number	**Degrees**	**Decimal Minutes**	**Degrees**	**Decimal Minutes**
WTG 01	32º	44.4552 'S	28º	15.7763 'E
WTG 02	32º	44.4866 'S	28º	15.9182 'E
WTG 03	32º	44.5555 'S	28º	16.0600 'E
WTG 04	32º	44.6006 'S	28º	16.2154 'E
WTG 05	32º	44.5629 'S	28º	16.3995 'E

Powerline Design Specifications	
Length of Powerline	37.73 km – Chaba Powerline Option 1 (preferred alternative) 38.90 km – Chaba Powerline Option 2 8.89 km – Rivermouth Powerline Option 1 (preferred alternative) 6.89 km – Rivermouth Powerline Option 2 8.68 km – Rivermouth Powerline Option 3
Powerline Capacity	22 kV
Powerline Servitude Width	12 m
Total Powerline Footprint	453 052 m^2 – Chaba Powerline Option 1 (preferred alternative) 466 800 m^2 – Chaba Powerline Option 2 103 245 m^2 – Rivermouth Powerline Option 1 (preferred alternative) 8 2 692 m^2 – Rivermouth Powerline Option 2 103 543 m^2 – Rivermouth Powerline Option 3
Powerline Road Access	Existing gravel roads

Powerline Coordinates					
		Degrees	**Decimal Minutes**	**Degrees**	**Decimal Minutes**
	START	32º	44,5509 'S	28º	16,1564 'E

Chaba Powerline Corridor Option 1 (preferred)	***CENTRE***	32º	41,0155 'S	28º	6,7749 'E
	END	32º	37,3615 'S	27º	57,8343 'E
Chaba Powerline Corridor Option 2	***START***	32º	38,0843 'S	27º	59,2584 'E
	CENTRE	32º	42,9261 'S	28º	1,8095 'E
	END	32º	42,6671 'S	28º	8,3828 'E
Rivermouth Powerline Corridor Option 1 (preferred)	***START***	32º	41,8659 'S	28º	18,7182 'E
	CENTRE	32º	42,4137 'S	28º	16,7258 'E
	END	32º	44,4889 'S	28º	16,1946 'E
Rivermouth Powerline Corridor Option 2	***START***	32º	41,8821 'S	28º	18,7471 'E
	CENTRE	32º	42,4038 'S	28º	17,8088 'E
	END	32º	42,9841 'S	28º	17,0150 'E
Rivermouth Powerline Corridor Option 3	***START***	32º	44,4939 'S	28º	16,1858 'E
	CENTRE	32º	43,4945 'S	28º	18,4854 'E
	END	32º	43,5548 'S	28º	18,3791 'E

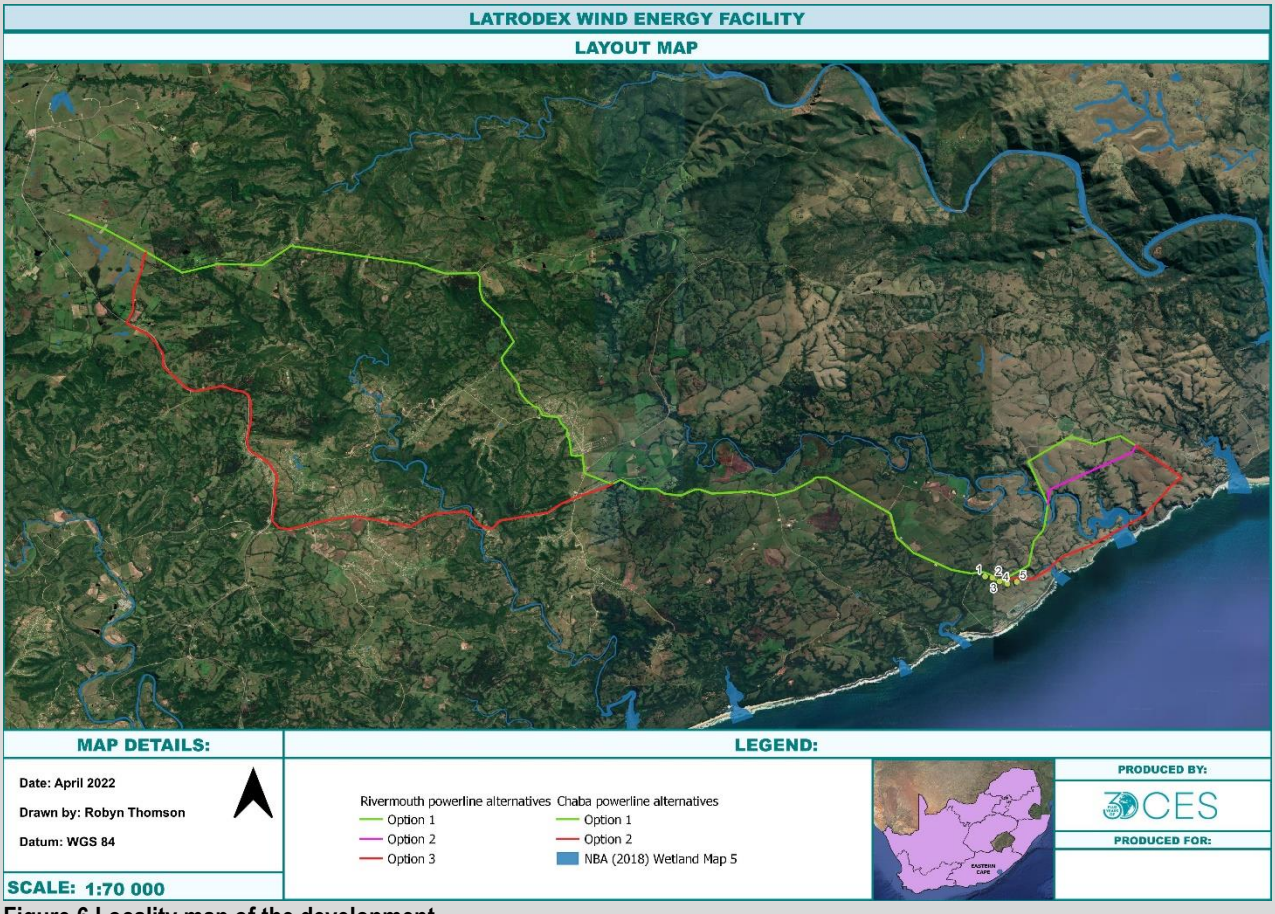

Figure 6 Locality map of the development

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

(a) the property on which or location where it is proposed to undertake the activity;

(b) the type of activity to be undertaken;

(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Paragraphs 3 – 13 below should be completed for each alternative.

Table 1: WEF alternatives

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
PROPERTY OR LOCATION This refers to the fundamental location options, and the environmental risks and impacts associated with such options.	**Alternative location 1**: Current proposed site (Preferred alternative). This site has been selected based on good wind resource potential and proximity to available electricity grid.	⅄ Located close to the Wild Coast Abalone Facility. ⅄ Suitable wind resource. ⅄ Land availability (The landowner is the owner of the WCA facility).	⅄ Land previously undeveloped ⅄ Potential visual intrusion to surrounding communities. ⅄ Potential impacts on avifauna and bats.	YES	The main determining factors for selecting the proposed location were:- ⅄ Proximity to the WCA facility. ⅄ Available land. ⅄ Available wind resource. Preliminary investigations have identified that the proposed project site meets the above land specifications.
	Alternative location 2: None identified as rights to private land must be sought from local landowners. Location 1 has been agreed to. Alternative sites in the area do not yield the same wind resource potential.	N/A	N/A	N/A	⅄ Alternative locations for the current project are limited and probably not reasonable or feasible due to lower wind resources. ⅄ The proximity to the WCA facility is a crucial factor to the overall feasibility of the project. ⅄ The available wind resource was considered a crucial aspect. ⅄ Therefore, alternative locations were not assessed.
TYPE OF TECHNOLOGY This refers to the fundamental technology options and the environmental risks and impacts associated with such options.	**Alternative technology 1**: Wind turbines (Preferred alternative)	⅄ Clean and renewable energy. ⅄ Mitigate climate change. ⅄ Does not require large areas of land.	⅄ Visually intrusive ⅄ Avifaunal impacts ⅄ Bat impacts	**YES**	The activity does not exclude all current land uses i.e. Wildlife and stock grazing can still take place between turbines.
	Alternative technology 2 – Wave energy	⅄ Clean and renewable energy. ⅄ Mitigate climate change. ⅄ Does not require large areas of land.	⅄ Coastal footprint ⅄ Located in a Marine Protected Area ⅄ High maintenance ⅄ Expensive	**NO**	The wave energy plant would need to be located on the beach. The Marine Protected Area precludes the development of a wave energy facility.
	Alternative energy technology 3 – Solar PV	⅄ Clean and renewable energy. ⅄ Mitigate climate change.	⅄ Visually intrusive ⅄ Requires large area of land.	**NO**	Wind and solar are not mutually exclusive, i.e. both developments can take place in close proximity to one another. The

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
					amount of land secured is not large enough to support a solar PV development. In terms of output, wind energy has a higher potential than solar PV based on suitable land available on the site.
	Alternative energy technology 4 – Concentrated Solar Power (CSP)	✈ Clean and renewable energy ✈ Mitigate climate change.	✈ Visually intrusive. ✈ Requires large area of land. ✈ Water a limiting factor. ✈ Reflectivity of mirrors potentially a significant issue.	**NO**	Not enough intense radiation in the area to be considered viable. The solar atlas shows the project area to occur in an area that receives <6.0 kWh/m^2 of solar radiation per day. Although favourable for solar radiation there are areas in South Africa that receive between 7 and 8 kWh/m^2 radiation per day which is preferable when compared to areas that receive 6kWh/m^2
	Alternative energy technology 5 – Coal fired power plant	✈ None identified	✈ Air pollution from coal dust and smoke stack emissions (SO2). ✈ Contribution to climate change. ✈ Ground contamination from coal dust. ✈ Haulage of coal to the power plant	**NO**	Not environmentally desirable.
	Alternative energy technology 6 – Biomass	✈ Clean and renewable energy. ✈ Mitigate climate change.	✈ Expensive source of energy	**NO**	Sufficient suitable biomass may not be available in proximity to the site. Biomass energy is not mutually exclusive.
	Alternative energy technology 7 – Nuclear Power	✈ Greater electricity generation with little raw material required	✈ Raw material highly radioactive ✈ Water availability a severe limitation.	**NO**	The significant dependence of nuclear energy generation on high volumes of water preclude its development on the proposed site. Nuclear energy is not mutually exclusive.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
DESIGN OR LAYOUT This relates mostly to alternative ways in which the proposed development or activity can be physically laid out on the ground to minimise or reduce environmental risks or impacts	**Alternative layout 1:** Preferred WEF layout site (Preferred alternative)	⅄ The preferred alternative has undergone a rigorous environmental assessment to confirm its suitability for the area.	⅄ There may be impacts associated with the disturbance of sensitive environments.	**YES**	No layout alternatives have been assessed the layout included in this BAR is the optimal layout from an environmental perspective, where all environmentally sensitive areas have been designated as NO-GO areas.
	Alternative layout 2: No alternative layout alternatives have been considered.	N/A	N/A	**N/A**	
OPERATIONAL ASPECTS This relates mostly to alternative ways in which the development or activity can operate to reduce environmental risks or impacts	**Alternative operational activities**	⅄ Operational Management alternatives will be informed by specialist input (e.g. bird and bat monitoring) through on-going operational monitoring.	N/A	**YES**	Operational management recommendations will be informed by specialist input and included in the Final EMPr to reduce the likelihood of adverse environmental impacts occurring during the operational phase.
NO-GO OPTION This refers to the current status quo and the risks and impacts associated with it.	Small stock grazing and small scale game farming.	⅄ Will remain relatively undisturbed.	⅄ No contribution towards the national renewable energy target.	**YES**	Assessed in this report.

Table 2 Powerline Alternatives (Chaba Alternatives and Rivermouth Alternatives)

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
Property or location This refers to the **fundamental location options**, and the environmental risks and impacts associated with such options.	**Chaba Powerline Corridor Alternative Location 1 - (Preferred alternative)** This site has been selected based on proximity to available electricity grid (Chaba Substation). Chaba substation is able to cater for the maximum amount	⅄ This is the most direct route to the Chaba Substation into which the surplus energy generated by the WEF can feed for distribution purposes. ⅄ The proposed powerline corridor is the shortest powerline route (which follows an existing road and powerline route) from the	⅄ Potential impacts on avifauna. ⅄ Visual impacts.	**YES**	The main determining factors for selecting the proposed location were:- ⅄ Proximity to a grid connection point. ⅄ Existing road and powerline servitude. ⅄ Length of route.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	of power generated by the facility (i.e., 15 MW).	proposed WEF to the Chaba Substation.			
	Chaba Powerline Corridor Alternative Location 2 This site has been selected based on proximity to available electricity grid (Chaba Substation). Chaba substation is able to cater for the maximum amount of power generated by the facility (i.e., 15 MW).	⅄ The proposed powerline corridor follows existing roads and powerline routes from the proposed WEF to the Chaba Substation.	⅄ Potential impacts on avifauna. ⅄ Requires a large amount of bush clearing ⅄ Visual impacts.	**YES**	The main determining factors for selecting the proposed location were:- ⅄ Proximity to a grid connection point. ⅄ Existing road and powerline servitude.
	Rivermouth Powerline Alternative 1 (preferred) This site has been selected based on proximity to available electricity grid (Rivermouth Substation). Rivermouth substation is able to cater for 6 MW of power generated by the WEF.	⅄ The proposed powerline corridor follows existing roads in most sections to the Rivermouth Substation. It follows the least sensitive route.	⅄ Potential impacts on avifauna. ⅄ Visual impacts. ⅄ Aquatic impacts.	**YES**	The main determining factors for selecting the proposed location were:- ⅄ Proximity to a grid connection point. ⅄ Existing road and powerline servitude. ⅄ Length of route.
	Rivermouth Powerline Alternative 2 This site has been selected based on proximity to available electricity grid (Rivermouth Substation). Rivermouth substation is able to cater for 6 MW of power generated by the WEF.	⅄ The proposed powerline corridor is the shortest direct route to the Rivermouth Substation.	⅄ Potential impacts on avifauna. ⅄ Visual impacts. Powerline Alternative 2 has been assessed as having the highest potential impact in terms of visual impacts. ⅄ Ecological impacts. The ecological impacts associated with the powerline	**NO**	The ecological impacts of this route are too high and as such this alternative is deemed to be not feasible.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	Rivermouth Powerline Alternative 3 This site has been selected based on proximity to available electricity grid (Rivermouth Substation). Rivermouth substation is able to cater for 6 MW of power generated by the WEF.	✈ This is the route of an existing powerline from Haga Haga to the Rivermouth Substation.	✈ Visual impacts. ✈ Potential impacts in terms of avifauna. ✈ Impacts on the estuarine environment.	**NO**	The ecological impacts of this route are too high and as such this alternative is deemed to be not feasible.
Type of technology This refers to the fundamental technology options, such as overhead powerlines versus underground powerlines and the environmental risks and impacts associated with such options.	**Alternative Powerline Technology 1** – Overhead (Preferred alternative)	✈ Does not require large areas of land. ✈ Less invasive and less expensive maintenance during operational phase.	✈ Avifaunal impacts, specifically collision risk.	**YES**	The activity does not exclude all current land uses e.g. wildlife and stock grazing can still take place between powerline pylons. The impact for this alternative is higher from an avifaunal perspective, but this can be mitigated through design alternatives. The impacts in terms of vegetation clearance and maintenance of the powerline route are lower for this alternative.
	Alternative Powerline Technology 2 – Underground	✈ Safer alternative for avifauna, specifically with regards to collision risk.	✈ Impacts on wetlands and other watercourses. ✈ More intensive vegetation clearance required. ✈ High impact during operational phase due to disturbance of top soil for maintenance purposes.	**NO**	This activity is not technically feasible for this particular development due to the length of the proposed powerlines. The proposed powerline alternatives must connect at suitable substations to fulfil their energy transfer. This technology alternative has therefore not been considered as a feasible alternative for the proposed WEF connection.
Design or layout This relates mostly to alternative ways in which the proposed development or activity can be physically laid out on the ground to minimise or reduce environmental risks or impacts	**Powerline Alternative Design 1:** Steel Powerline Pylons	✈ More reliable material in which maintenance is less likely to be required, which means less disturbance to fauna and flora in the area. ✈ Low risk of damage by fires	✈ More expensive than wooden pylons.	**YES**	Steel powerline pylons are more reliable and suitable for the proposed 22kV powerline. The material used means a low chance of breakages and the pylons themselves will not be damaged by fire.
	Powerline Alternative Design 2: Wooden Powerline Pylons	✈ Less expensive than steel pylons	✈ Less reliable material in which maintenance is more likely to be required, which means a higher level of	**NO**	

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			disturbance to fauna and flora in the area. Hirer risk of damage by fires		
No-go option This refers to the current status quo and the risks and impacts associated to it.	Stock grazing and small scale game farming	Will remain relatively undisturbed	The proposed WEF will not be able to connect to the distribution substations (Chaba and Rivermouth Substations)	**NOT APPLICABLE**	Assessed in this report.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.
List alternative sites if applicable.

	Latitude (S):		Longitude (E):	
Alternative:				
Alternative S1[1] (preferred or only site alternative)	32º	44.5555 'S	28º	16.0600 'E
Alternative S2 (if any)	ɵ	'	ɵ	'
Alternative S3 (if any)	ɵ	'	ɵ	'

In the case of linear activities:

Chaba Powerline	**Latitude (S):**		**Longitude (E):**	
Alternative:				
Alternative S1 (preferred or only route alternative)				
• Starting point of the activity	32º	44,5509 'S	28º	16,1564 'E
• Middle point of the activity	32º	41,0155 'S	28º	6,7749 'E
• End point of the activity	32º	37,3615 'S	27º	57,8343 'E
Alternative S2 (if any)				
• Starting point of the activity	32º	38,0843 'S	27º	59,2584 'E
• Middle point of the activity	32º	42,9261 'S	28º	1,8095 'E
• End point of the activity	32º	42,6671 'S	28º	8,3828 'E
~~Alternative S3 (if any)~~				
~~• Starting point of the activity~~	ɵ	'	ɵ	'
~~• Middle point of the activity~~	ɵ	'	ɵ	'
~~• End point of the activity~~	ɵ	'	ɵ	'

Rivermouth Powerline				
Alternative:	**Latitude (S):**		**Longitude (E):**	
Alternative S1 (preferred or only route alternative)				
• Starting point of the activity	32º	41,8659 'S	28º	18,7182 'E
• Middle point of the activity	32º	42,4137 'S	28º	16,7258 'E

[1] "Alternative S.." refer to site alternatives.

- End point of the activity

32º	44,4889 'S	28º	16,1946 'E

Alternative S2 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

32º	41,8821 'S	28º	18,7471 'E
32º	42,3531 'S	28º	17,9219 'E
32º	42,9841 'S	28º	17,0150 'E

Alternative S3 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

32º	44,4939 'S	28º	16,1858 'E
32º	43,6150 'S	28º	18,2727 'E
32º	44,0346 'S	28º	17,3800 'E

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative: Alternative A1[2] (preferred activity alternative)

Size of the activity: 31 600m^2

FACILITY COMPONENT	CONSTRUCTION FOOTPRINT	FINAL FOOTPRINT AFTER REHABILITATION	
Primary laydown area (crane and blade laydown)	***Dimensions*** **3 500m^2 x 5 turbines = 17 500m^2** **which equates to 1.75ha**	***Dimensions*** **3 500m^2 x 5 turbines = 17 500m^2** **which equates to 1.75ha**	
Temporary infrastructure	***Dimensions*** **30m^2 x 5 turbines = 270m^2** **which equates to 0.03ha**	***To be rehabilitated***	
Turbine foundation	***Dimensions*** **400m^2 x 5 turbines = 3 600m^2** **which equates to 0.36ha**	***Dimensions*** **400m^2 x 5 turbines = 3 600m^2** **which equates to 0.36ha**	
Switching gear	***Dimensions*** **25m^2 x 5 turbines = 225m^2** **which equates to 0.02ha**	***Dimensions*** **25m^2 x 5 turbines = 225m^2** **which equates to 0.02ha**	
Roads and underground cabling	***Dimensions*** **14m x 350m = 4 900 m^2** **which equates to 0.49ha**	***Dimensions*** **8m x 350m = 2 800m^2** **which equates to 0.28ha**	
Switching Station and Control Area	**TOTAL** **7 500 m^2** **which equates to 0.75ha**	**TOTAL** **7 500 m^2** **which equates to 0.75ha**	
TOTAL FOOTPRINT	**3.4ha = 34 000m^2** ***of clearing needed for the construction phase of the development of the proposed WEF***	**3.16ha = 31 600m^2** ***of clearing remaining during the post-construction operational phase (after rehabilitation)***	

[2] "Alternative A.." refer to activity, process, technology or other alternatives.

~~Alternative A2 (if any)~~	~~m²~~
~~Alternative A3 (if any)~~	~~m²~~

or, for linear activities:

Alternative:	**Length of the activity:**	
	Chaba OHL	Rivermouth
Alternative A1 (preferred activity alternative)	37 730 m	8.59 m
Alternative A2 (if any)	38 900 m	6.89 m
Alternative A3 (if any)	~~m~~	8.68 m

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	12m wide
Alternative A2 (if any)	~~m~~
Alternative A3 (if any)	~~m~~

5. SITE ACCESS

Does ready access to the site exist?	**YES**	~~NO~~
If NO, what is the distance over which a new access road will be built	~~m~~	

Describe the type of access road planned:

The development will use existing roads.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

6.1 the scale of the plan which must be at least a scale of 1:500;

6.2 the property boundaries and numbers of all the properties within 50 metres of the site;

6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;

6.4 the exact position of each element of the application as well as any other structures on the site;

6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;

6.6 all trees and shrubs taller than 1.8 metres;

6.7 walls and fencing including details of the height and construction material;

6.8 servitudes indicating the purpose of the servitude;

6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):

- rivers;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.9 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and

6.10 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R300 million	
What is the expected yearly income that will be generated by or as a result of the activity?	R50 million	
Will the activity contribute to service infrastructure?	~~NO~~	**YES**
Is the activity a public amenity?	**NO**	~~YES~~
How many new employment opportunities will be created in the development phase of the activity?	150	

What is the expected value of the employment opportunities during the development phase?	R52.3 million direct employment during construction phase
What percentage of this will accrue to previously disadvantaged individuals?	30%
How many permanent new employment opportunities will be created during the operational phase of the activity?	8
What is the expected current value of the employment opportunities during the first 10 years?	R 22.8 million
What percentage of this will accrue to previously disadvantaged individuals?	30%

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

International

The 1992 United Nations Framework Convention on Climate Change (UNFCCC)

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

RELEVANCE TO THE PROPOSED LATRODEX WEF

The UNFCCC is relevant in that the proposed Latrodex WEF project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity. South Africa has committed to reducing emissions to demonstrate its commitment to meeting international obligations.

The Kyoto Protocol (2002)

The Kyoto Protocol is a protocol to the UNFCCC which was initially adopted for use on 11 December 1997 in Kyoto, Japan, and which entered into force on 16 February 2005 (UNFCCC, 2009). The Kyoto Protocol is the chief instrument for tackling climate change. The major feature of the Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. This amounts to an average of 5% against 1990 levels over the five-year period 2008-2011. The major distinction between the Protocol and the Convention is that, "while the Convention encouraged industrialised countries to stabilize GHG emissions, the Protocol commits them to do so".

RELEVANCE TO THE PROPOSED LATRODEX WEF

The Kyoto Protocol is relevant in that the proposed Latrodex WEF project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity, and will assist South Africa to begin demonstrating its commitment to meeting international obligations in terms of reducing its emissions.

National

National Development Plan (2011)

The National Development Plan (NDP) (also referred to as Vision 2030) is a detailed plan produced by the National Planning Commission in 2011 that is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP represents a new approach by Government to promote sustainable and inclusive development in South Africa, promoting a decent standard of living for all, and includes 12 key focus areas, those relevant to the current proposed WEF being:

- An economy that will create more jobs.
- Improving infrastructure.
- Transition to a low carbon economy.

Sector	Target
Electrical infrastructure	• South Africa needs an additional 29,000 MW of electricity by 2030. About 10,900 MW of existing capacity will be retired, implying new build of about 40,000 MW. • About 20,000 MW of this capacity should come from renewable sources.
Transition to a low carbon economy	• Achieve the peak, plateau and decline greenhouse gas emissions trajectory by 2025. • About 20,000 MW of renewable energy capacity should be constructed by 2030.

RELEVANCE TO THE PROPOSED LATRODEX WEF

The proposed Latrodex WEF will contribute towards additional energy capacity in South Africa and will contribute towards a reduction in greenhouse gas emissions.

National Climate Change Response White Paper (2012)

The White Paper indicates that Government regards climate change as one of the greatest threats to sustainable development in South Africa and commits the country to making a fair contribution to the global effort to achieve the stabilisation of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system.

The White Paper also identifies various strategies in order to achieve its climate change response objectives, including:

- The prioritisation of mitigation interventions that significantly contribute to an eventual decline emission trajectory from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.
- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry.

The White Paper provides numerous specific actions for various Key Mitigation Sectors including renewable energy. The following selected strategies (amongst others) must be implemented by South Africa in order to achieve its climate change response objectives:

- The prioritisation of mitigation interventions that significantly contribute to a peak, plateau and decline emission trajectory where greenhouse gas emissions peak in 2020 to 2025 at 34% and 42% respectively below a business as usual baseline, plateau to 2035 and begin declining in absolute terms from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.
- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry.

RELEVANCE TO THE PROPOSED LATRODEX WEF

The proposed Latrodex WEF project will provide an alternative to fossil fuel-derived electricity, and will contribute to climate change mitigation.

Integrated Energy Plan for the Republic of South Africa (2003)

The former Department of Minerals, Resources and Energy (DMRE) commissioned the Integrated Energy Plan (IEP) in response to the requirements of the National Energy Policy in order to provide a framework by which specific energy policies, development decisions and energy supply trade-offs could be made on a project-by-project basis. The framework is intended to create a balance between energy demand and resource availability so as to provide low-cost electricity for social and economic development, while taking into account health, safety and environmental parameters.

In addition to the above, the IEP recognised the following:-

- South Africa is likely to be reliant on coal for at least the next 20 years as the predominant source of energy.
- New electricity generation will remain predominantly coal based but with the potential for hydro, natural gas, renewables and nuclear capacity.
- Need to diversify energy supply through increased use of natural gas and new and renewable energies.
- The promotion of the use of energy efficiency management and technologies.
- The need to ensure environmental considerations in energy supply, transformation and end use.
- The promotion of universal access to clean and affordable energy, with the emphasis on household energy supply being coordinated with provincial and local integrated development programme.
- The need to introduce policy, legislation and regulations for the promotion of renewable energy and energy efficiency measures and mandatory provision of energy data.
- The need to undertake integrated energy planning on an on-going basis.

RELEVANCE TO THE PROPOSED LATRODEX WEF

The Latrodex WEF is in line with the IEP with regards to diversification of energy supply and the promotion of universal access to clean energy.

Long Term Mitigation Scenarios (2007)

The aim of the Long Term Mitigation Scenarios (LTMS) was to set the pathway for South Africa's long-term climate policy and will eventually inform a legislative, regulatory and fiscal package that will give effect to the policy package at a mandatory level. The overall goal is to "develop a plan of action which is economically risk-averse and internationally aligned to the world effort on climate change."

The strategy assesses various response scenarios but concludes that the only sustainable option ("the preferred option") for South Africa is the "Required by Science" scenario where the emissions reduction targets should target a band of between -30% to -40% emission reductions from 2003 levels by 2050 which includes increasing renewable energy in the energy mix by 50% by 2050.

RELEVANCE TO THE PROPOSED LATRODEX WEF

The proposed Latrodex WEF will contribute towards an overall reduction in emissions and aligns with the world stance on efforts towards the mitigation of climate change.

South Africa's current electricity generation and supply system is strained with the Eastern Cape Province constrained by the availability and stability of electricity supply, reliant on the import of power from other provinces. The country has been experiencing loadshedding for the last 15 years due to Eskom's limited grid capacity. A stable power supply is a crucial requirement for the operation of the Wild Coast Abalone Facility, and loadshedding puts the business at considerable risk. The proposed WEF is being developed to meet the power requirements for the existing Wild Coast Abalone Facility. It is

proposed that surplus power will be sold to private buyers. The development will also contribute towards meeting the targets for South Africa's transition to renewable energy.

Indicate any benefits that the activity will have for society in general:

The proposed Latrodex WEF will stabilise the power supply to the Wild Coast Abalone Facility and will contribute to South Africa and the Eastern Cape's green energy targets.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The primary objective of the project is to provide power to the Wild Coast Abalone Facility.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

TITLE OF LEGISLATION, POLICY OR GUIDELINE:	ADMINISTERING AUTHORITY:	DATE:
National Environmental Management Act (NEMA, Act No. 107 of 1998) and its subsequent amendments	Department of Environmental Affairs (DEA) or the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	1998
National Environmental Management Act (NEMA, Act No. 107 of 1998) Environmental Impact Assessment (EIA) Regulations (as amended in 2017)	Department of Environmental Affairs (DEA) or the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	2021
Constitution Act (Act No. 108 of 1996)	Republic of South Africa	1996
National Heritage Resources Act (NHRA, Act No. 25 of 1999)	Eastern Cape Provincial Heritage Resources Authority (ECPHRA)	1999
National Water Act (NWA, Act No. 36 of 1998) and its subsequent amendments	Department of Water and Sanitation (DWS)	1998
National Environmental Management: Biodiversity Act (NEMBA, Act No. 10 of 2004)	Department of Environmental Affairs (DEA) or the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	2004
National Environmental Management: Biodiversity Act, Alien and Invasive Species Regulations (2014)	Department of Environmental Affairs (DEA) or the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	2014
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	Department of Agriculture, Forestry and Fisheries (DAFF)	1983
Occupational Health and Safety Act (OHSA, Act No. 85 of 1993)	Department of Labour (DoL)	1993
Hazardous Substances Act (HS, Act No. 15 of 1973)	Department of Health (DoH)	1973
Eastern Cape Vision 2030 Provincial Development Plan (ECDP, 2014)	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	2014
Local Government: Municipal Systems Act (Act No. 32 of 2000)	Nelson Mandela Bay Municipality	2000
South African Vegetation Map (Mucina and Rutherford, 2012) and Vegetation Descriptions (2006)	South African National Biodiversity Institute (SANBI)	2006 / 2012
Eastern Cape Biodiversity Conservation plan (ECBCP, 2020)	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	2020
National Freshwater Ecosystem Priority Areas (NFEPA)	Department of Water and Sanitation (DWS)	2011/ 2014

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES** ■
If yes, what estimated quantity will be produced per month?	18 m^3

How will the construction solid waste be disposed of (describe)?

The construction solid waste will be transported from site and disposed of at the closest registered landfill site. The solid waste will be disposed of by a subcontracted company called.

Where will the construction solid waste be disposed of (describe)?

Registered landfill site as per municipal agreement.

Will the activity produce solid waste during its operational phase?	■ **NO**
If yes, what estimated quantity will be produced per month?	~~m^3~~

How will the solid waste be disposed of (describe)?

N/A

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	■ **NO**

~~If yes, inform the competent authority and request a change to an application for scoping and EIA.~~

Is the activity that is being applied for a solid waste handling or treatment facility?	■ **NO**

~~If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	■ **NO**
~~If yes, what estimated quantity will be produced per month?~~	**N/A**

~~Will the activity produce any effluent that will be treated and/or disposed of on site?~~

	NO

~~If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

~~Will the activity produce effluent that will be treated and/or disposed of at another facility?~~

	~~NO~~

~~If yes, provide the particulars of the facility:~~

~~Facility name:~~			
~~Contact person:~~			
~~Postal address:~~			
~~Postal code:~~			
~~Telephone:~~		~~Cell:~~	
~~E-mail:~~		~~Fax:~~	

~~Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:~~

11(c) Emissions into the atmosphere

~~Will the activity release emissions into the atmosphere?~~

	NO

~~If yes, is it controlled by any legislation of any sphere of government?~~

	NO

~~If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

~~If no, describe the emissions in terms of type and concentration:~~

N/A

11(d) Generation of noise

Will the activity generate noise?

YES	

If yes, is it controlled by any legislation of any sphere of government?

YES	

~~If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

~~If no, describe the noise in terms of type and level:~~

The generation of noise by WEFs is governed by the Noise Control Regulations (GN R154 of 1992). In order to assess the type and level of noise generation by this facility, a Noise Impact Assessment was undertaken. Please refer to Appendix D for the full assessment.

The following is the executive summary from the noise assessment:

NOISE IMPACT FINDINGS AND MITIGATION MEASURES

For the purpose of this noise impact assessment the sound power emission levels of the Vestas V90 3.0 MW wind turbine (with a sound power emission level of 104 and 108.5 dBA dBA) were used. This assessment also considered a worst-case scenario using the sound power emission levels of the Acciona AW132/3300 wind turbine (with a maximum sound power emission level of 108.5 dBA).

Various construction activities would be taking place during the development of the facility, but will pose no noise risk to the closest receptors. The resulting future noise projections indicated that the construction activities of the Wind Turbines, as modelled for the worst-case scenario will comply with the National Noise Control Regulations for both day and night-time activities.

This assessment considered the noise emissions of both the Vestas V90 3.0 MW (projected scenario) as well as the Acciona 132/3300 (worst-case scenario) wind turbines using the ISO 9613-2 noise algorithms. The output of the modelling indicated that there will be a low risk of a noise impact during the operational phase and no additional mitigation is required. There is no potential for a cumulative noise impact from other wind farms in the area.

There is a very low risk of a noise impact during the construction of the access routes, underground and overhead power lines with a low risk of a noise impact during the operational phase. There is a low potential of a cumulative noise impact from other wind farms in the area.

With the input data as used, this assessment indicated that the potential noise impact would be of a low significance during the operational phase and therefore acceptable.

NOISE IMPACT RECOMMENDATIONS AND CONCLUSIONS

Considering the modelled construction and operational noise levels, the projected noise levels will be acceptable. Considering the possible low significance of the noise impacts, the development of the Latrodex WEF can be authorised. It is important to note that the dwelling at NSD01 should not be used for residential purposes.

Additional sound or noise measurements are not required, and no additional noise assessments are required for this project. The potential noise impact must again be evaluated should the layout be changed where any wind turbines are located closer than 1,000 m from a confirmed NSD or if the developer decides to use a different wind turbine that has a sound power emission level higher than 109 dBA (re 1 pW).

Figure 7 Aerial image indicating the closest potentially noise-sensitive developments (green dots)

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

municipal		groundwater	

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:	Litres* <10,000
Does the activity require a water use permit from the Department of Water Affairs?	**YES**

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

*** PLEASE NOTE THAT THE DWS WILL NOT PROCESS WATER USE LICENCE APPLICATIONS FOR WIND ENERGY FACILITIES UNTIL THE PROPOSED WEF HAS RECEIVED AUTHORISATION.**

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Construction Phase:
If access to an existing power line is available, the site camp will connect to the existing power supply to provide power to the site camp. If not, diesel generators are typically used to power the site. At this stage this has not yet be decided.

Operational Phase:
Not applicable as the facility will not require energy during the operational phase.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Not applicable.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):	**N/A**

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section?

YES	

If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	**1:50 – 1:20**	**1:20 – 1:15**	**1:15 – 1:10**	

Alternative S2 (if any):

[redacted]

Alternative S3 (if any):

[redacted]

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 8).

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 9).

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 10).

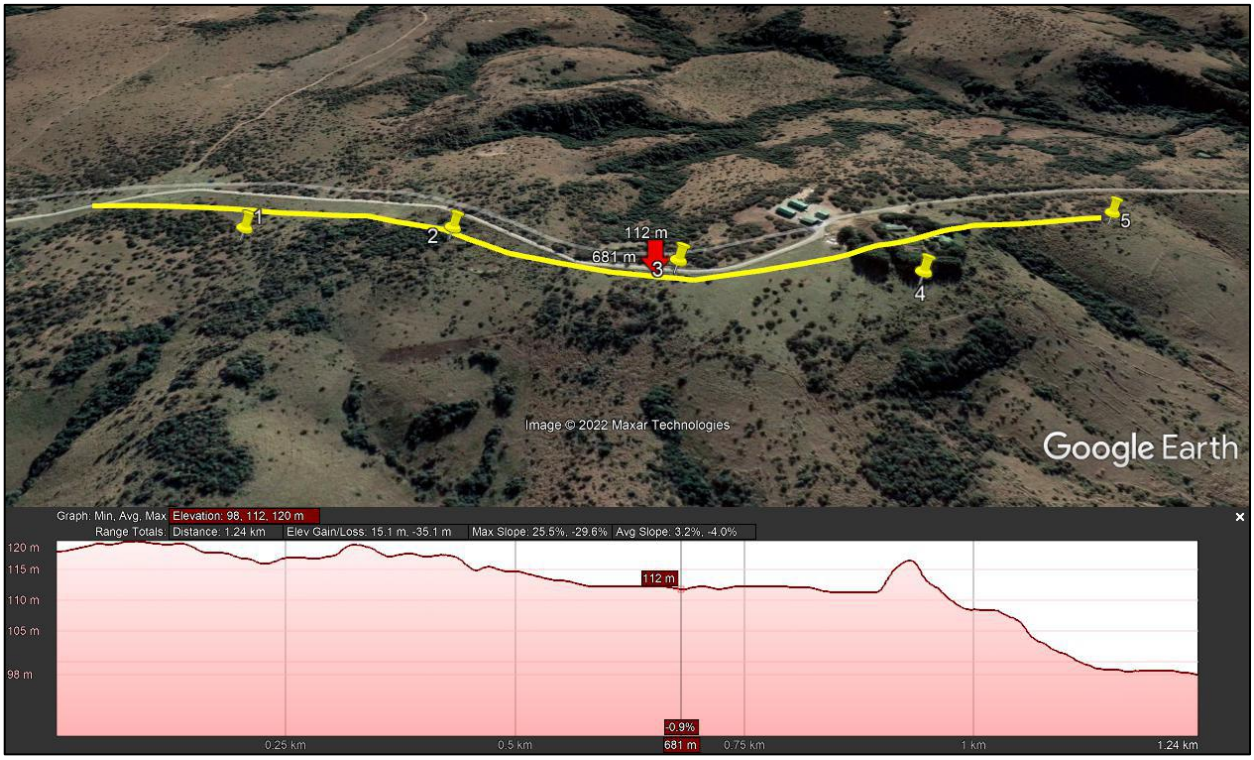

Figure 8 Topography of the Latrodex WEF.

Figure 9 Topography of the Rivermouth Substation powerline alternatives.

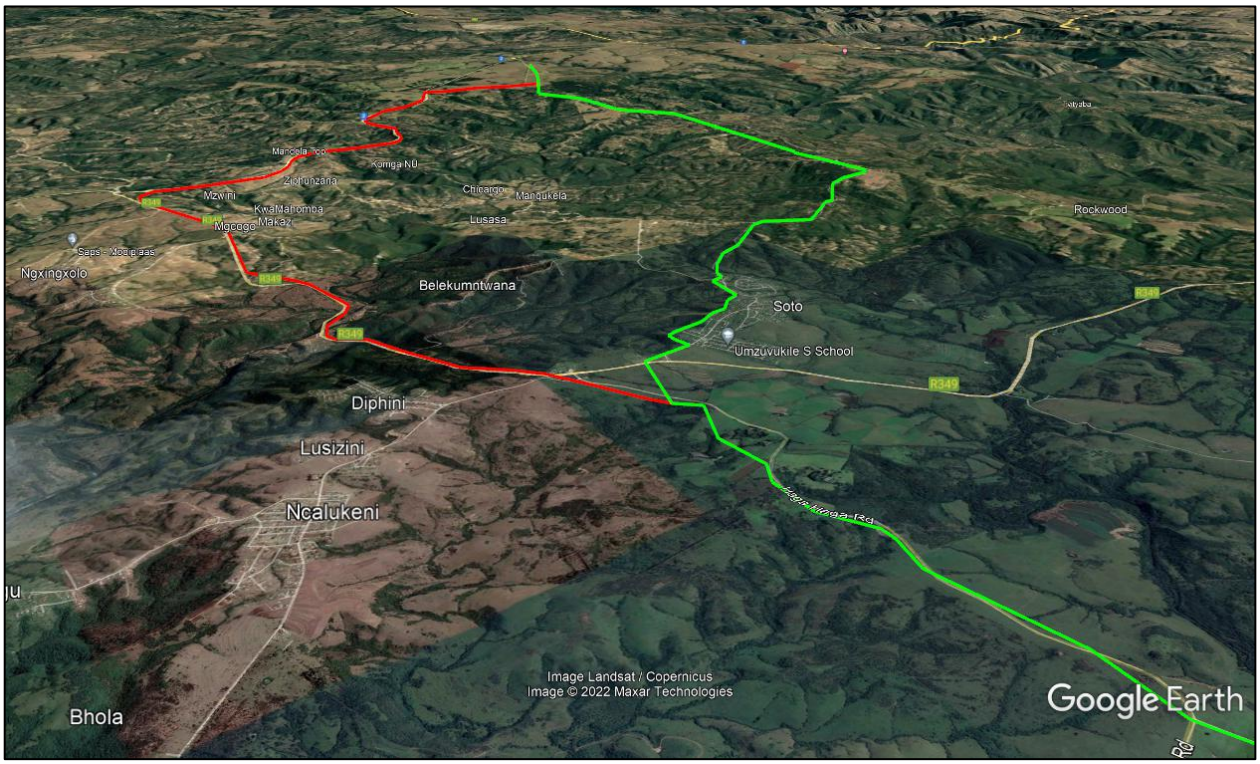

Figure 10 Topography of the Chaba Substation powerline alternatives.

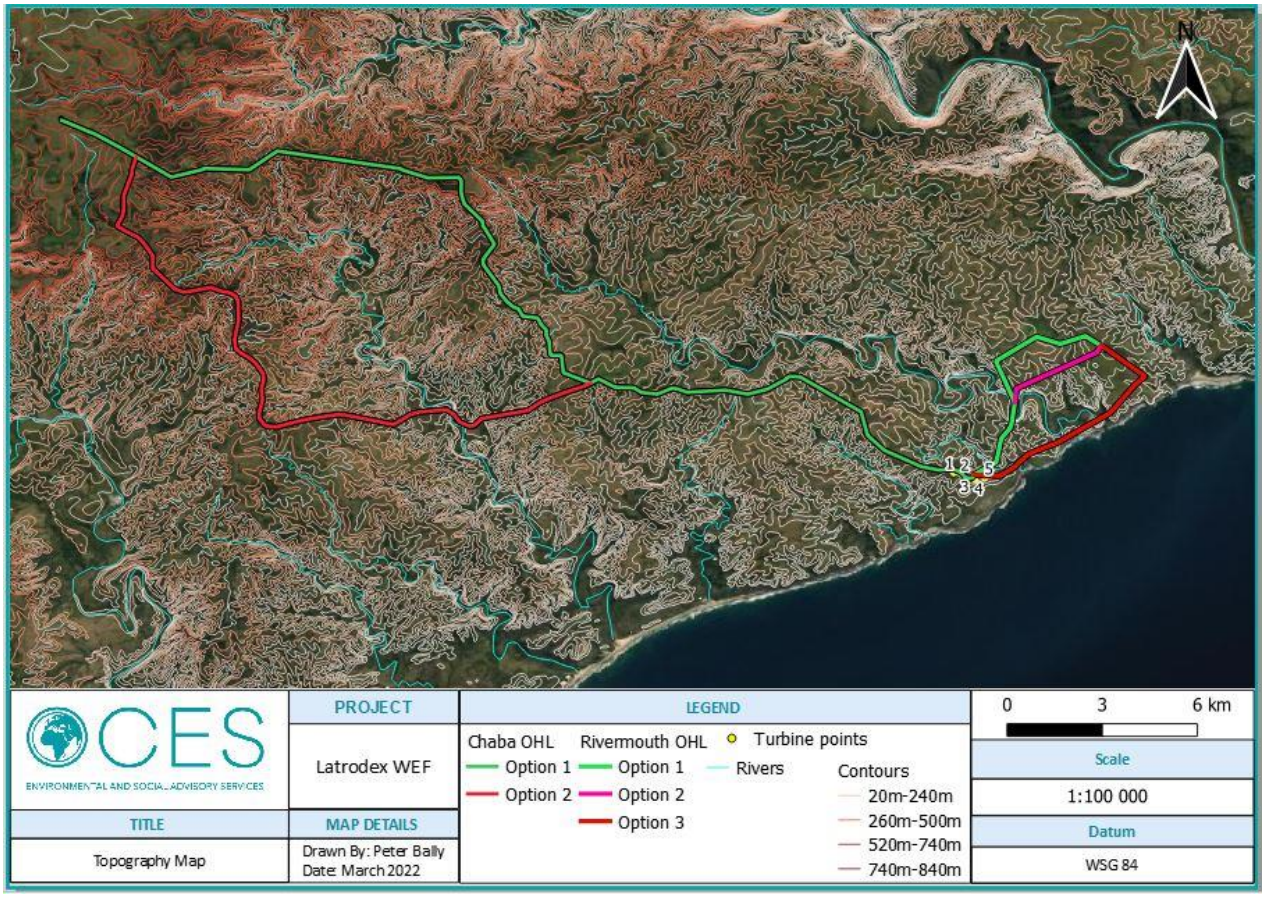

Figure 11 Contour map

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline
~~2.2 Plateau~~
~~2.3 Side slope of hill/mountain~~
~~2.4 Closed valley~~
~~2.5 Open valley~~
~~2.6 Plain~~
2.7 Undulating plain / low hills
~~2.8 Dune~~
~~2.9 Seafront~~

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:		**Alternative S2 (if any):**		**Alternative S3 (if any):**	
Shallow water table (less than 1.5m deep)		**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~

Dolomite, sinkhole or doline areas		**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Seasonally wet soils (often close to water bodies)	**YES**		~~YES~~	~~NO~~	~~YES~~	~~NO~~
Unstable rocky slopes or steep slopes with loose soil		**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Dispersive soils (soils that dissolve in water)		**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Soils with high clay content (clay fraction more than 40%)		**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Any other unstable soil or geological feature		**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
An area sensitive to erosion	**YES**		~~YES~~	~~NO~~	~~YES~~	~~NO~~

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

Geology and Soils

The underlying geology of the proposed WEF area can be classified as mudstones of the Beaufort Group and sedimentary alluvial sands. According to the SOTER soils association map, the soils underlying the study area can be described as having minimal development, usually shallow on hard or weathering rock with or without intermittent diverse soils (association of Leptosols, Regosols, Calcisols and Durisols, with one or more of Cambisols and Luvisols).

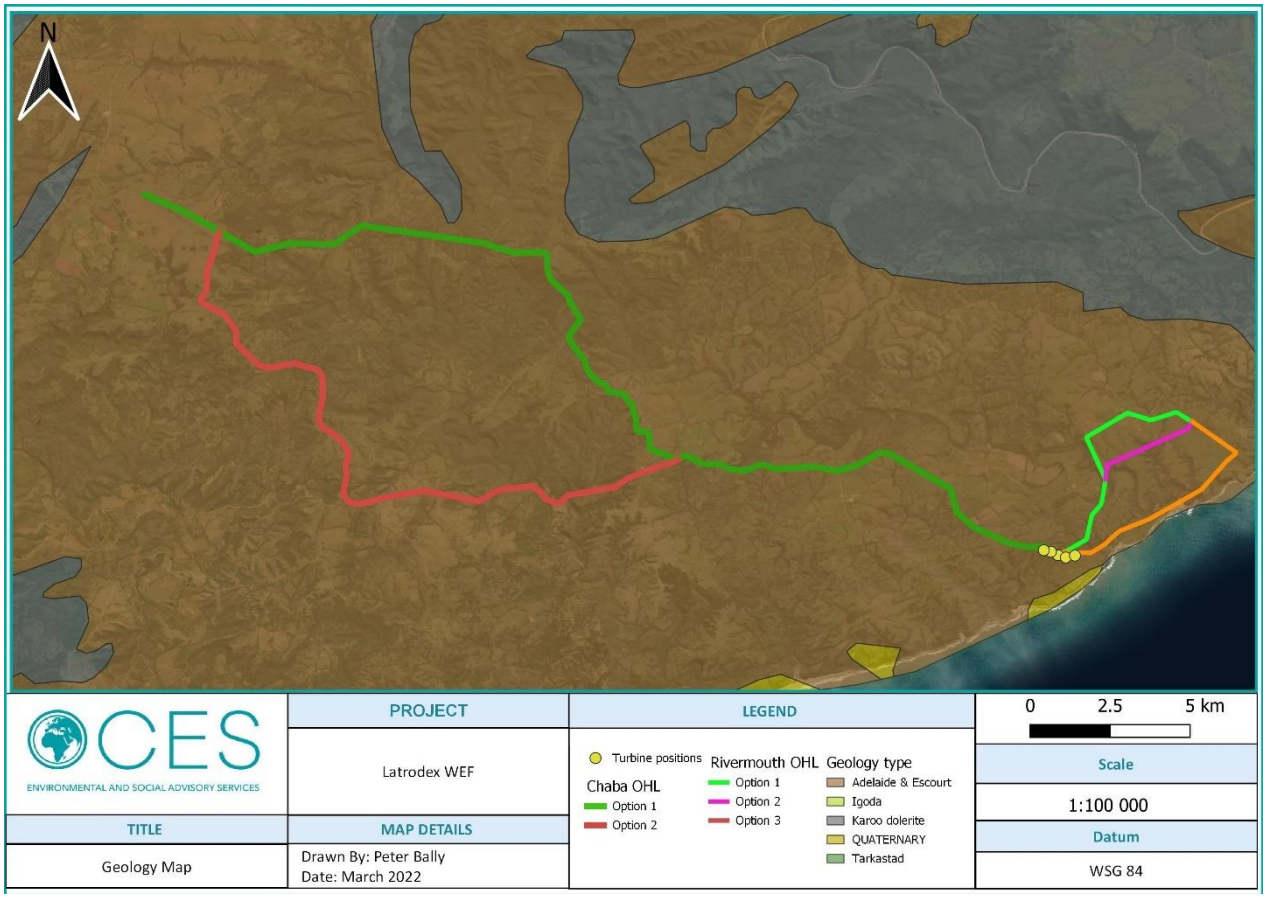

Figure 12 Geology map

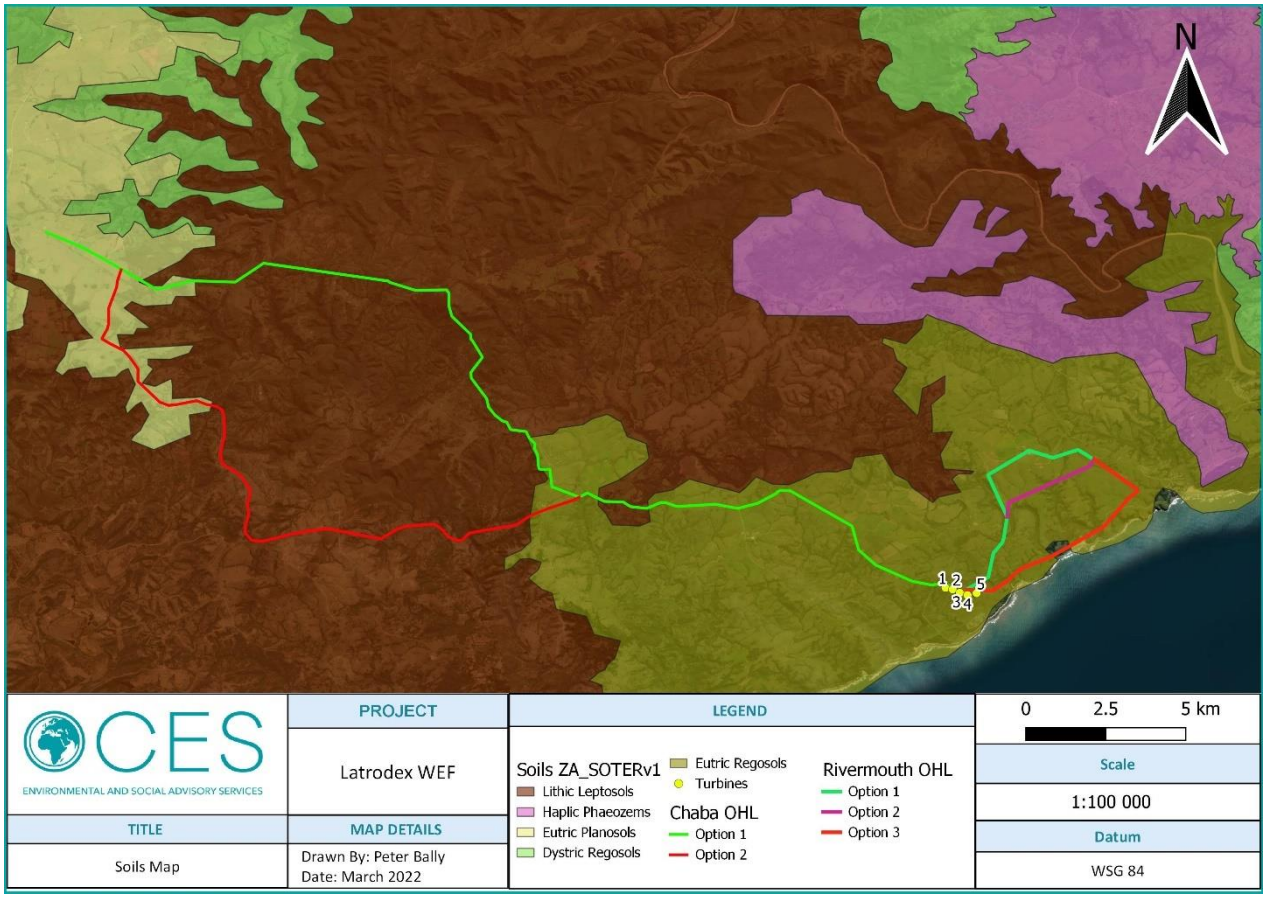

Figure 13 Soils map

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

~~4.1 Natural veld – good condition~~ [E]
4.2 Natural veld – scattered aliens [E]
~~4.3 Natural veld with heavy alien infestation~~ [E]
~~4.4 Veld dominated by alien species~~ [E]
~~4.5 Gardens~~
~~4.6 Sport field~~
~~4.7 Cultivated land~~
~~4.8 Paved surface~~
4.9 Building or other structure
4.10 Bare soil

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens

Reticulation line	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "E "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

A Vegetation Specialist was appointed to complete the Groundcover section of this report. Please find the full Vegetation Assessment Report attached as **Appendix D**: Ecological Impact Assessment Report, Specialist Reports.

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 mucronate*, *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 on site.

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.

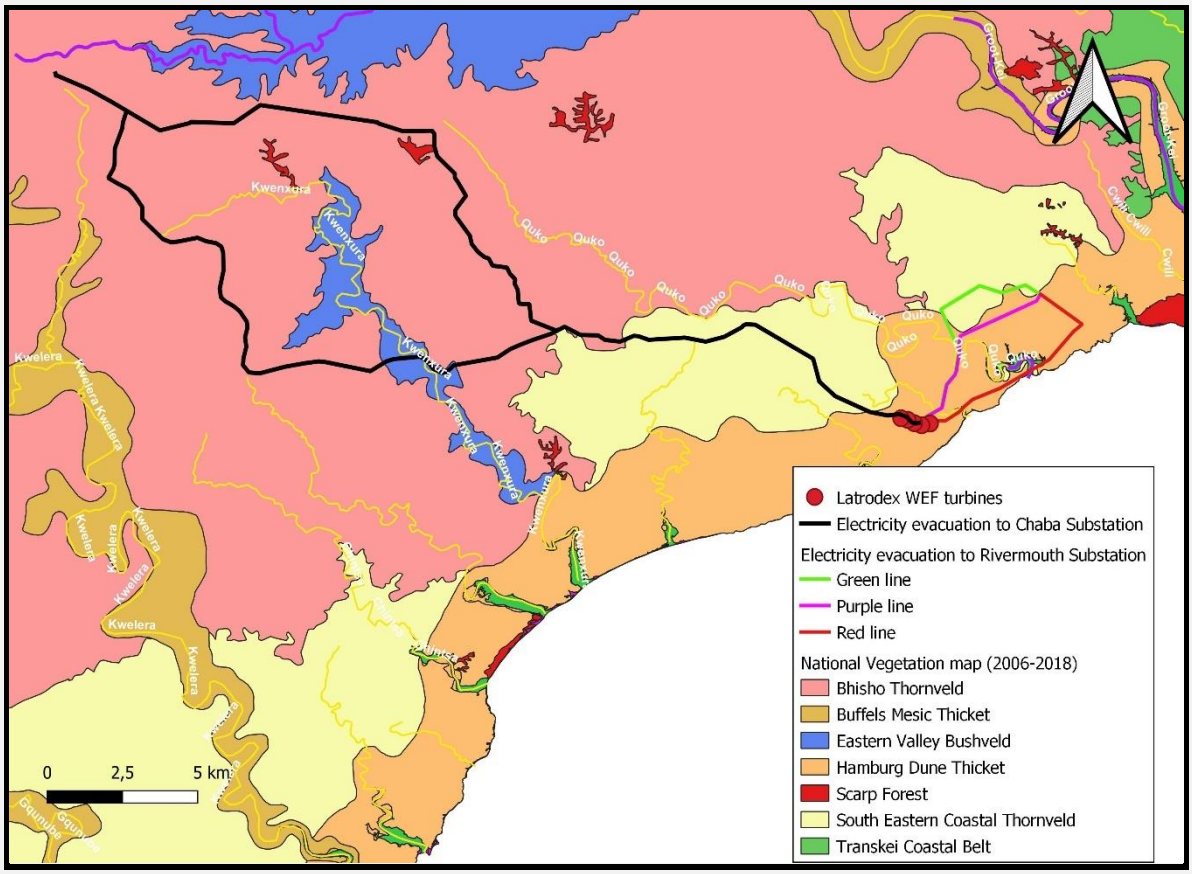

Figure 14 The vegetation type of the Latrodex WEF and powerline alternatives.

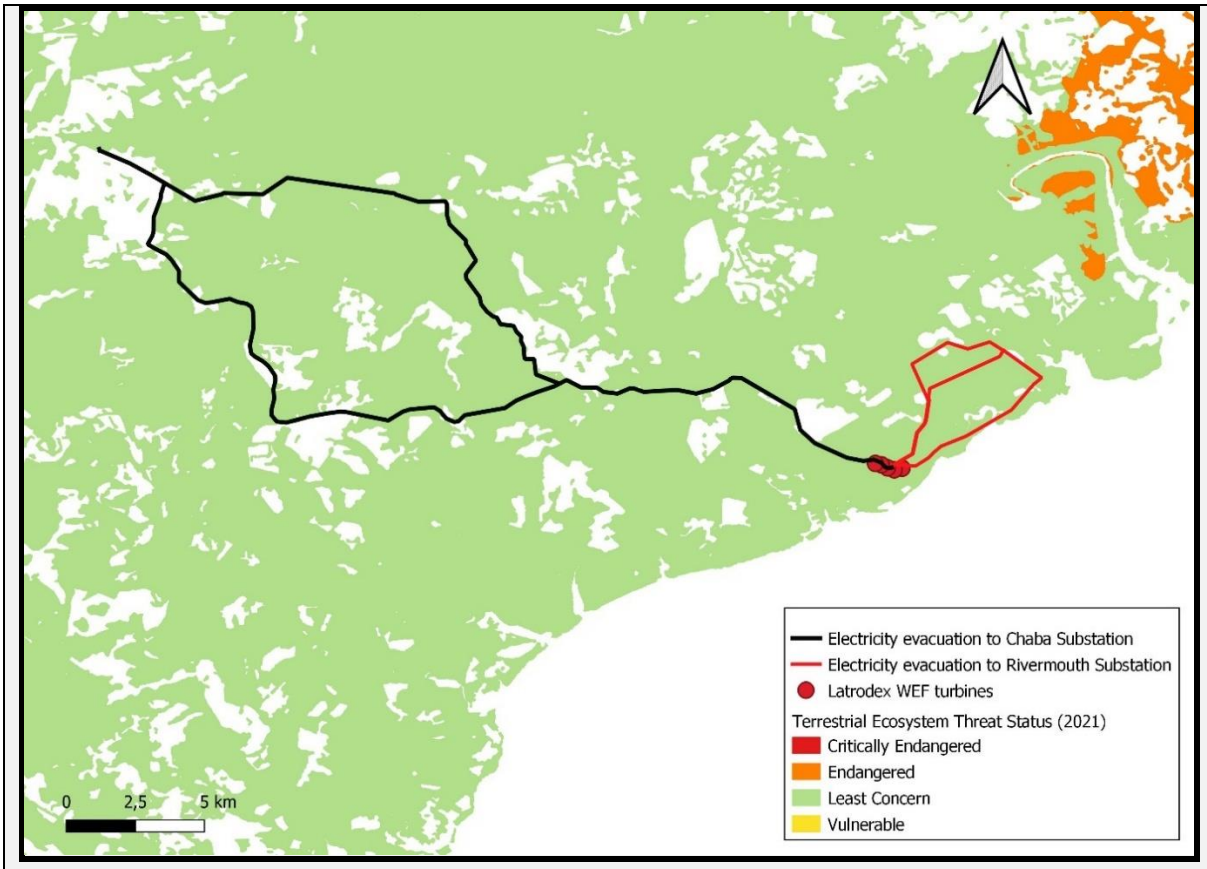

Figure 15 Ecosystem threat status of the vegetation types associated with the Latrodex WEF and associated powerline route alternatives.

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. In terms of loss of CBA area within this planning unit, not more than 5ha will be lost. The significance of this is assessed in the sensitivity analysis.

The northern alternative of the Chaba Substation powerline runs through a patch of CBA1 area and along a Protected Area (Figure 16, 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 16, 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.

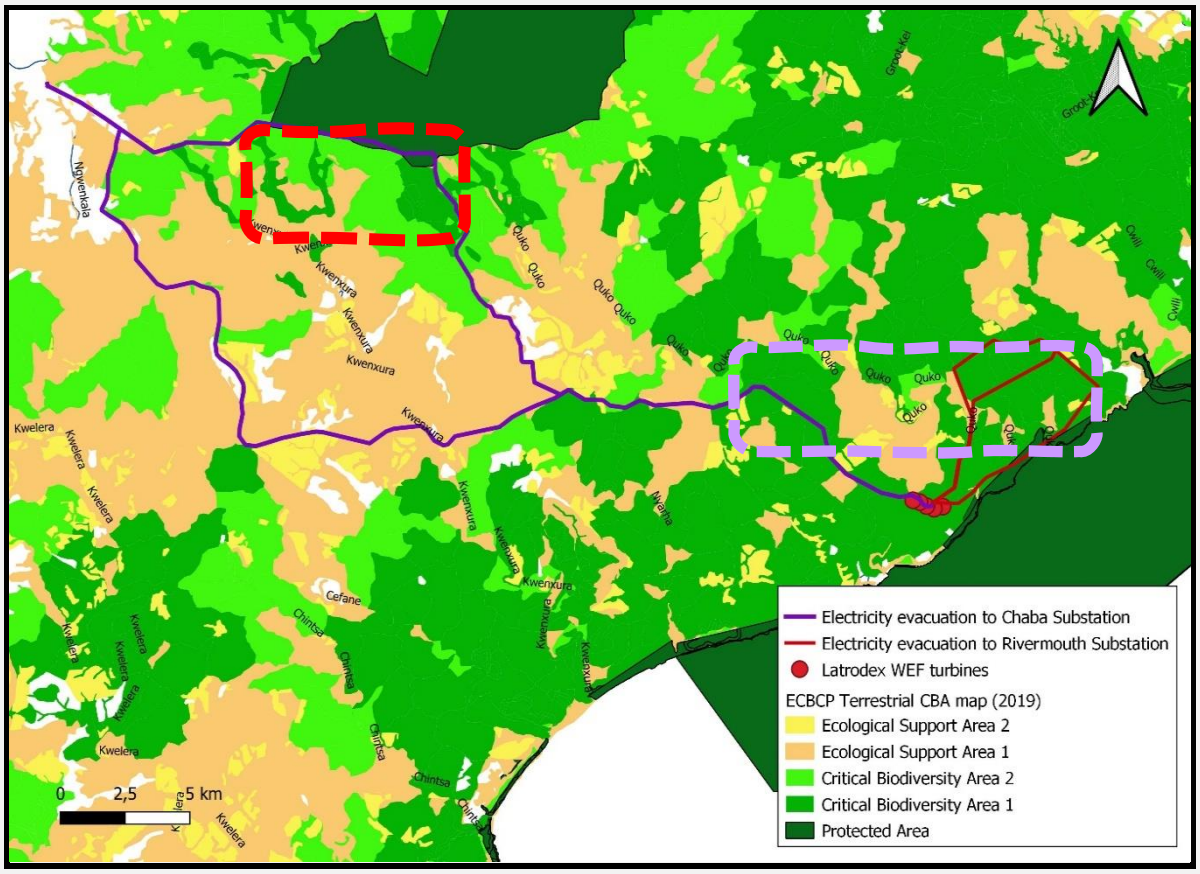

Figure 16 ECBCP (2019) Terrestrial Critical Biodiversity Area map of the Latrodex WEF and powerline alternatives.

Eastern Cape Biodiversity Conservation Plan Aquatic CBA map (2019)

The ECBCP (2019) Aquatic CBA layer (Figure 17), 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.

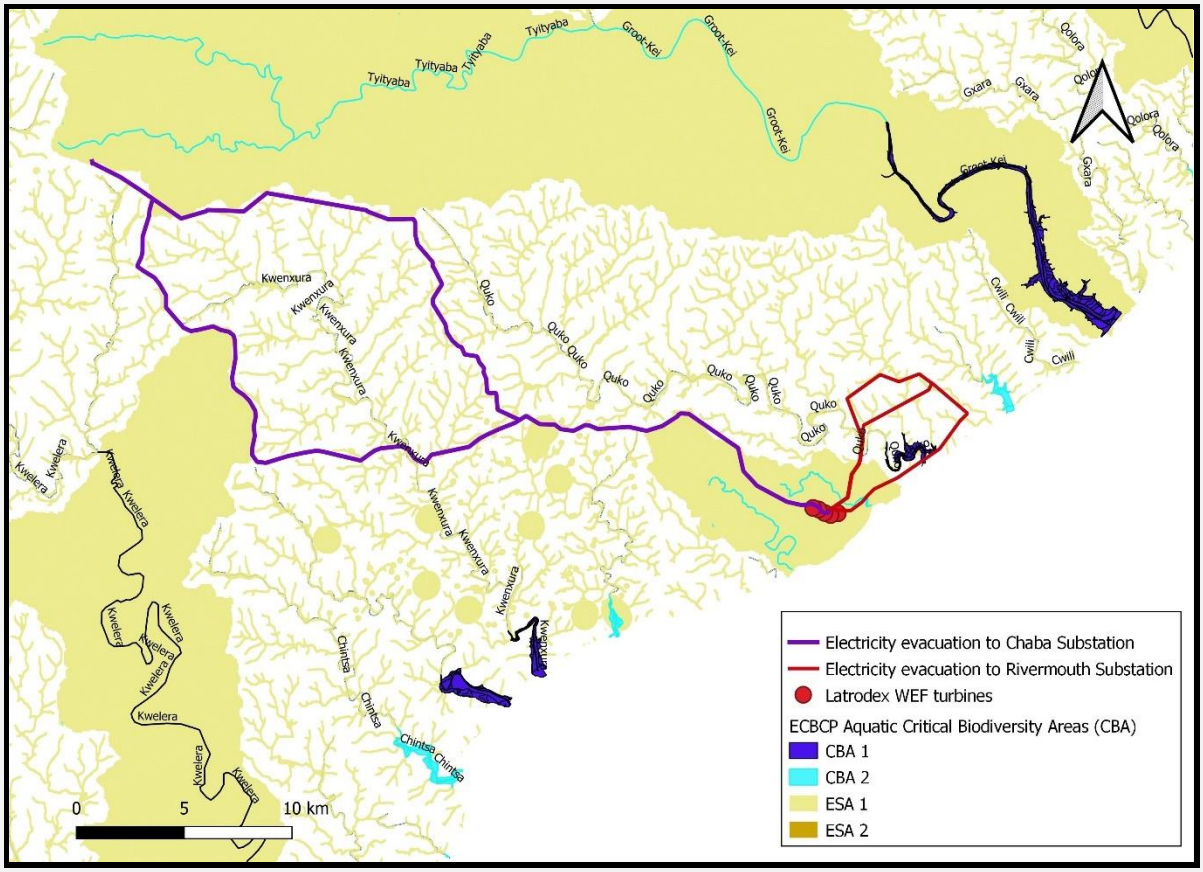

Figure 17 ECBCP (2019) Aquatic Critical Biodiversity Area map of the Latrodex WEF and powerline alternatives.

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 18). 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.

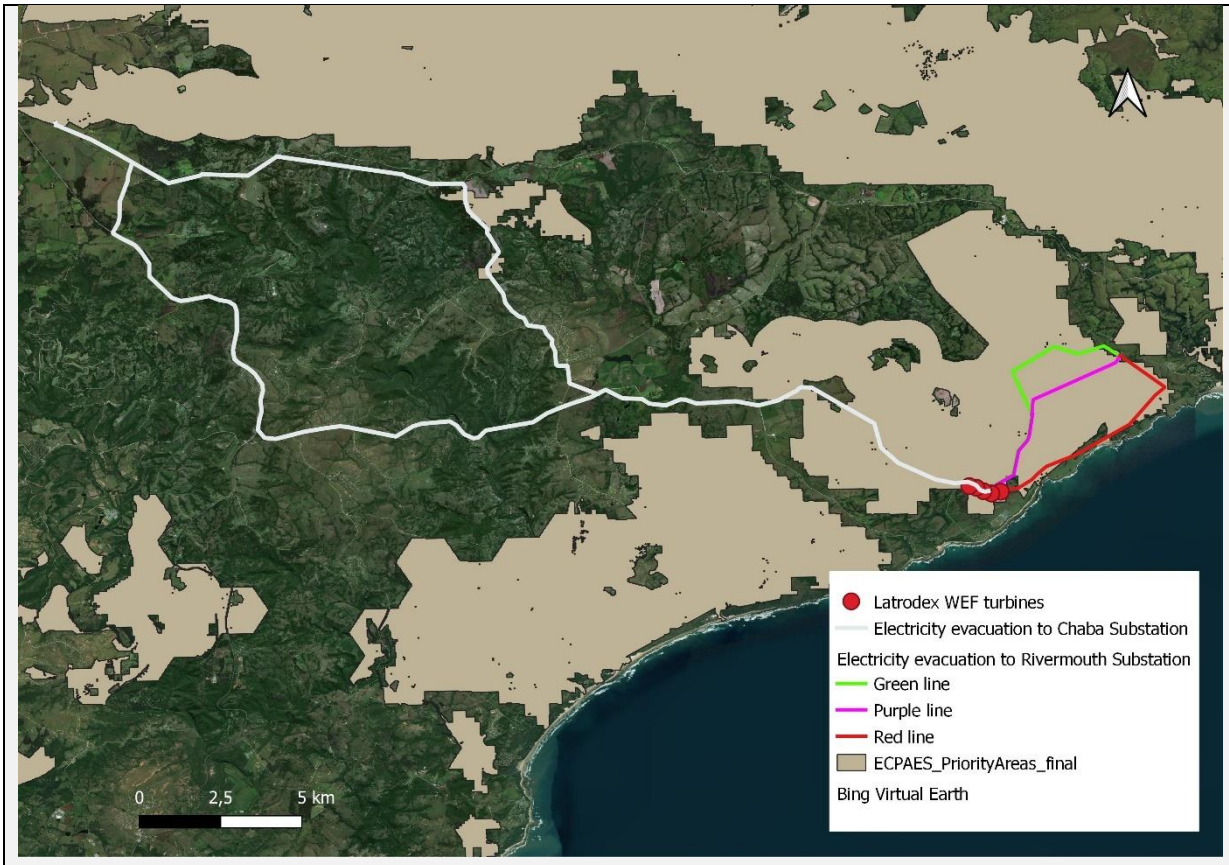

Figure 18 Eastern Cape Protected Area Expansion Strategy (ECPAES) priority areas.

Floristics

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 3 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	*
ASPHODELACEAE	*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		
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		*
Ranunculaceae	*Anemone bracteata*	VU		
Rubiaceae	*Canthium inerme*	LC		*
Rubiaceae	*Psychotria capensis*	Not evaluated		*
Rutaceae	*Vepris lanceolata*	LC		*
Rutaceae	*Zanthoxylum capense*	LC		*
Sensitive species 378		VU		
Sensitive species 319		VU	PNCO	

Alien Plant species

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

Table 4 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.

Site Fauna

A full list of potential faunal species is presented in Appendix C of the Ecological Specialist Study. 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.

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.

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 of the Ecological Specialist Report and in Table 7 of the Basic Assessment Report.

Invertebrates

The DFFE Screening report flags 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.)

Aslauga australis

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. This species is not likely to occur in the Latrodex WEF site due to the absence of forest, but suitable habitat does occur along powerlines that traverse densely wooded/forested areas. (http://speciesstatus.sanbi.org/assessment/last-assessment/204/)

Chrysoritis lyncurium

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/)

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.

Avifauna

An Avifaunal Specialist was appointed to complete the bird portion of the Groundcover (ecological) section of this report. Please find the full Avifaunal Assessment Report attached as **Appendix D**: Ecological Impact Assessment Report, Specialist Reports.

Small terrestrial bird species

A total of 52 small bird species were recorded on the 6 Walked Transects conducted on the Latrodex Wind Farm site. This includes 441 individual birds from 256 records. In summer 30 species were recorded, autumn 28 species, winter 25 species, and spring 23 species. None of these species are regionally Red Listed.

The most abundant species on the site were not surprisingly all species already known to be common in the area, such as: Dark-capped Bulbul Pycnonotus tricolor; Sombre Greenbul Andropadus importunus; and Black-bellied Starling Notopholia corrusca. Of the species listed by the online screening tool we confirmed only Denham's Bustard on site. The remaining species could possibly occur close to site but not on site itself due to a lack of suitable habitat. One exception is Knysna Warbler which has suitable habitat on site. We did not record this species ourselves but do think there is a possibility of it occurring on site from time to time.

Large terrestrial species & raptors

A total of 3 large terrestrial and raptor species were recorded across the drive transects totalling 44 kilometres for the year (or 11km per season). This included 8 individual birds from 7 records. The three species recorded were: Jackal Buzzard; African Fish-Eagle *Haliaeetus* vocifer and Yellow-billed Kite *Milvus m*igrans. None of the 3 species are regionally Red Listed. The most abundant species recorded by this method to date was the Jackal Buzzard, which was also recorded in all four seasons. African Fish-Eagle was recorded only in winter and summer. Yellow-billed Kite was recorded only in spring (it is a summer migrant to our area).

Focal Site surveys

Very few water fowl were recorded at the three Focal Sites (all dams) through the four seasons. No records were made in winter and spring. In summer 2 Egyptian Goose *Alopochen aegyptiaca* were recorded at FS1, and two Egyptian Goose and 2 Blacksmith Lapwing *Vanellus melanopterus* at FS3.

No records were made of Southern Ground hornbill in the area, either visually or audibly.

Incidental Observations of target bird species

Only two target bird species were recorded on the site as Incidental Observations: Jackal Buzzard; and African Fish-Eagle. Jackal Buzzard was by far the most abundant species recorded by this method. Neither of the species recorded by this method are regionally Red Listed. Since these data are not the product of systematic data collection methods, they should be used cautiously and are not discussed further here.

A total of 94 bird species were recorded on site (considering all data collection methods), 42 in winter, 52 in spring 45 in summer, and 50 in autumn

Bird flight activity on site

A total of 12 sessions of bird flight observation were completed, of 4 hours each, totalling 48 hours of observation at Vantage Points across the site in the four seasons. In total, 69 records were made of 95 individual birds flying on site. This included 11 target bird species. These data are shown in Table 4 (summarised for the full year) and in Appendix 3 (full dataset). A single Lanner Falcon was recorded flying four times during autumn, and a single Denham's Bustard in winter.

Two of the 11 recorded species are regionally Red Listed (Taylor et al, 2015): Lanner Falcon *Falco biarmicus* (Vulnerable); and Denham's Bustard *Neotis denhamii* (Vulnerable).

The most frequent flying species on site was Jackal Buzzard, a resident near the site. Forty-four records were made of 46 individual birds, across all four seasons. Jackal Buzzard flights made up 63% of all flight records. Spur-winged Goose *Plectropterus gambensis* was recorded flying only once, in a flock of 19 birds. Yellow-billed Kite was recorded only in spring and summer (it is a summer migrant to our area), and Lanner Falcon was recorded only in autumn. African Fish-Eagle was recorded flying three times, and Denham's Bustard once (a single bird).

Bats

A Bat Specialist was appointed to complete the bat portion of the Groundcover (ecological) section of this report. Please find the full Avifaunal Assessment Report attached as **Appendix D**: Ecological Impact Assessment Report, Specialist Reports.

Bats can be categorized by their preferred foraging altitudes and are adapted, mostly by the physiology of their wings, to forage in lower altitudes (clutter) amongst the bushes and trees, medium altitudes, and open air (high flying bats). The latter are usually the most susceptible to fatality by turbine blades. It should also be noted that even though some species forage at lower altitudes, they might change their flight behaviour during migration.

The proposed Latrodex WEF has a rich species diversity. Calls similar to 14 of the 25 species that have distribution maps overlaying the proposed development site were recorded by the static recorders. *Neoromicia capensis* represents 45% of the calls at the proposed Latrodex WEF, and is the dominant species on site. *Neoromicia capensis* is a high-risk species, which forages in the vicinity of the turbine blades. As such, the risk of collision and barotrauma is high.

At the Latrodex WEF, there occurs a predominant representation, more than 60%, of the Molossidae family, namely 40% of the activity related to *T.aegyptiaca*, 19% to the endemic *Sauromys petrophilus,* 1 % to *Chaerephon pumilus* and a statistically insignificant number of calls related to the Near Threatened *Otomops martiensenni* at Met high. The Vespertilionidae family represents 26% of the activity related to *Neoromicia capensis*, 10% activity to the endemic *Eptesicus hottentotus* and a statistically insignificant number of calls related to *Pipistrellus hesperidus,* Near Threatened *Myotis tricolor, Neoromicia nana* and *Scotophilus dinganii.* 4% of the activity recorded indicates the presence of the red data *Miniopterus natalensis,* Miniopteridae family.

The higher species diversity can be observed at the lower monitoring system, as well as a significant difference in the predominant species. This is particularly evident in the different representation of *T. aegyptiaca, N. capansis* and *M. natalensis.*

Apart from June to July 2020, bat activity is high. *Neoromicia capensis* activity peaks during September 2020, with several smaller peaks from August 2020 to April 2021. *Tadarida aegyptiaca* displays an increase in activity during autumn until the beginning of winter and during spring, with a peak in bat activity during early November 2020 and smaller peaks at the end of autumn. *Miniopterus natalensis* displays an increase in activity during autumn and spring. This is a migrating species and the peak in autumn could be a pocket of bats migrating over the site, which should be closely observed during operational monitoring. *Eptesicus hottentotus* displays an increase in activity at the beginning of spring, with a peak in bat activity around January and February in 2020 and 2021. *Sauromys petrophilus* shows an increase in bat activity from late spring until late autumn, with a peak in bat activity during middle December 2020.

All species activity declines towards the winter months. A general increase in activity is then portrayed from the end of winter, through three seasons, until the end of autumn. According to the data from the monitoring period, in general, bats show an increase in activity towards the end of summer and an increase in autumn. Then a decrease in activity is displayed as winter approaches with a second increase during spring or summer (for some species), when warmer temperatures set in.

Monthly activity at the Latrodex WEF peaks peaks in October 2020. Activity declines closer to the winter months, with relative low activity during winter in comparison to other seasons. A clear increase in activity is evident from July to October, as temperature rises. From middle spring a general trend of gradual decline can be observed towards July 2020.

The distribution of nightly activity is important when curtailment is recommended, as it indicates during which periods of the night bats are most active. Bats are usually more active the first few hours after sunset, as they

emerge from their roosts to forage and to drink water. As sunrise approaches, they return to their roost and settle down for the day. There is often a slight increase in activity, presumably as bats return to their day roosts before sunrise.

Site Sensitivity

In terms of the method outlined in the guidelines to determine the Site Ecological Importance (SEI), Riparian thicket, dense thicket and forest have been mapped as HIGH.

Table 5 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	Very low	Very low
Surrounding grassland and savanna	Medium	High	Medium	Very low	Very low

The SEI or sensitivity assessment of the Latrodex WEF study area (Figure 19) 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 move.

In terms of the powerline route alternatives:

Powerlines to Chaba Substation (Figure 20)

- 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 21)

- 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 is therefore considered as HIGH sensitivity. In addition, there a section of HIGH sensitivity where the powerline crosses the Quko River, where riparian vegetation may be affected.
- The green line crosses the Quko River and where this will impact the riparian vegetation, it has been deemed a HIGH sensitivity region.

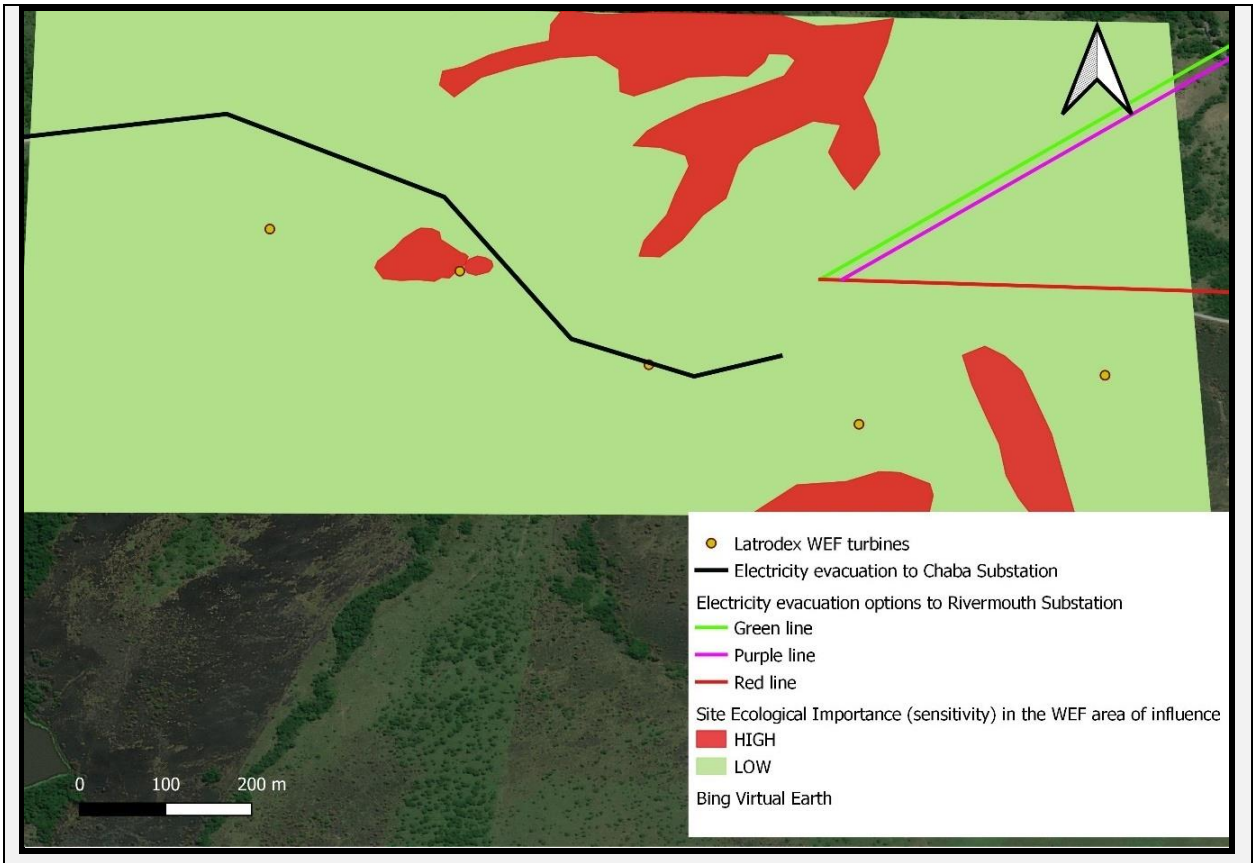

Figure 19 Site Ecological Importance / Sensitivity of the Latrodex WEF area of influence.

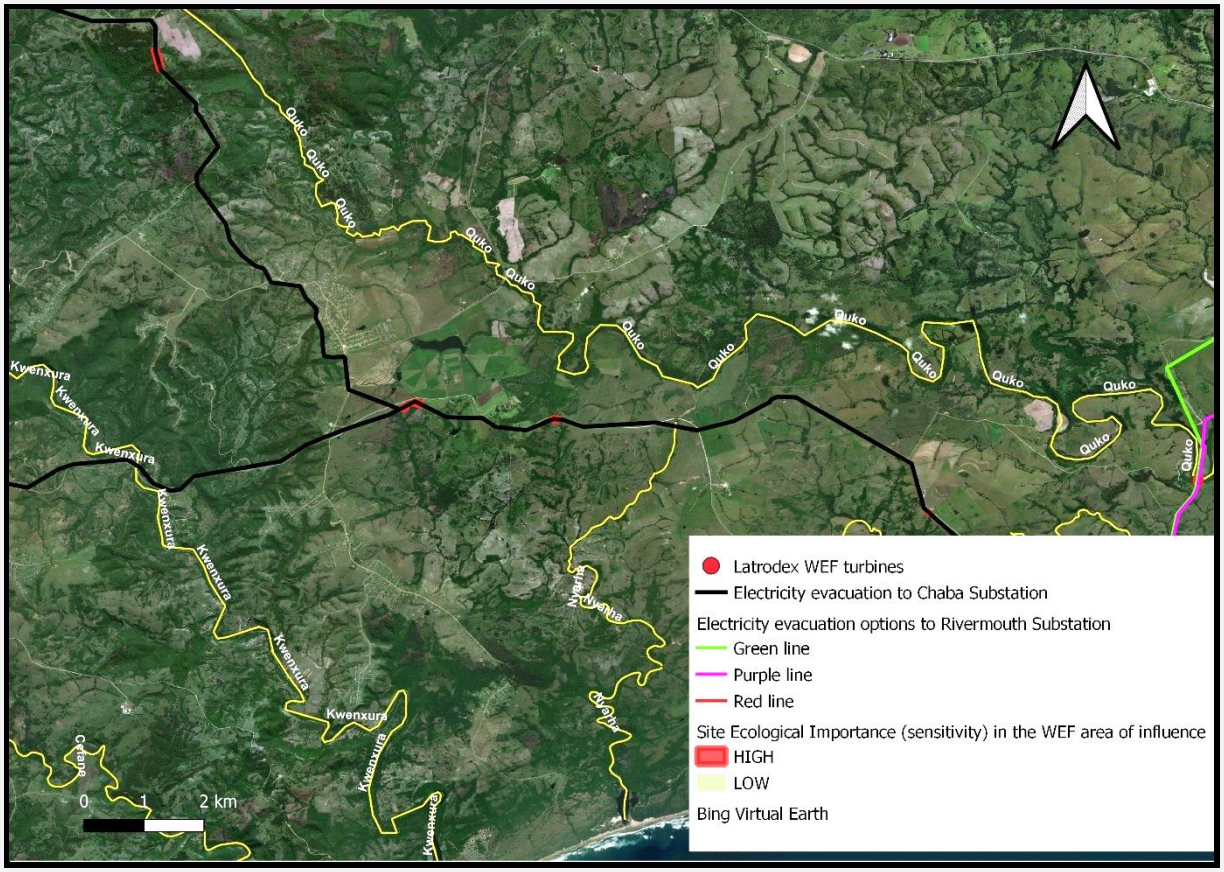

Figure 20 SEI/sensitivity of the Chaba Substation powerline line alternatives.

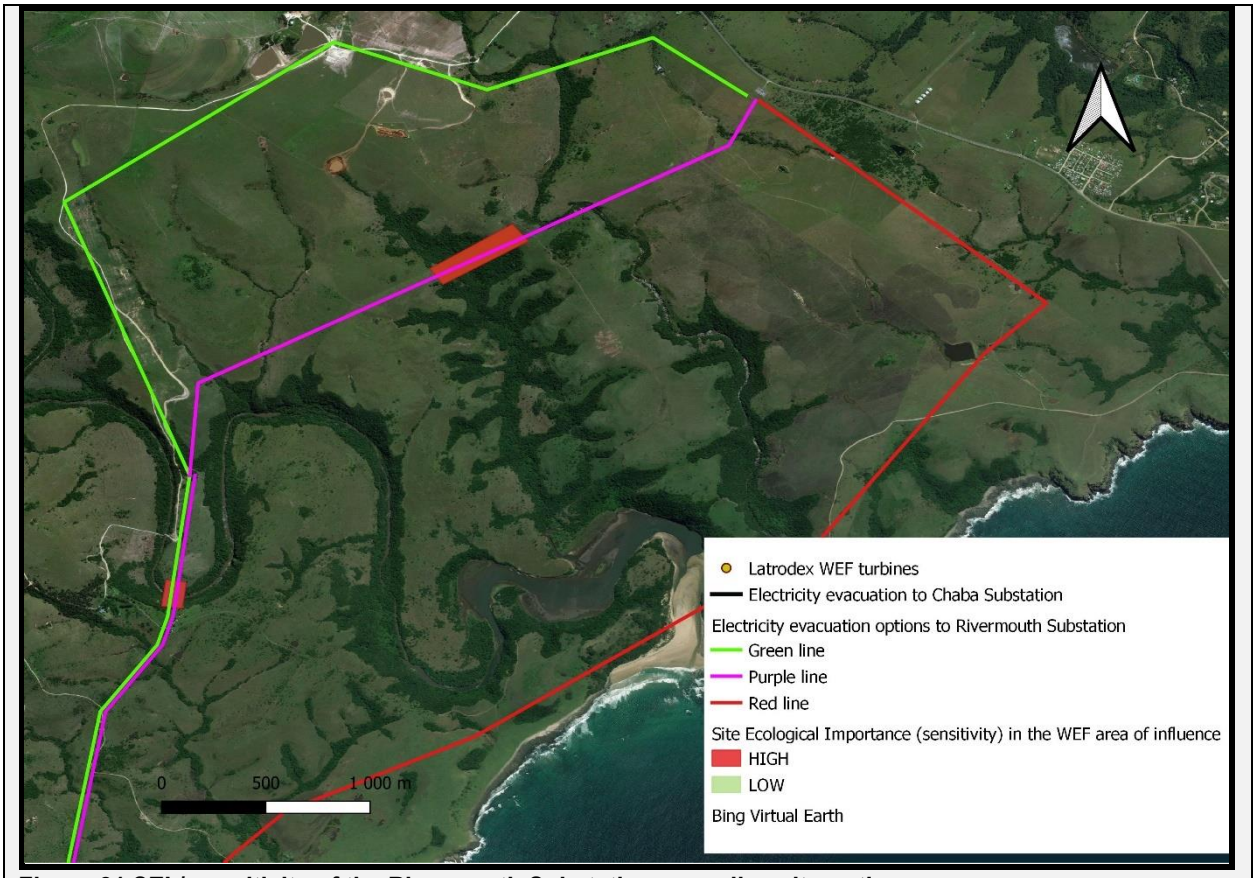

Figure 21 SEI / sensitivity of the Rivermouth Substation powerline alternatives.

Aquatic Environment

The NFEPA programme provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports sustainable use of water resources. These priority areas are called Freshwater Ecosystem Priority Areas, or FEPAs.

Wetland ecosystem types are used by NFEPA for representing natural examples of the diversity of wetland ecosystem types across South Africa. Wetlands of the same ecosystem type are expected to share similar functionality and ecological characteristics. Information used to classify wetlands as FEPAs included:

- Ramsar status;
- Known threatened frog and water bird occurrences; and
- Expert knowledge on biodiversity importance.

The proposed wind turbines are located along a ridge line and the boundary of two sub-quaternary catchments of quaternary catchment R30A of the Mzimvubu-Tsitsikamma Water Management Area.
According the National Wetland Map 5 (NBA, 2018), there are no natural wetlands within 500m of the development site.
The following form observations from the initial site visit:

- Turbine 1 is located within a low sensitivity area. There are unnamed non-perennial streams located south-east and downslope of the site.
- Two water storage dams (artificial wetlands) occur within close proximity to turbine 2.
- A section of natural wetlands occur between turbine 3 and 4.
- Turbine 5 is located in low sensitivity area, however, it is surrounding by non-perennial streams downslope to the east and west of the site.

It is worth noting, that the general study area had received a lot of rainfall and Cyperus species (wetland vegetation) were scattered and noticed throughout the hilltop. This is likely as a result of the heavy rainfall period/groundwater contribution in the area.

Recommendations:

- Turbine 2 should be adjusted to be more than 32m from the water storage dams.
- Turbine 3 and 4 must be adjusted to be more than 50m from the natural wetland area. No infrastructure should be within these areas.

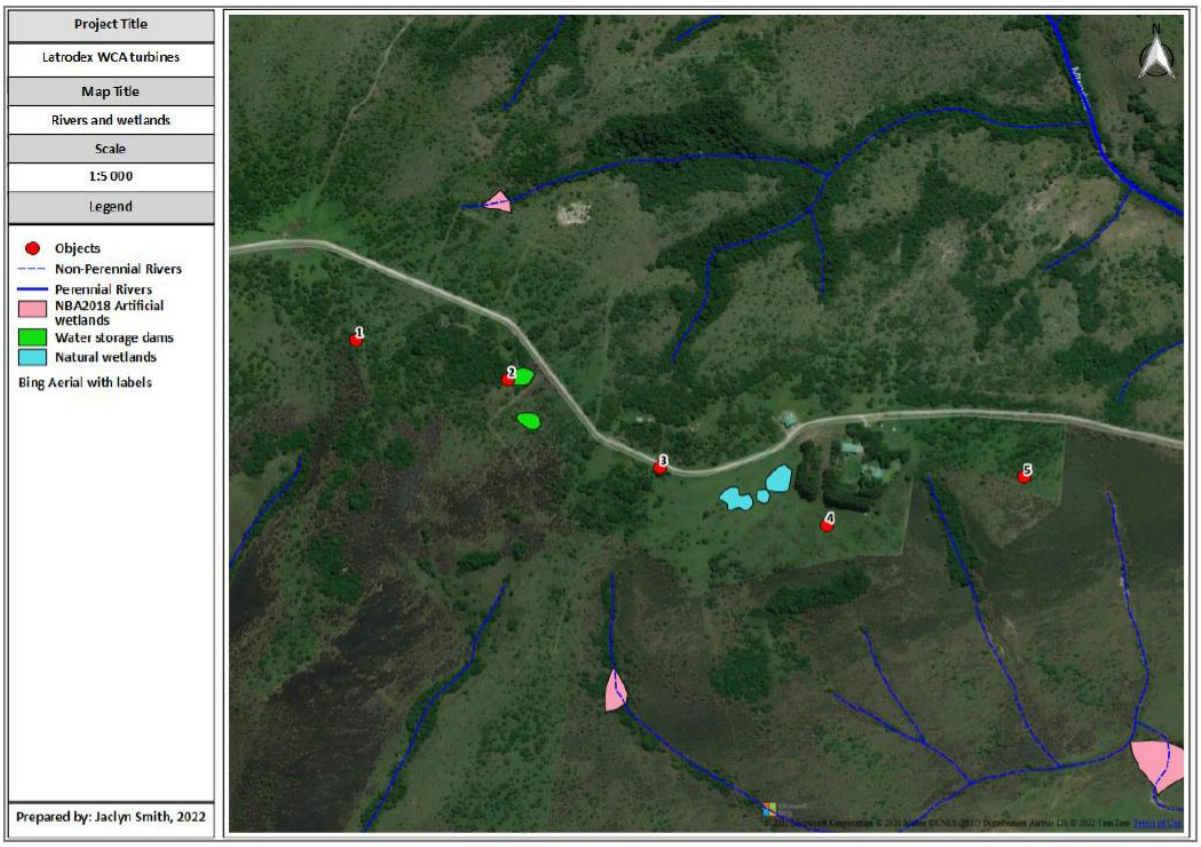

Figure 22 Wind turbines rivers and wetlands

Figure 23 Natural wetland area between turbines 3 and 4

Figure 24 Artificial storage dam adjacent to turbine 2

Power lines

Chaba Powerline

The 33kV powerline connecting to the Eskom Grid from the proposed wind turbines predominantly follows existing gravel access roads, however, in some sections it goes through transformed and untransformed farm lands. The powerline follows a ridgeline/areas of high relief and traverses the Nyarha, Haga-Haga, Kwenxura and Quko Rivers and their first order non-perennial tributaries.

According to NBA (2018), there are a number of natural wetlands occurring within 500m of the powerline route and a number of artificial wetlands (water storage dams) occurring within close proximity to the route.

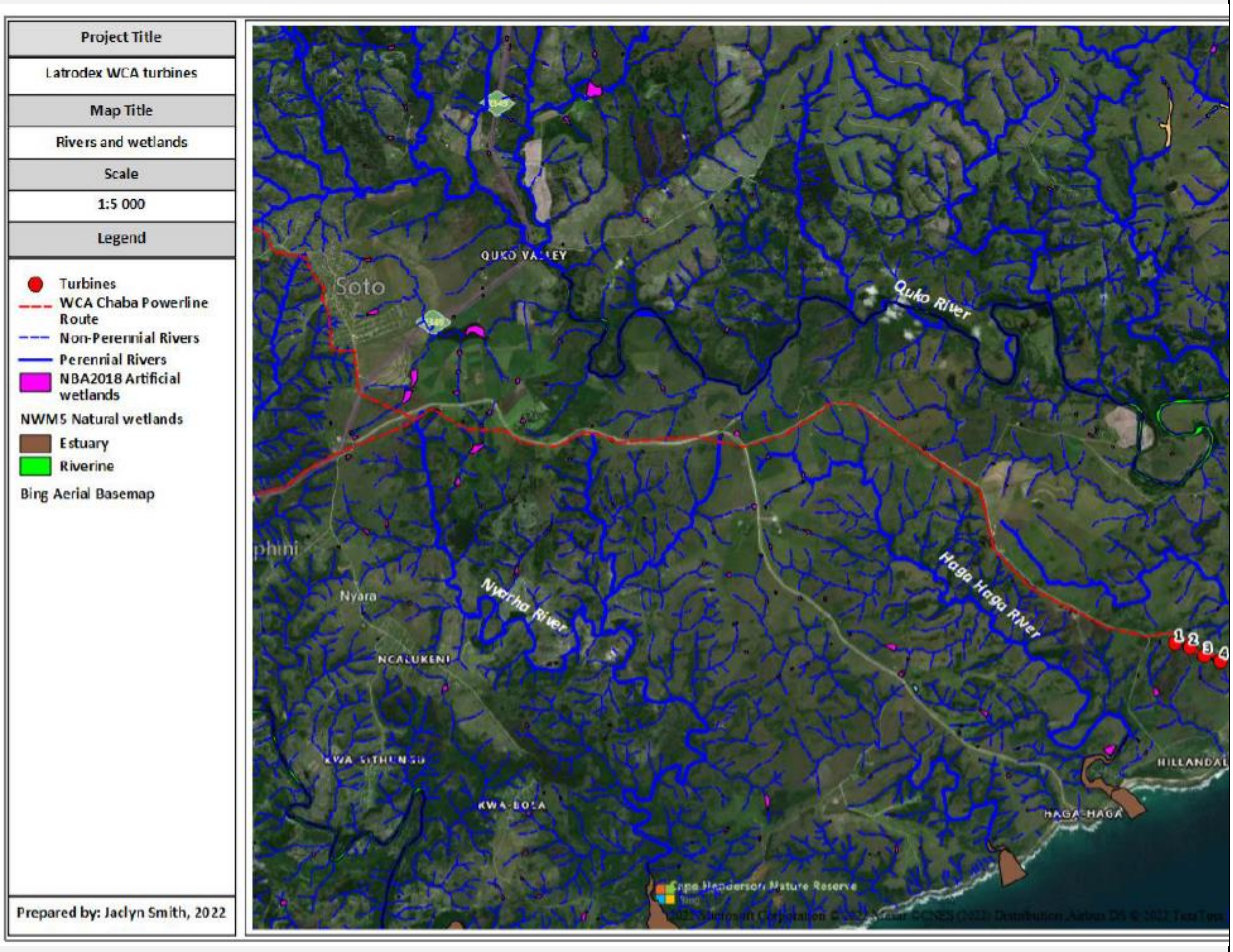

Figure 25 Chaba powerline rivers and wetlands (a)

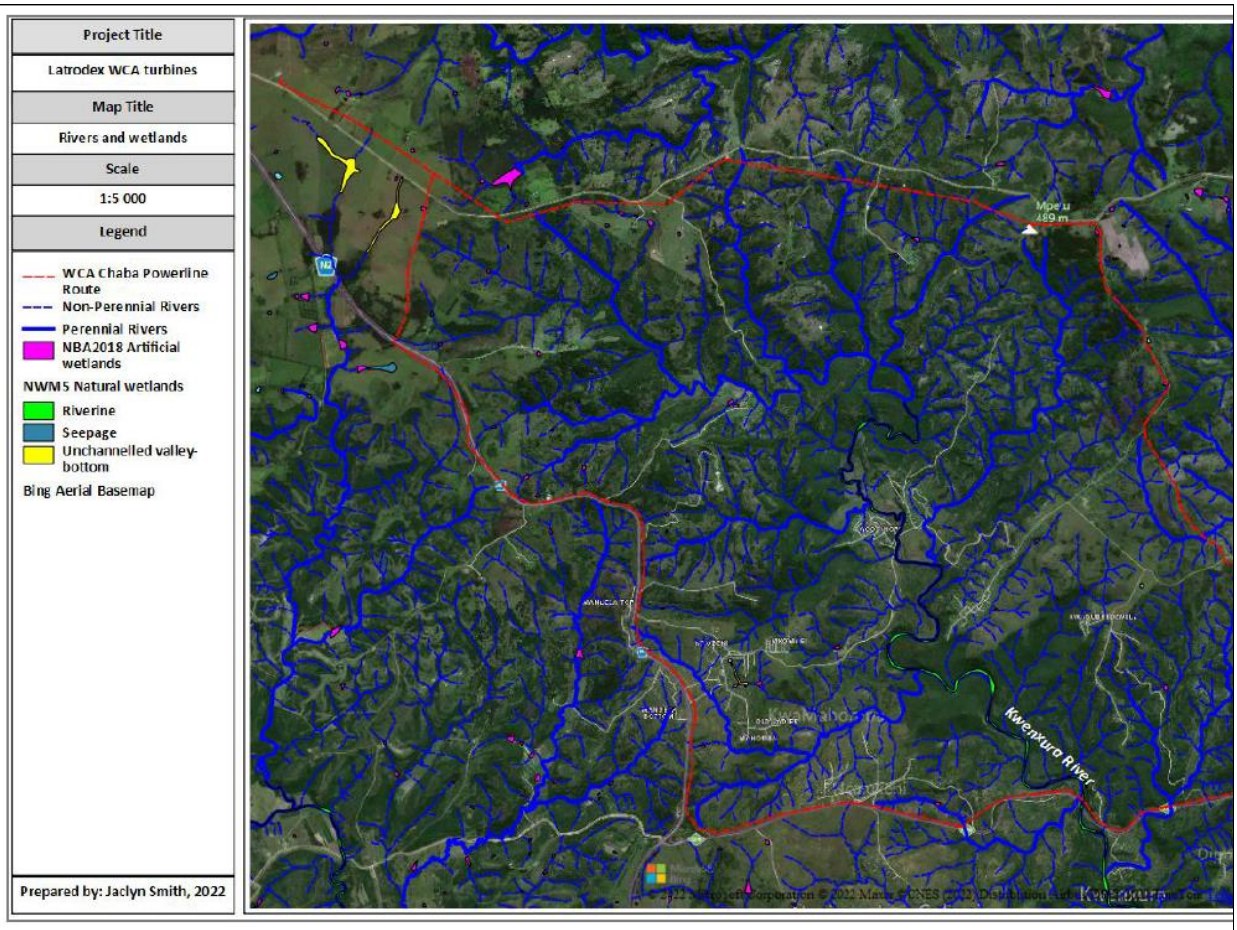

Figure 26 Chaba powerline rivers and wetlands (b)

Recommendations:

- The powerline should be adjusted to go along existing gravel access roads as far as possible.
- All powerline pole placement should be adjusted to avoid water course and wetland crossings as far as possible.
- The route should be surveyed by an aquatic and wetland specialist to identify and delineate riparian and wetland areas.

Rivermouth Powerline

The powerline will cross the Mtendwe, Quko and Kumqotwane Rivers and their associated tributaries. The small portion of the powerline will cross the Nyutura River.

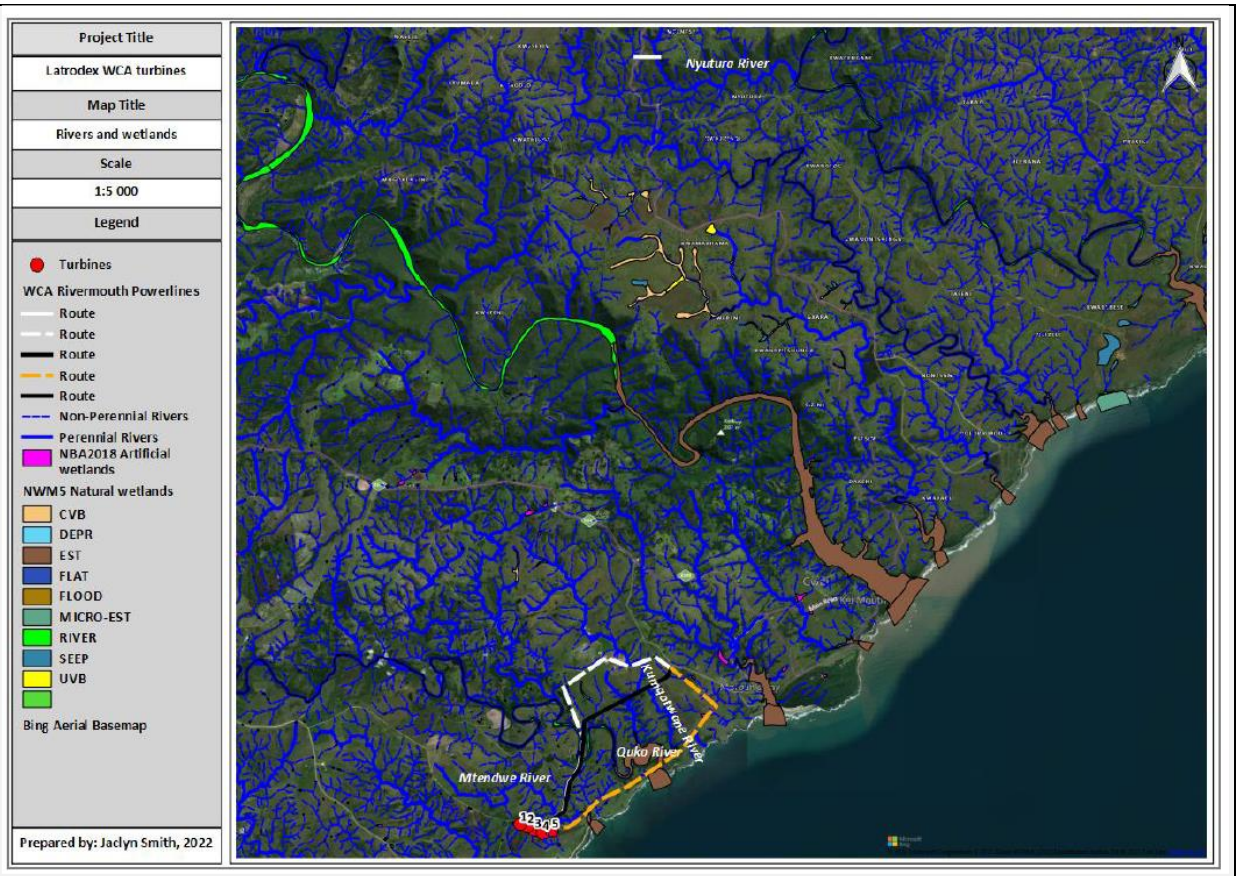

Figure 27 Rivermouth powerline rivers and wetlands

Recommendations:

- The powerline should be adjusted to go along existing gravel access roads as far as possible.
- All powerline pole placement should be adjusted to avoid watercourses and wetland crossings as far as possible.
- The route should be surveyed by an aquatic and wetland specialist to identify and delineate riparian and wetland areas.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area
5.2 Low density residential
5.3 Medium density residential
~~5.4 High density residential~~
~~5.5 Informal residential~~
~~5.6 Retail commercial & warehousing~~
~~5.7 Light industrial~~
~~5.8 Medium industrial~~ ~~AN~~
~~5.9 Heavy industrial~~ ~~AN~~
~~5.10 Power station~~

~~5.11 Office/consulting room~~
~~5.12 Military or police base/station/compound~~
~~5.13 Spoil heap or slimes dam[A]~~
~~5.14 Quarry, sand or borrow pit~~
5.15 Dam or reservoir
~~5.16 Hospital/medical centre~~
~~5.17 School~~
~~5.18 Tertiary education facility~~
~~5.19 Church~~
~~5.20 Old age home~~
~~5.21 Sewage treatment plant[A]~~
~~5.22 Train station or shunting yard[N]~~
~~5.23 Railway line[N]~~
~~5.24 Major road (4 lanes or more)[N]~~
~~5.25 Airport[N]~~
~~5.26 Harbour~~
~~5.27 Sport facilities~~
~~5.28 Golf course~~
~~5.29 Polo fields~~
~~5.30 Filling station[H]~~
~~5.31 Landfill or waste treatment site~~
~~5.32 Plantation~~
5.33 Agriculture
5.34 River, stream or wetland
~~5.35 Nature conservation area~~
5.36 Mountain, koppie or ridge
~~5.37 Museum~~
5.38 Historical building
~~5.39 Protected Area~~
5.40 Graveyard
~~5.41 Archaeological site~~
~~5.42 Other land uses (describe)~~

If any of the boxes marked with an "N "are ticked, how will this impact / be impacted upon by the proposed activity.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity. **N/A**

If YES, specify and explain:	
If YES, specify:	

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity. **N/A**

If YES, specify and explain:	

If YES, specify:

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?	**YES**	~~NO~~
	~~Uncertain~~	

If YES, explain:

Archaeological and Palaeontological Heritage Specialists were appointed to complete the Heritage section of this report. Please find the full Archaeological Heritage and Palaeontological Reports attached as **Appendix D**: Archaeological Heritage Impact Assessment Report & Palaeontological Specialist Reports, Specialist Reports.

Archaeological and Cultural Heritage

One farmstead was identified. Structures older than 60 years are protected under Section 34 of the NHRA. This farmstead occurs of the 1964 first edition 1;50 000 topographic map and is potentially older than 60 years as the air photography for this map was done in 1959. If the farmstead is to be impacted, it will require a formal process of application for a destruction permit issued by the Eastern Cape Provincial Heritage Authority as required by s34 of the NHRA.

The maps were utilised to identify structures that could possibly be older than 60 years and thus protected under Section 34 and 35 of the NHRA. Only the one farmstead (circled in blue) is located within the project footprint see Figure 28.

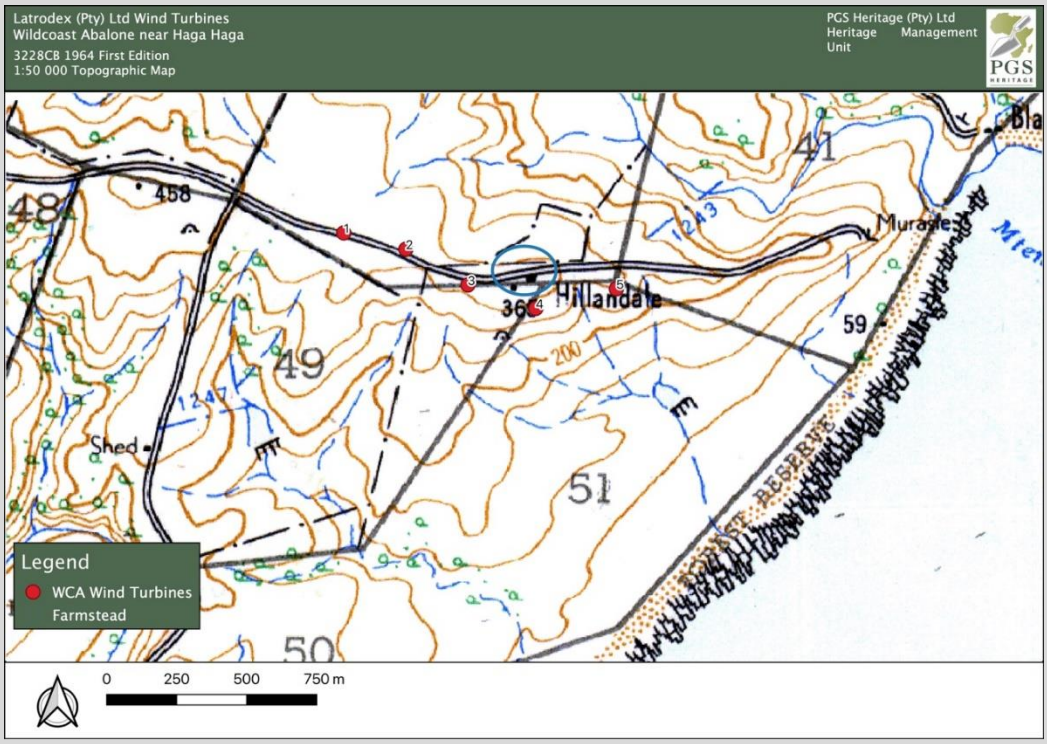

Figure 28 Historical (1964) map showing the one farmstead within the project footprint between turbines three and four – circled in blue.

Palaeontological Heritage

Rocks of the Adelaide Subgroup and the Karoo Dolerite Suite underlie the proposed location of the wind turbines and the surrounding environs. It is only the rocks of the Karoo Dolerite Suite that constitute the land surface at each of the wind tower locations. The thickness of the dolerite in the project area is much greater than the anticipated 2 m maximum depth of impact of any disturbance of the land surface. Accordingly, it is only the rocks of the Karoo Dolerite Suite that will be impacted upon by the development of the project.

The impacts of the project upon the palaeontological heritage of the Karoo Dolerite Suite is nil, as the unit is unfossiliferous. The rocks of the Adelaide Subgroup underly the Karoo Dolerite Suite and are known to contain fossil faunas and floras of world importance. However, these rocks were not found to crop out within the area to be impacted upon directly by the construction of the project's

	infrastructure. However, should the estimates of the thickness of the Karoo Dolerite Suite herein prove to be an underestimate (or the depth of excavation required for the foundations of the wind turbine towers prove greater than estimated) there is a possibility that the excavations may expose Adelaide Subgroup rocks. Should this occur and the rock strata prove fossiliferous this would prove highly beneficial to science. In this eventuality the nature of the project is considered to be of beneficial/positive impact.

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:	N/A

Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;
(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  (vii) any other party as required by the competent authority;
(c) placing an advertisement in—
  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

The advertisement is included under Appendix E1: Advertisement

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and
(b) state—

(i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;

(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;

(iii) the nature and location of the activity to which the application relates;

(iv) where further information on the application or activity can be obtained; and

(iv) the manner in which and the person to whom representations in respect of the application may be made.

Landowners have been notified of the proposed development. Proof of notification is included under Appendix E2: Landowner Notification

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

Please refer to Appendix E3: Notice Board.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

The Draft BAR was made available to the public for a review and comment period of 30 days. Comments and responses are included in the Final BAR under Appendix E4: Issues & Response Trail. Original correspondence from I&APs is included under Appendix E5: Original correspondence from I&APs.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

LATRODEX WIND TURBINES: STAKEHOLDERS	
Stakeholder	Contact Person
Department of Environment Forestry and Fisheries	Ms Zamalanga Langa
Department of Environmental Affairs: Biodiversity & Conservation	Mr Shonisani Munzhedzi
Department of Environmental Affairs: Biodiversity & Conservation	Mr Simon Malete
Department of Economic Development, Environmental Affairs and Tourism	Mr Siyabonga Gqalangile
Department of Economic Development, Environmental Affairs and Tourism	Mr Alistair McMaster
Department of Water & Sanitation (DWS) (Eastern Cape)	Ms Marisa Bloem
Department of Water & Sanitation (DWS) (Eastern Cape)	Mr Thabo Nokoyo
Department of Mineral Resources (DMR) (Eastern Cape)	Ms Brenda Ngebulana
Department of Mineral Resources (DMR) (Eastern Cape)	Ms Zimkita Tyala
Department of Environment Forestry and Fisheries	Ms Thoko Buthelezi
Department of Environment Forestry and Fisheries	Ms Mashudu Marubini
Department of Energy	Ms Mokgadi Mathekgana
Eskom	Mr Eddie Leach
Eskom: Renewable Energy	Mr John Geeringh
Eastern Cape Development Corporation (ECDC)	Mr Rory Haschick
Eastern Cape Provincial Heritage Resources Authority (ECPHRA)	Mr Lennox Zote
Eastern Cape Provincial Heritage Resources Authority (ECPHRA)	Mr Sello Mokhanya
South African Heritage Resources Agency (SAHRA)	Admin
Civil Aviation Authority (CAA)	Ms Lizelle Stroh
Air Traffic and Navigation Services (ATNS)	Mr Dylan Fryer
Roads (SANRAL/Public Works)	Ms Nanna Gouws
BirdLife South Africa	Mr Daniel Marnewick
BirdLife South Africa	Dr Hanneline Smit-Robinson
BirdLife South Africa: Birds and Renewable Energy Manager	Ms Samantha Ralson
BirdLife South Africa: Policy & Advocacy Manager	Mr Simon Gear
Endangered Wildlife Trust: CEO	Ms Yolan Friedman
Endangered Wildlife Trust: Head of Conservation Science	Dr Harriet Davies-Mostert
Endangered Wildlife Trust: African Crane Conservation Programme Manager	Ms Kerryn Morrison
Endangered Wildlife Trust: African Crane Conservation Programme Field Officer	Ms Glenn Ramke
Endangered Wildlife Trust: Wildlife & Energy Programme	Mr Lourens Leeuwner
WESSA EC Regional Representatives	Ms Jenny Gon
WESSA EC Regional Representatives	Ms Eileen Shepherd
DWS	Lizna Fourie (Licensing)
DWS: WUA	Esmeralda van Rooyen

LATRODEX WIND TURBINES: STAKEHOLDERS	
Stakeholder	Contact Person
DWS: Groundwater	Babalwa Ndlangisa
DWS: WQM	Z Magodla
DWS: WQM	A Dukashe
DWS: WQM	Moodley Dheegan
DWS: WQM	Bera Moosa
DWS: WQM	Kunene Bhekokwakhe
DWS: WQM	Magwentshu Lawona
ECPHRA (EC Heritage)	Mzikayise L Zote
ECPHRA (EC Heritage)	Mr Sello Mokhanya
South African Heritage Resource Agency (SAHRA)	Ragna Redelstorff
DEDEAT	Hlomela Hanise
DEDEAT	Nonzukiso Ntshutsha
DEDEAT (Director of Enforcement)	Div De Villiers
DEDEAT	Rob Stegman
DEDEAT	Given Ndabambi
DEDEAT: Coastal Zone Management	Ricky Hannan
DEDEAT: Coastal Zone Management	Loyiso Nondlebe
DEDEAT: Coastal Zone Management	Leight-Anne Kretzman
DFFE Biodiversity Conservation Unit (BCU)	Portia Makitla
DFFE Biodiversity Conservation Unit (BCU)	Thobekile Zungu
DFFE: Biodiversity Mainstreaming EIA	Tsholofelo Shalot Sekonko
DFFE: Biodiversity Mainstreaming EIA	Mmatla Rabothata
DFFE: Biodiversity Mainstreaming EIA	Biodivresity Conservation
DFFE Directorate: Sustainable Aquaculture ManagementEnvironmental Officer: Shellfish Production	Michelle Pretorius <>
DFFE Directorate: Sustainable Aquaculture Management	Fatima Daya <>
DFFE Directorate: Sustainable Aquaculture Management	Kishan Sankar <>; ;
DFFE Directorate: Sustainable Aquaculture Management	Maxhoba Jezile <>
DFFE: Oceans and Coast	Daisy Kotsedi
DFFE: Oceans and Coast	
DFFE: Oceans and Coast	Siyabonga Dlulisa
South African Environment Observation Network (SAEON)	Angelique Brooksbank
DFFE: Fisheries: Operation Phakisa Aquaculture Delivery Unit	KeaganH Halley
DFFE: Fisheries: Operation Phakisa Aquaculture Delivery Unit	Andrea Bernatzeder
DFFE: Forestry	Dorothy Jagers
DFFE: Forestry	Mxolisi Dan Malgas
DFFE: Forestry (Permitting and inspection)	Thobani Vetsheza
DFFE: Forestry	J. Vuyusani
DFFE: Forestry	Nomalwande Mbananga
Department of Transport	Danie Pretorius
Department of Agrarian Reform and Rural Development	Ms Thabile Mehlomakhulu
Department of Agrarian Reform and Rural Development	Ms Xoliswa Nyathi
Department of Agrarian Reform and Rural Development	Bahlekile Keikelame
ECDC	Rory Hashick

LATRODEX WIND TURBINES: STAKEHOLDERS	
Stakeholder	Contact Person
WESSA	Mike Denison
Eskom: Eastern Cape Operating Unit	Xolani Wana
Eastern Cape Parks and Tourism Agency	Eleanor Van Den Berg-McGregor
Eastern Cape Parks and Tourism Agency	Dean Peinke
Eastern Cape Parks and Tourism Agency	Kagiso Mangwale
Eastern Cape Parks and Tourism Agency	Ayaka Peter
Eastern Cape Parks and Tourism Agency	Mzwabantu Kostauli
Eastern Cape Parks and Tourism Agency	Nomatile Nombewu
Amathole District Municipality (ADM)	Siyabulela M
Amathole District Municipality: Environmental Management	Luyanda Mafumbu
Great Kei Local Municipality (GKLM)	L Plika
Great Kei Local Municipality (GKLM)	Municipal Manager: Mr. L.N Mambila
Great Kei Local Municipality (GKLM)	Municipal Manager PA: N Nonkasana
GKLM Ward 5 Councillor	Cllr Khantshashe
GKLM Ward 5 Councillor	
GKLM Mayor	Mr N Tekile

List of authorities from whom comments have been received:

Communication with DEDEAT has involved confirmation that DEDEAT (Amathole District) is the Competent Authority for the proposed development. A pre-application meeting (virtual) was also held with DEDEAT. Minutes of the meeting are attached under under Appendix E6: Pre-Application Meeting Minutes.
A site meeting was held with DFFE: Oceans and Coasts and minutes are included under Appendix E7: DFFE site visit Meeting Minutes

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders? YES

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Landowners have been notified of the proposed development. Proof of notification is included under Appendix E2a: Landowner Notification.

Interested and Affected Parties were notified upon release, of the availability of the Draft BAR for public comment. Proof of notification is included under Appendix E2b: I&AP Notification.

Comments submitted by I&APs are included under Appendix E4: Comments and response trail and Appendix E5: Original correspondence.

Please refer to Appendix E8: Stakeholder/Landowner/Surrounding Landowner/I&AP Database.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

Detailed comments and responses are included in appendix E4: Issues & Response Trail and appendix E5: Original correspondence from I&APs.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

Detailed comments and responses are included in appendix E4: Issues & Response Trail and appendix E5: Original correspondence from I&APs.

2.IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

Alternative (preferred alternative)

The impact assessment for the proposed Latrodex WEF was conducted in two parts; a general impact assessment, and various specialist impact assessments. The general impact assessment identified and assessed impacts across four phases of development:

- Planning & Design Phase
- Construction Phase
- Operational Phase
- Decommissioning Phase

The general impact assessment covered issues such as:

- Drainage line impacts
- General construction impacts
- Access roads
- Underground electrical connections
- Stormwater
- Electromagnetic Interference

Refer to **Appendix G** for the impact assessment methodology used.

Potential issues and impacts identified throughout all project phases of the proposed development.

Table 6 Assessment of impacts during the Planning and Design Phase

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
PLANNING AND DESIGN PHASE													
	(SIGNIFICANCE WITHOUT MITIGATION)											**(SIGNIFICANCE WITH MITIGATION)**	
GENERAL													
Legal and policy compliance	During the planning and design phase, failure to comply with existing policies and legal obligations can lead to the project conflicting with local, provincial and national policies, legislation, etc. This can result in legal non-compliances, fines, delays in construction activity, overall project failure and undue disturbance to the natural environment.	Negative	Direct	Severe	Regional	Long-term	Possible	Reversible	Resource will be partly lost	Achievable	**HIGH**	• The development must adhere to the relevant legislation and/or policy, e.g. ECBCP, Municipal By-laws, etc. • All legal matters pertaining to permitting must be completed prior to any construction activity. • All relevant permits must be obtained from the competent authority in order to remove/relocate any protected plant species. • All necessary permits must be in place prior to the removal/destruction of any potential heritage or paleontological resources found on site, should it be required.	**LOW**
Inadequate planning for the transportation of turbine and powerline parts could lead to traffic congestion	Inadequate planning for the transportation of turbine and powerline parts and specialists construction equipment to the site by long and/or slow moving vehicles could cause traffic congestion, especially if temporary road closures are required.	Negative	Direct	Severe	Regional	Short-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• Project planning must include a plan for transport management plan that will be implemented especially during the construction phase of the development. • The necessary road traffic permits must be obtained for transporting parts, containers, materials and construction equipment to the site.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
PLANNING AND DESIGN PHASE													
	(SIGNIFICANCE WITHOUT MITIGATION)											**(SIGNIFICANCE WITH MITIGATION)**	
Degradation of existing road infrastructure due to heavy vehicle traffic	The integrity of existing highway infrastructure such as bridges and barriers may be compromised by the burden of heavy vehicle traffic delivering components to site.	Negative	Direct	Moderate	Regional	Short-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• Careful planning of the routes taken by heavy vehicles must highlight areas of road that may need to be upgraded in order to accommodate these vehicles. Once identified these areas must be upgraded if necessary.	**LOW**
Inappropriate planning for the storage of hazardous substances could lead to surface and ground water pollution	Inappropriate planning for the storage of hazardous substances such as diesel, paint, pesticides, etc. could lead to surface and ground water pollution due to, for example, oil leaks, spillage of diesel, etc.	Negative	Direct	Severe	Regional	Long-term	Unlikely	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• All hazardous substances must be stored in a bunded area with an impermeable surface beneath them. Ensure that such areas are designed into the layout plan for the site camp. • A Spill Response Contingency Plan must be drafted and implemented.	**LOW**
Ground water contamination due to mixing of cement in inappropriate areas on site	The mixing of cement on site could result in ground water and surface water contamination from compounds in the cement. In addition, a large number of cement mixing stations on site could increase the presence of impermeable areas of hard standing which could in turn increase rates of runoff thereby increasing the risk of localised flooding, soil erosion, siltation, sedimentation and the formation of gullies.	Negative	Direct	Moderate	Localised	Short-term	Possible	Reversible	Resource will not be lost	Easily Achievable	**LOW**	• Cement mixing must be conducted at a single location which should be centrally located, where practical. Ensure that this site is chosen and agreed to by the ECO prior to construction. • Wash water from cleaning vehicles and implements must be managed: stored on site and disposed off-site at a licenced WWTW; waste manifests to prove legal disposal.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
PLANNING AND DESIGN PHASE													
	(SIGNIFICANCE WITHOUT MITIGATION)											**(SIGNIFICANCE WITH MITIGATION)**	
An increase in impermeable surfaces could lead to increased localised flooding and erosion	The construction of roads and impermeable areas of hard standing (both turbines and powerline pylons) could increase rates of run-off and lead to an increase in localised flooding and erosion. An inappropriate stormwater management plan could result in a higher severity of flooding and erosion.	Negative	Direct	Moderate	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• All structures must be located at least 32m away from identified drainage lines unless authorised by the Department of Water and Sanitation. • All structures must be located at least 500m from the delineated edge of wetlands unless authorised by the Department of Water and Sanitation. No non-linear structures will be allowed within 50m of the delineated edge unless authorised by the DWS. A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of the water flow • The Stormwater Management Plan must also include management mitigation measures for water pollution, waste water management and the management of surface erosion.	**LOW**
The blocking or delaying of signal to electronic devices caused by wind turbines	WEFs can cause television, radio and microwave interference by blocking and/or causing part of the signal to be delayed.	Negative	Direct	Moderate	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• Accurate siting of wind turbines in the planning and design phase will reduce the possibility of these impacts • If complaints are received by neighbouring landowners regarding the issue, then the developer must investigate and mitigate these issues to the best of their abilities. •	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
PLANNING AND DESIGN PHASE													
	(SIGNIFICANCE WITHOUT MITIGATION)											**(SIGNIFICANCE WITH MITIGATION)**	
Shadow flicker, which could result in health impacts to individuals exposed for extended periods of time	Rotating wind turbine blades interrupt the sunlight producing unavoidable flicker bright enough to pass through closed eyelids, and moving shadows cast by the blades on windows can affect illumination inside buildings. This effect is commonly known as shadow flicker. Wind turbine shadow flicker has the potential to induce photosensitive epilepsy seizures however the risk is low with large modern models and if proper planning is adhered to. It is possible to model the potential shadow flicker and determine potential negative impacts.	Negative	Direct	Moderate	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• Planning should ensure the flash frequency does not exceed three per second, and the shadows cast by one turbine on another should not have a cumulative flash rate exceeding three per second.	**LOW**

Table 7 Assessment of impacts during the Construction phase.

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
	(SIGNIFICANCE WITHOUT MITIGATION)											**(SIGNIFICANCE WITH MITIGATION)**	
GENERAL													
Legal and policy compliance	During the construction phase, failure to adhere to existing policies, regulations, permits, authorisations and legal obligations will lead to the project being non-compliant with local, provincial and national policies, legislation, etc. and may lead to undue disturbance of the natural environment and/or closure of the facility.	Negative	Direct	Severe	National	Long-term	Possible	Reversible	Resource will be partly lost	Achievable	**HIGH**	• The Applicant must employ an independent Environmental Control Officer (ECO) for the duration of the construction phase to audit the contractor's compliance with the specifications in the EA, EMPr and any other permits/authorisations.	**LOW**
Dust associated with an increase in vehicles on site could result in health impacts	Dust is likely to be a potential nuisance during the construction due to an increase in vehicles transporting supplies during this period and also as a result of vegetation clearing. This is the main cause. Dust can have detrimental effects on human health for individuals within a close proximity to the site.	Negative	Direct	Severe	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• Nuisance dust can be reduced by implementing the following: - Damping down of un-surfaced and un-vegetated areas using water from a licensed source; - Retention of vegetation where possible; - Only clear what is strictly necessary at any one time, i.e. do not clear the entire site at the beginning of construction; - Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of dust to surrounding areas - Surface all access roads with a gravel layer before commencing any construction activities; and - A speed limit of 40km/h must not be exceeded on dirt roads. • Any complaints or claims emanating from the lack of dust control should be attended to immediately by the Contractor.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Noise pollution	Adverse noise effects will occur during the construction period due to movement and use of heavy machinery. Activities such as excavation of foundations, road construction and vegetation stripping could lead to adverse noise for individuals located within close proximity of the construction site.	Negative	Direct	Moderate	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**LOW**	• Ensure that all equipment is properly maintained, and faulty silencers are replaced immediately. • Follow the recommendations provided in the Environmental Management Programme (EMPr) to limit disturbance created by noise and vibration. These include: - Concentrate all construction activities during the daytime hours (between sunrise and sunset), where feasible. - Provide ear protection equipment to staff working directly with noise generating machinery, also during short stays in areas with excessive noise. - Install silencers and noise control mechanisms (insulates) in equipment and machines that generate high levels of noise. • Avoid unnecessary idling times. • Minimizing the need for trucks/equipment to reverse. This will reduce the frequency at which disturbing but necessary reverse warnings will occur. Alternatives to the traditional reverse 'beeper' alarm such as a 'self-adjusting' or 'smart' alarm could be considered. These alarms include a mechanism to detect the local noise level and automatically adjust the output of the alarm is so that it is 5 to 10 dB above the noise level in the vicinity of the moving equipment. The promotional material for some smart alarms does state that the ability to adjust the level of the alarm is of advantage to those sites 'with low ambient noise level' (Burgess & McCarty, 2009).	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Unnecessary disturbance of vegetation due to sprawl of campsite could cause a loss of biodiversity.	An unnecessary sprawl of the construction camp site beyond the demarcated area could result in an increase in the loss of vegetation and biodiversity surrounding the campsite.	Negative	Direct	Moderate	Localised	Short-term	Possible	Reversible	Resource will not be lost	Easily Achievable	**LOW**	• The ECO must assist in the siting of all construction camp related structures (including any concrete batching plants or centralised concrete mixing areas) and supervise any bush clearing for the construction camp. • The construction camp should be clearly demarcated and fenced to avoid sprawl. • The construction area must be located in a degraded area where very little to no bush clearing is required to the extent possible. Where permits are required to remove plants, these will be applied for by the developer prior to the start of construction; • The camp site may not be located in the Coega IDZ; and • If there is a concrete batching site, it should be fenced. Shade cloth should be attached to the fence to stop sand blowing around.	**LOW**
Inappropriate storage and handling of hazardous substances could lead to surface and ground water pollution	Inappropriate storage and handling of hazardous substances such as diesel, paint, pesticides, etc. could lead to surface and ground water pollution due to, for example, oil leaks, spillage of diesel, etc.	Negative	Direct	Severe	Localised	Long-term	Probable	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• All hazardous substances must be stored in a bunded area with an impermeable surface beneath them. Ensure that such areas are designed into the layout plan for the site camp. • A Spill Response Contingency Plan must be drafted and implemented.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Littering and the use of informal ablution facilities by construction workers could cause surface and ground water pollution	The littering of general waste and the use of the surrounding environmental as informal ablutions by construction workers could lead to pollution in the surrounding water sources and the general vegetation which could have a detrimental impact on plant and animal species in the surrounding areas.	Negative	Direct	Moderate	Localised	Short-term	Possible	Reversible	Resource will not be lost	Easily Achievable	**LOW**	• Littering must be avoided and litter bins must be made available at various strategic points onsite. • Refuse from the construction site must be collected on a regular basis and deposited at an appropriate landfill site. • The bins should be animal proof i.e. the lids must not allow animals to get in and scavenge. • There must be sufficient litter bins on site and they should be emptied regularly and as necessary. Waste manifests to be provided by the municipality to prove legal disposal. • Portable ablution facilities must be located on site and must be situated away from (>50m) from any watercourses.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Stormwater management and erosion prevention	During the construction phase, failure to implement effective stormwater management measures may result in increased surface soil erosion and contamination of stormwater and resulting surrounding watercourses.	Negative	Direct, Indirect	Moderate	Study area	Long-term	Possible	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• The construction site must be managed in a manner that prevents pollution watercourses or groundwater, due to suspended solids, silt or chemical pollutants. • Berms and swathes must be placed in areas that may be prone to erosion. • Temporary cut-off drains and berms may be required to capture storm water and promote infiltration. • The unnecessary removal of groundcover from slopes must be prevented, especially on steep slopes which will not be developed. • If re-vegetation of exposed surfaces cannot be established, temporary erosion and sediment control measures must be maintained until such a time that re-vegetation can commence. • All temporary erosion and sediment control measures must be monitored for the duration of the construction phase and repaired immediately when damaged. All temporary erosion and sediment control structures must only be removed once vegetation cover has successfully recolonised the affected areas. • After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and silt fences or fascine work must be established along the gulley for additional protection until vegetation has re-colonised the rehabilitated area.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Waste management	During the construction phase, poor management of handling, disposal and storage of general and hazardous waste may lead to the pollution of the surrounding environment.	Negative	Direct, Indirect	Moderate	Study area	Medium-term	Possible	Reversible	Resource will not be lost	Easily Achievable	**MODERATE**	• Waste Management must be included in the contractor's method statements for handling onsite general and hazardous waste during the construction phase must be developed and implemented. • An appropriate area must be identified where construction waste/rubble can be stored prior to disposal. • All general waste must be disposed of in bins/waste skips labelled "general waste". • Sufficient waste bins must be provided throughout the construction site for collecting waste. • All general waste collected on site must be disposed of at a licensed general waste disposal site. • All hazardous waste generated on site must be placed in a temporary impermeable bunded containment area which must be disposed of at a hazardous landfill site or be collected by the appropriate service provider. • The contractor must retain paperwork proving the correct disposal of waste at a registered landfill site. • Proof of receipt of hazardous waste by a licenced service provider must be maintained on the site. • Adequate sanitary facilities must be provided for construction workers and they must be properly secured to the ground. • Maintenance of the chemical toilets should be done on a regular basis to prevent any leakages.	**LOW**
AGRICULTURE AND SOILS													

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Management of hazardous chemicals	The inadequate management of hazardous substances during the Construction Phase of the proposed Latrodex WEF could result in soil contamination and a loss of fertile soils due to hazardous substance spills.	Negative	Direct	Severe	Localised	Medium-term	Possible	Reversible	Resource will not be lost	Achievable	**MODERATE**	• Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 must be adhered to. This applies to solvents and other chemicals possibly used during the construction process; • Cement must not be mixed directly on the ground, or mixed during rainfall events when the potential for transportation into the stormwater system is the greatest; • Cement must only be mixed in the area demarcated for this purpose and on impermeable surfaces; • Drip trays must be placed under construction machinery to avoid soil contamination; • The appointed ECO must determine the precise method of treatment of polluted soil. This could involve the application of soil absorbent materials, oil-digestive powders to the contaminated soil or the excavation of the contaminated soil depending on the nature of the spill; • If refuelling occurs on site, a dedicated area should be established and refuelling should only take place on impermeable surfaces; • All fuel should be stored in a bunded area; • Ensure all construction machinery is in sound working order to prevent oil leaks; and • Any hazardous materials that need to be stored on site must be locked away.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Loss of Livestock and Wildlife Grazing	The clearance of grasses and shrubs during the Construction Phase for the placement of the wind turbine foundations, associated infrastructure and powerline pylons will result in the loss of land used for livestock and wildlife grazing which could impact on the wildlife and agriculture on the proposed properties.	Negative	Direct	Moderate	Localised	Medium-term	Definite	Reversible	Resource will not be lost	Achievable	**MODERATE**	• The clearance of vegetation should be limited to the demarcated construction footprint.	**LOW**
		Negative	Cumulative	Moderate	Regional	Long-term	Definite	Reversible	Resource will not be lost	Achievable	**MODERATE**		**LOW**
Soil Compaction	Soil will be compacted by construction vehicles and construction activities during the Construction Phase. Compacted soil results in the reduced ability for plant growth and water absorption as well as the increase in runoff.	Negative	Direct	Moderate	Localised	Medium-term	Definite	Reversible	Resource will not be lost	Achievable	**MODERATE**	• Heavy construction activities should be scheduled to avoid excessively wet periods, where possible; and • Topsoil stockpiles must not be compacted.	**LOW**
		Negative	Cumulative	Moderate	Regional	Long-term	Definite	Reversible	Resource will not be lost	Achievable	**MODERATE**		**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Increase in Soil Erosion	The clearing of vegetation during the Construction Phase will result in the exposure of soils. Exposed soils are susceptible to erosion by wind and water (i.e. run-off) during wind and/or rainfall events. Sections of the proposed Latrodex WEF site are currently eroded. It is envisioned that sections of the proposed site will continue to erode in the absence of the proposed Latrodex WEF development.	Negative	Direct	Severe	Localised	Medium-term	Definite	Reversible	Resource will not be lost	Achievable	**MODERATE**	• Disturbance and clearing of vegetation should be kept to the minimum required for the construction of the Latrodex WEF and associated structures; • All reasonable measures to limit erosion caused by construction activities must be taken; and • The appointed ECO must monitor the soil erosion and remedial action must be taken at the first signs of erosion.	
		Negative	Cumulative	Moderate	Regional	Long-term	Probable	Reversible	Resource will not be lost	Achievable	**MODERATE**		**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Management of Topsoil	The inadequate management of topsoil during the Construction Phase of the proposed Latrodex WEF, associated infrastructure and the powerline pylons could result in the loss of important topsoil and may cause irreversible damage to the landscape if left unmitigated. In addition, the loss or damage to topsoil will have a significant impact on the rehabilitation of the site.	Negative	Direct	Moderate	Localised	Long-term	Probable	Reversible	Resource will not be lost	Achievable	**MODERATE**	• Stripping of topsoil should be undertaken in such a manner as to minimise erosion by wind or runoff; • Areas from which the topsoil is to be removed must be cleared of any foreign material which could form part of the topsoil during removal including rubble, any waste material, litter, excess vegetation and any other material which could reduce the quality of the topsoil; • Ensure that subsoil and topsoil are not mixed during stripping, excavation, reinstatement and rehabilitation. If topsoil is mixed with clay subsoil the usefulness of the topsoil for rehabilitation of the site will be lost; • Once cleared, soils should be exposed for the minimum time possible; • Topsoil should be temporarily stockpiled, separate from subsoil and rocky materials; • Topsoil should only be stockpiled in areas designated by the appointed ECO; • Stockpiled topsoil must not be compacted; and • Any excess topsoil that is not used for rehabilitation must be removed from the site.	**LOW**
Inappropriate and Inadequate Rehabilitation	Inadequate rehabilitation during the Construction Phase of the proposed Latrodex WEF and powerline could result in the loss of valuable topsoil, irreversible damage to the landscape and the invasion of alien vegetation.	Negative	Direct	Severe	Localised	Long-term	Probable	Reversible	Resource will not be lost	Achievable	**MODERATE**	• If the topsoil is sterile or the seedbank is affected then topsoil should be supplemented with an indigenous seed mix; • Soils outside of the development footprint that are exposed during the construction of the WEF and the powerline must only be bare for the minimum time possible; • Stockpiled topsoil must not be compacted; and	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
		Negative	Cumulative	Severe	Localised	Long-term	Probable	Reversible	Resource will not be lost	Achievable	**LOW**	• The site must be rehabilitated to the satisfaction of the appointed ECO.	**LOW**
AVIFAUNA (AS PER AVIFAUNAL IMPACT ASSESSMENT – APPENDIX D)													
Habitat destruction	During construction, vegetation is altered or removed for the project footprint (Turbines, roads, hard stands and other components). This destroys avifauna habitat, makes it less useful to birds, or less attractive to sensitive species.	Negative	Direct	Slight	Localised	Long-term	Probable	Irreversible	Resource will be lost	Very difficult	**LOW**	• No changes to the current turbine positions should be made without consulting the specialist. • A pre-construction avifaunal walk down should be conducted to confirm final layout and identify any sensitivities that may arise between the conclusion of the EIA process and the construction phase. • All construction activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment. • All temporary disturbed areas should be rehabilitated according to the site's rehabilitation plan, following construction.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Disturbance of birds during construction	Birds are disturbed by construction or operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	Negative	Direct	Slight	Study aera	Short-term	Possibility	Reversible	Resource will not be lost	Moderate	**LOW**	• No changes to the current turbine positions should be made without consulting the specialist. • An avifaunal walk down should be conducted to confirm final layout and identify any sensitivities that may arise between the conclusion of the EIA process and the construction phase. • All construction activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment.	**LOW**
BATS (AS PER BAT IMPACT ASSESSMENT – APPENDIX D)													
Roost disturbance, destruction, and fragmentation	During the construction phase there could occur the destruction of active bat roosts and/or features that could serve as potential roosts, such as rock formations and the removal of trees on site. In addition, the destruction of derelict holes, such as aardvark holes, and any fragmentation of woody habitat, which includes dense bushes. The removal of trees and bushes would have an impact on all bats that could potentially roost in trees, including fruit bats, and on the foraging range of clutter and clutter-edge species.	Negative	Direct	Moderate	Localised	Short-term	Definite	Reversible	Resource will be partially lost	Easily achievable	**MODERATE**	• Construction activities to be kept out of possible bat roosting areas, such as the farm dwelling structures. • Rock formations should be avoided during construction, as these serve as roosting space for bats, but with the current layout, it is not expected that there will be any rock formations along the turbine positions. • Care should be taken if any bushes or trees are destroyed. • Aardvark holes or any large derelict holes or excavations should not be destroyed before careful examination for bats. • The Environmental Control Officer (ECO), a responsible appointed person or site manager should contact a bat specialist before construction commences so that they know what to look out for during construction.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Construction activities during night-time	Construction noise, especially during night-time, as well as lighting disturbance to bats.	Negative	Direct	Slight	Localised	Short-term	Possible	Reversible	Resource will not be lost	Easily achievable	**LOW**	• Nightly construction activities should be avoided, or if necessary, minimised to the shortest period possible. • With the exception of compulsory civil aviation lighting, artificial lighting during construction should be minimised, especially bright lights or spotlights. • Lights should avoid skyward illumination. • Turbine tower lights should be switched off when not in operation, where possible, depending on regulations.	**LOW**
Creating new habitat amongst the turbines	Creating new habitats amongst the turbines which might attract bats. These include buildings with roofs that could serve as roosting spaces, open water sources from quarries or excavation where water could accumulate.	Negative	Direct	Slight	Localised	Long-term	Possible	Reversible	Resource will not be lost	Easily achievable	**MODERATE**	• Completely seal off roofs of new buildings (e.g., substations and site buildings). Note: a small bat species could enter a hole the size of 1 cm^2. • Carefully inspect roofs of existing buildings and if there are no bat roosts, it is recommended that these roofs are sealed. • Roofs need to be regularly inspected during the lifetime of the wind farm and any new holes need to be sealed. • Excavation areas or artificial depressions should be filled and rehabilitated to avoid creating areas of open water sources which could attract bats during the rainy season.	**LOW**
VISUAL (AS PER VISUAL IMPACT ASSESSMENT – APPENDIX D)													

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Impact on sensitive visual receptors in close proximity to the WEF	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Within the region, dust as a result of construction activities may also be visible, as such it will result in a visual impact occurring during construction. This impact is likely to be of moderate significance both before and after mitigation.	Negative	Direct	Severe	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily achievable	**MODERATE**	• Ensure that vegetation is not unnecessarily removed during the construction period. • Reduce the construction period through careful logistical planning and productive implementation of resources. • Plan the placement of lay-down areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e., in already disturbed areas) wherever possible. • Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. • Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities. • Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent). • Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. • Rehabilitate all disturbed areas immediately after the completion of construction works.	**MODERATE**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Potential visual impact of construction on sensitive visual receptors in close proximity to the proposed OHLs	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 1 – moderate significance before and after mitigation,	Negative	Direct	Severe	Localised	Short-term	Definite	Reversible	Resource will not be lost	Easily achievable	**MODERATE**	• Proper planning, management and rehabilitation of the construction sites. • Ensure that vegetation is not unnecessarily removed during the construction period. • Reduce the construction period through careful logistical planning and productive implementation of resources. • Plan the placement of lay-down areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e., in already disturbed areas) wherever possible. • Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. • Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities. • Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent). • Restrict construction activities to daylight hours whenever possible in order to reduce lighting	**MODERATE**
	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 2 - moderate mitigated to low significance	Negative	Direct	Severe	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily achievable	**MODERATE**		**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 3 – moderate mitigated to low significance	Negative	Direct	Severe	Localised	Short-term	Probable	Reversible	Resource will not be lost	Easily achievable	**MODERATE**	impacts. • Rehabilitate all disturbed areas immediately after the completion of construction works.	**LOW**
	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Chaba Routes: Alternative 1 – moderate significance before and after mitigation	Negative	Direct	Severe	Localised	Short-term	Definite	Reversible	Resource will not be lost	Easily achievable	**MODERATE**		**MODERATE**
	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Chaba Routes: Alternative 2 - moderate mitigated to low significance	Negative	Direct	Severe	Localised	Short-term	Definite	Reversible	Resource will not be lost	Easily achievable	**MODERATE**		**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
NOISE (AS PER NOISE IMPACT ASSESSMENT – APPENDIX D)													
Noise impact of day time construction activities (all turbines)	Projected noise levels during construction of the WEF were modelled using the methods as proposed by SANS 10357:2004. The resulting future noise projections indicated that the construction activities, as modelled for the worst case scenario will comply with the National Noise Control Regulations during both the day- and night-time periods. No additional mitigation measures were proposed or are required. Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities. Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low.	Negative	Direct	Low	Localised	Short-term	Improbable	Reversible	Resource will not be lost	Easily achievable	**LOW**	• Ensure equivalent A-weighted daytime noise levels below 45 dBA at potentially sensitive receptors. • Ensure that maximum noise levels at potentially sensitive receptors be less than 65 dBA; • Prevent the generation of disturbing or nuisance noises; • Ensure acceptable noise levels at surrounding stakeholders and potentially sensitive receptors; • Ensuring compliance with the National Noise Control Regulations. • Ensure a good working relationship between the developer/contractor and all potentially noise-sensitive receptors. Communication channels should be established to ensure prior notice to the sensitive receptor if work is to take place close to them (especially if work is to take place within 500m from them at night). • Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures if available. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised; • Locate access routes as far as possible from identified receptors, especially if these roads will be used during night-time construction activities.	**LOW**
Noise impact of night time construction activities (all turbines)	Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities. Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low.	Negative	Direct	Low	Localised	Short-term	Improbable	Reversible	Resource will partially be lost	Easily achievable	**LOW**		**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
												• Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment and stored in suitable containers until appropriate disposal. • Drums must be kept on site to collect contaminated soil. These should be disposed of at a registered waste site. • Contaminated water containing fuel, oil or other hazardous substances must never be released into the environment. It must be disposed of at an appropriate registered site. • Vehicle maintenance should not take place on site unless a specific bunded area is constructed for such a purpose.	

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
ECOLOGICAL IMPACTS (AS PER ECOLOGICAL IMPACT ASSESSMENT – APPENDIX D)													
Loss of Natural Vegetation Loss of natural Hamburg Dune Thicket	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	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
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**	• This route will not be considered.	
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**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
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**
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**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Loss of Plant Species of Conservation Concern	Although no threatened plant species were observed in the 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 develop is therefore slight.	Negative	Cumulative	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

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Disturbance to faunal species and potential reduction in abundance and mortality of faunal species	Habitat clearing of 5 ha 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 could be transient and use the site to move through the landscape.	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.	**LOW**

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
	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	Cumulative	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**
Establishment of Alien Plant Species	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	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
AQUATIC ENVIRONMENT (AS PER AQUATIC COMPLIANCE IMPACT STATEMENT, APPENDIX D)													
Direct physical loss or modification of freshwater habitat	The most notable direct physical loss of freshwater ecosystem habitat will occur at turbine 1 and turbine 2, which are in close proximity to artificial dams and natural wetland areas, respectively.	Negative	Direct	Moderate	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	MODERATE	• Turbine 2 should be adjusted to be more than 32m from the water storage dams. • Turbine 3 and 4 must be adjusted to be more than 50m from the natural wetland area. No	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Alteration of hydrological and geomorphological processes (erosion and sediment)	Potential sediment related risks associated with the construction phase of this project relate to an increase in sediment supply to watercourses associated with trenching taking place within and near watercourse units. Extensive watercourse and dryland erosion within the study area increases the risk of construction phase sediment mobilisation due to trenching or excavation activities, especially where pipelines are not associated with existing road crossings. Sediment related risks are however temporary in nature and are easily manageable during pipeline upgrades and installations. Trenching within wetlands to lay or upgrade pipes will also temporarily alter natural water distribution patterns. This is not expected to affect many watercourses as most pipe crossings are associated with roads, where the pipelines will be buried in the road fill, rather than in the wetland bed material. All pipeline crossings of large perennial river systems are at the location of existing bridges with the water reticulation pipelines expected to be attached to bridges. These are therefore no expected diversions of watercourses to create dry working areas.	Negative	Direct	Moderate	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	MODERATE	infrastructure should be within these areas. • Underground cabling crossings points should be aligned along areas or corridors of existing disturbance, e.g., along existing roads, and should ideally be buried within the road fill if possible. • Prior to the commencement of any construction activities, the following features must be staked out by a surveyor and demarcated using brightly coloured shade cloth: o The construction servitude at all watercourses crossings extending 15m either side of the crossing. o Artificial dams and natural wetlands. • Demarcations are to remain until construction is complete. • All areas outside of this demarcated working areas must be considered no-go areas for the entire construction phase. Any contractor found working within No-Go areas must be fined as per fining schedule/system setup for the project. • Access to and from the project site should be either via existing roads or within the construction servitude. • All disturbed areas beyond the construction site that are intentionally or accidentally disturbed during the construction phase must be rehabilitated immediately to the satisfaction of the ECO. All disturbed areas must be prepared	LOW
Impacts to water quality	Water quality impacts during construction will be limited to potential increased water turbidity associated with potential increased sediment supply to watercourses, and pollution related to potential spillages of fuels and chemicals during construction of the pipeline alignments. If poorly managed, this impact could be of a moderately low significance, where large sediment plumes are regularly deposited into onsite watercourses during construction, and where onsite spill related pollution risks are not mitigated properly.	Negative	Direct	Low	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	LOW		LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Impacts to ecological connectivity and/or ecological disturbance impacts	During construction, the presence of workers and machinery in the general vicinity of onsite watercourses is likely to create noise, vibrations and dust which have the potential to temporarily disturb and displace fauna that make use of watercourse corridors for movement and refuge. Use of watercourses for refugia by fauna in the context of the study area is however likely to be limited due to the urban and per-urban nature of the area, and the generally degraded state of onsite watercourses. Additionally, construction phase disturbances will be temporary.	Negative	Direct	Low	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	LOW	and then re-vegetated to the satisfaction of the ECO as per the relevant rehabilitation plan.	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
SOCIO-ECONOMIC (AS PER THE SOCIO-ECONOMIC IMPACT ASSESSMENT – APPENDIX D)													
Temporary stimulation of the national and local economy	The proposed Wild Coast Abalone WEF is expected to require R 300 million (2022 prices) to establish during construction. All of the funds will be invested into the local economy. Aspects such as aggregate, civil works for the substation and electrical infrastructure and fuel will be procured predominantly from Great Kei suppliers. Equipment and plant which is not available in Great Kei and other towns within the Amathole DM region will be procured from suppliers within the province. The localised expenditure on the project will stimulate the local and national economies. The availability of materials within South Africa will dictate where inputs are sourced from and which company will be awarded the tender, with closely proximity to site and BBBEE status given as preference. It is estimated that the construction of the project will increase the production in the country (i.e. new business sales) by R 375.6 million, which will translate into an additional R 70.5 million of GVA. Besides the value added that could be generated by local construction businesses through sub-contracting agreements and employment of free-lancers, the sectors that are expected to benefit the most from the production and consumption induced effects are tertiary services such as trade, accommodation, and transport services. The greatest effects on production and GVA stimulated during construction activities will be created through the multiplier effects, specifically through a combination of production and consumption induced effects. The former refers to the impact generated along backwards linkages when the project creates demand for goods and services required for construction and subsequently stimulates the business sales of the suppliers of inputs that are required to produce these goods and services. The latter refers to the effects of household spending which is derived from an increase in salaries and wages directly and indirectly stimulated by the project's expenditure.	Positive	Direct, cumulative	Moderate	National	Medium-term	Definite	Reversible	Resource lost once construction completed	Achievable	MODERATE	• The developer should be encouraged by the EPC contractor to increase the local procurement practices and promote the employment of people from local communities, as far as feasible, to maximise the benefits to the local economies. • The developer should engage with local authorities and business organisations to investigate the possibility of procuring construction materials, goods and products from local suppliers were feasible.	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
	Sectors and industries that will experience the greatest stimulus from this indirect and induced impacts include: - Basic metals, structural metal products and other fabricated metal products industries - Trade - Insurance - Transport services - Electrical machinery and apparatus **Cumulative** A WEF has been built in the municipality (Chaba WEF) and another one under EIA Authorisation process is the Haga Haga Wind Farms (Pty) Ltd. In the province, some are already have already been constructed. This could provide sufficient economies of scale and thus open opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the economy. This has already occurred to a certain extent with the manufacturing of WEF components in the country.												

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Temporary increase in employment in the national and local economies	The proposed facility will create 150 Full Time Equivalent (FTE) employment positions during construction. About 80% of the employment positions involve skilled and semi-skilled construction workers, with the remaining being managers, professional engineers and supervisors. It is anticipated that 80% of the employment will be filled by people from local communities. Given the size of the local construction sector it is anticipated that there will be sufficient local labour to satisfy the demand for unskilled workers. Beyond the direct employment opportunities that will be created by the project during the construction phase the development will also have a positive spin-off effect on the employment situation in other sectors of the national and local economies as shown in Table 13. Most of these positions will be in sectors such as construction, business services and trade. Given that a significant portion of the multiplier effects will be generated through backward linkages, more than half of these FTE employment positions will be created along the supply chain and amongst industries providing inputs to the businesses in the supply chain. Based on these figures the total contribution of the project towards employment creation in South Africa is estimated at 711 FTE employment positions throughout the construction phase. It is recommended that the developer encourage the EPC contractor to fill as many local positions as possible.	Positive	Direct	Low	National	Short-term	Definite	Reversible	Resource lost once construction completed	Achievable	LOW	• Organise local community meetings to advise the local labour force about the project that is planned to be established and the employment that can potentially applied for • Establish a local skills desk (in Great Kei) to determine the potential skills that could be sourced in the area • Recruit local labour as far as feasible • Employ labour-intensive methods in construction where feasible • Sub-contract to local construction companies particularly SMMEs and BBBEE compliant enterprises where possible • Use local suppliers where feasible and arrange with the local SMMEs to provide transport, catering and other services to the construction crews.	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Contribution to skills development in the country and local economy	The construction of the proposed Wild Coast Abalone WEF is likely to have a positive impact on the skills development in South Africa particularly given the limited number of such facilities currently operating in the country. Since there are a limited number of operational wind energy facilities in South Africa, the local expertise in the construction of such facilities is very limited. During the turbine component assembly and tower manufacturing period which is included as part of the construction phase and is planned to be conducted in the Eastern Cape, it is likely that foreign technical experts will be involved. This will present an opportunity for skills and knowledge transfer between these technical experts and local manufactures. It is also expected that the construction crew involved in the project will gain knowledge and experience in respect of the development of wind energy facilities. This will be highly beneficial given South Africa's target of generating 9 200 MW from wind energy by 2030 (Department Energy, 2011). In addition to the direct effects of the project on skills development in the country and the local economy, the project could contribute to the development of the local R&D and manufacturing industries associated with wind technology. This could be achieved through partnerships with Rhodes University (situated in Makhanda) or the Nelson Mandela University (NMU) in Port Elizabeth. Partnerships of this nature could further enhance the development of new skills and expertise. **Cumulative** Improved labour productivity and employability of construction workers for similar projects Possible development of local skills and expertise in R&D and manufacturing industries related to wind technology through partnerships with Rhodes University and NMU	Positive	Direct	Low, cumulative	Regional	Short-term	Probable	Reversible. Skills can be lost if not practiced	Resource will not be lost	Achievable	LOW	• Facilitate knowledge and skills transfer between foreign technical experts and South African professionals during the pre-establishment and construction phases • Set up apprenticeship programmes to build onto existing skill levels or develop new skills amongst construction workers especially those from local communities	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Temporary increase in household earnings	The proposed WEF will create a total of 711 FTE employment positions (direct, indirect and induced) during construction generating R 246 million of revenue for the affected households in the country through direct, indirect and induced effects. Of this figure R 19 million will be paid out in the form of salaries and wages to those individuals directly employed during the construction phase. The remaining R 227 million in households' earnings will be generated through indirect and induced effects resulting from project expenditure. Although temporary, this increase in household earnings will have a positive effect on the standard of living these households. This is especially applicable to the households benefiting from the project that reside in the Great Kei Local Municipality. **Cumulative** Improved standard of living of the affected households	Positive	Direct, cumulative	Low	National	Short-term	Probable	Reversible	Resource lost once construction completed	Achievable	LOW	• Recruit local labour as far as feasible to increase the benefits to the local households • Employ labour intensive methods in construction where feasible • Sub-contract to local construction companies where possible • Use local suppliers where feasible and arrange with local SMMEs and BBBEE compliant enterprises to provide transport, catering and other services to the construction crews •	MODERATE
Temporary increase in government revenue	The investment in the Latrodex Wind Farm will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc. Government earnings will be distributed by national government to cover public spending which includes amongst others the provision and maintenance of transport infrastructure, health and education services as well as other public goods. **Cumulative** Lower government debt and servicing costs	Positive	Direct, cumulative	Low	National	Short-term	Probable	Reversible	Resource lost once construction completed	Achievable	MODERATE	• None suggested	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Negative changes to the sense of place	A community's sense of place is developed over time as it embraces the surrounding environment, becomes familiar with its physical properties and creates its own history. The sense of place is created through the interaction of different factors such as the areas visual resources, its aesthetics, climate, culture and heritage as well as the lifestyle of individuals that live in and visit the area. Most importantly, it is a highly subjective matter and dependent on the demographics of the population that resides in the area and their perceptions regarding trade-offs. Detailed trade-offs are discussed in the Socioeconomic Impact Assessment attached under Appendix D. **Cumulative** Change in perception of the area due to the construction of other wind turbine developments in the surrounding area albeit temporarily.	Negative	Direct, cumulative	Moderate	Study area	Short-term	Definite	Reversible	Resource will not be lost	Achievable	MODERATE	• The mitigation measures proposed by the visual and noise specialists should be adhered to • Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during construction	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Temporary increase in social conflicts associated with the influx of people	The Great Kei economy is not sufficiently diversified to supply the entire workforce for the construction of the proposed WEF, particularly in terms of skilled positions. A significant number of the unskilled and semi-skilled workers required during the construction phase will, however, be sourced locally. It is estimated that 70-80% of employment that will be created during the construction phase could be filled by labour coming from the local municipality. Migrant workers will therefore comprise just over half of the total work force. The migration of people to the area is not likely to result in social conflicts between the local population and the migrant work force from the local population perceiving the migrant workers as "stealing" their employment opportunities. Given the low reliance on labour sourced externally, the potential of the influx of people into the area leading to a temporary increase in level of crime, illicit activity and possibly a deterioration of the health of the local community through the spread of infectious diseases is low. Semi-skilled and unskilled construction workers are unlikely to choose to remain in the area following the completion of the construction phase given the rural nature of the project site (with limited human settlements in the surrounding area). The risk of such individuals exacerbating the level of poverty within the Great Kei Local Municipality from living in the area without a source of income is thus low.	Negative	Direct	Low	Study area	Short-term	Probable	Reversible	Resource lost on construction completed	Achievable	LOW	• Adhere to strict labour recruitment practices that would reduce the desire of potential employment seekers to loiter around the properties in the hope of finding temporary employment • Control the movement of workers between the site and areas of residence to minimise loitering around the facility. This should be achieved through the provision of scheduled transportation services between the construction site and area of residence • Employ locals as far as feasible through the creation of a local skills database • Establish a management forum comprising key stakeholders to monitor and identify potential problems that may arise due to the influx of employment seekers to the area • Ensure that any damages or losses to nearby affected farms that can be linked to the conduct of construction workers are adequately reimbursed • Assign a dedicated person to deal with complaints and concerns of affected parties	LOW
Traffic	During the construction phase, increased flow of traffic to the project site may negatively impact the neighbouring areas.	Negative	Direct	Moderately	Study area	Short-term	Definite	Reversible	Resource will not be lost	Achievable	MODERATE	• Appropriate warning signs must be in place to notify the public regarding construction activities. • Construction vehicles are to adhere to traffic regulations. • Appropriate traffic safety measures, such as flagmen and speedbumps, must be used where deemed necessary.	LOW
HERITAGE IMPACTS (AS PER HERITAGE IMPACT ASSESSMENT – APPENDIX D)													

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
Archaeology	One farmstead was identified. Structures older than 60 years are protected under Section 34 of the NHRA. The identified farmstead is currently in use by the Abalone facility and will not be directly impacted by the turbine locations. If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA).	Negative	Direct & cumulative	Slight	Study area	Short-term	Possible	Irreversible	Resource will not be lost	Achievable	LOW	• If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA). • Portions of the proposed area for development are covered in dense vegetation and sites/features may be covered by soil and vegetation and will only be located once this has been removed. A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. • If concentrations pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (043 745 0888) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue. • The developer / ECO / or construction manager must apply to the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) for a	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
												destruction permit for any heritage material that is found prior to the commencement of the development activities.	
Palaeontology	The direct impacts upon the palaeontological heritage of the project area are potentially: • Damage or destruction of fossil materials during the construction of project infrastructural elements to a maximum depth of those excavations. Many fossil taxa (particularly vertebrate taxa) are known from only a single fossil and, thus, any fossil material is potentially highly significant. Accordingly, the loss or damage to any single fossil can be potentially significant to the understanding of the fossil heritage of South Africa and to the understanding of the evolution of life on Earth in general. Where fossil material is present and will be directly affected by the building or construction of the projects infrastructural elements the result will potentially be the irreversible damage or destruction of the fossil(s). • Movement of fossil materials during the construction phase, such that they are no longer in situ when discovered. The fact that the fossils are not in situ would either significantly reduce or completely destroy their scientific significance. It is considered, herein, that only the rocks of the karoo Dolerite Suite will be directly impacted upon by the project. The indirect impacts upon the palaeontological heritage of the project area are potentially the loss of access for scientific study to any fossil materials present beneath infrastructural elements for the life span of the existence of those constructions and facilities. The emplacement of the	Negative	Direct, indirect, & cumulative	Slight	Localised	Permanent	Definite	Irreversible	Resource will be lost	Achievable	LOW	• No fossil material were identified during the progress of the site investigation that underpins this report. The only lithological unit that will be directly impacted upon by this project is considered to be unfossiliferous. Accordingly, no damage mitigation protocols are required to preserve fossil assemblages. • Should scientifically or culturally significant fossil material exist within the project area, and these are discovered during the emplacement of the project's infrastructure elements, any negative impact upon it should be mitigated. This mitigation should take the form its evaluation by a palaeontologist and if considered scientifically significant it should be excavated (under permit from SAHRA) by a palaeontologist and the resultant material being lodged with an appropriately permitted institution. In the event that the fossil materials excavation is impossible or inappropriate the fossil or fossil locality could be protected and the site of any planned construction moved	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE													
	wind turbine towers will directly impact upon the Karoo Dolerite Suite. The indirect impacts of the progression of the project will be that the rocks of the Adelaide Subgroup will be effectively sterilised from scientific investigation for the life-time of the turbine towers. The calculation of cumulative effects in the case of this proposed project it is possible to make the observation that the Karoo Dolerite Suite is unfossiliferous. Accordingly, there would be nothing in the form of regional negative impacts upon the palaeontological heritage of the unit resulting from this project. The potential for the project to add significantly to negative impacts upon the palaeontological heritage of the wider region must be assessed as having a nil cumulative impact.												

Table 8: Assessment of impacts during the Operation phase

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
	(SIGNIFICANCE WITHOUT MITIGATION)											**(SIGNIFICANCE WITH MITIGATION)**	
ENVIRONMENTAL POLICY													
Legal and policy compliance	During the operation phase, failure to adhere to all permits, authorisations and regulations may lead to financial penalties and closure of the facility.	Negative	Direct	Severe	National	Long-term	Possible	Reversible	Resource will be partly lost	Achievable	HIGH	• The proponent must ensure that operation of the facility is compliant with the relevant legislation and policy and authorisations. • These should include (but are not restricted to): NEMA, EA plant removal permits and any other permits/authorisations.	LOW
ECOLOGICAL IMPACT ASSESSMENT (AS PER ECOLOGICAL IMPACT ASSESSMENT, APPENDIX D)													
Infestation of Alien Plant Species	Poor rehabilitation and the lack of implementation of an alien invasive plant eradication during the operation phase 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	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
AQUATIC ENVIRONMENT (AS PER AQUATIC COMPLIANCE IMPACT STATEMENT, APPENDIX D)													
Direct physical loss or modification of freshwater habitat	During the operational phase of the WEF direct impacts to freshwater habitat may occur during maintenance of pipeline infrastructure within the vicinity of watercourses. This is likely to occur very infrequently and where sensitive areas are avoided during repairs or maintenance.	Negative	Direct	Low	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	LOW	• Mitigation impacts discussed above for the construction phase apply to maintenance activities during operation.	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Impacts to water quality	Water quality impacts during the operation of the WEF are mostly unlikely to take place. Where these could occur is during pipeline crossing repairs or maintenance, where any potential pollutants used (fuels etc.) are poorly managed and there is a risk of spillage	Negative	Direct	Low	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	LOW	• Mitigation impacts discussed above for the construction phase apply to maintenance activities during operation.	LOW
Impacts to ecological connectivity and/or ecological disturbance impacts	During operation phase maintenance and repairs the presence of workers and machinery in the general vicinity of onsite watercourses is likely to create noise, vibrations and dust which have the potential to temporarily disturb and displace fauna that make use of watercourse corridors for movement and refuge	Negative	Direct	Low	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	LOW	• Mitigation impacts discussed above for the construction phase apply to maintenance activities during operation.	LOW
AVIFAUNAL (AS PER AVIFAUNAL IMPACT ASSESSMENT, APPENDIX D)													
Disturbance of birds during operations	Birds are disturbed by construction or operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	Negative	Direct	Slight	Study-area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	LOW	• None	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Displacement of birds during operational phase	As for disturbance above, the indications from operational wind farms are that this impact may be of low importance. At Latrodex Wind Farm we consider this impact to be of Low Negative significance with the mitigation measures already recommended above.	Negative	Direct	Slight	Study-area	Long-term	Possible	Reversible	Resource will not be lost	Achievable	LOW	• None	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Turbine collision fatalities	The risk of turbine collision is high for two species: Jackal Buzzard; and Yellow-billed Kite. This is due to their frequent flight activity and the fact that some of these flights pass through proposed turbine areas (unlike some of the other recorded species which flew mostly off site). Since these two species are not regionally Red Listed, we conclude that overall this impact will be of Low Negative significance.	Negative	Direct	Moderate	Study-area	Long-term	Possible	Reversible	Resource will not be lost	Achievable	LOW	• No changes to the current turbine positions should be made without consulting the specialist. • A post construction inspection must be conducted by an avifaunal specialist to confirm that all aspects have been appropriately handled. • Given that the impact of bird collision with turbines could occur once the wind farm is operational and require mitigation, we recommend strongly that an appropriate mitigation budget be provided for by the Applicant. At this stage it is not possible to determine what mitigation may be appropriate, and in the time between writing this report and the mitigation need arising (likely several years) new mitigation methods may be developed. However if such a need arises and suitable mitigation is identified it cannot be argued by the wind farm operator that mitigation was not budgeted for. Mitigation could cost the operator either in the form of additional costs or lost productivity as a result of changes to turbine operations. • It is also important that the Applicant be aware that mitigation measures may require the installation of equipment on turbines, or possibly the painting of blades. Potential technical and warrantee challenges should be noted where possible throughout the planning process so that they do not prevent the implementation of reasonable mitigation if required. • Post construction monitoring should inform an adaptive management programme to mitigate any identified impacts to acceptable levels. We recommend that all turbines are searched for collision fatalities every week once operational.	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Collision & electrocution on overhead power line and in substation/switching station	The impact of bird collision and electrocution with power lines is likely to be of Moderate significance and require mitigation.	Negative	Direct	Moderate	Study-area	Long-term	Possible	Reversible	Resource will not be lost	Achievable	MODERATE	• The length of overhead power line is kept to an absolute minimum. • All internal power cables connecting turbines to the onsite substation should be underground. The overhead power line to connect to the grid will need to be routed optimally, have anti bird collision line marking devices installed on all spans, and be a bird friendly pylon design.	MODERATE
VISUAL (AS PER VISUAL IMPACT ASSESSMENT, APPENDIX D)													
Impact on sensitive visual receptors in close proximity to the facility WEF	The visual impacts of facility operations on sensitive visual receptors (i.e., residents of settlements, coastal towns, farm and homestead, as well as, visitors to the area) in close proximity to the proposed Latrodex WEF (i.e., within 5km) is expected to be of high significance. Potential sensitive receptors are Residents of Haga Haga, Marschstrand, Kimbali Farms, Fish Bay and Haga Haga Retreat. No mitigation is possible for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates this impact assessment. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region.	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH	• Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint. • Maintain the general appearance of the facility as a whole. • Monitor rehabilitated areas, and implement remedial action as and when required. • Remove infrastructure not required for the post-decommissioning use of the site. • Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. • Monitor rehabilitated areas post-decommissioning and implement remedial actions.	HIGH
Impact on sensitive visual receptors in close proximity to the facility OHL	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	Negative	Direct, cumulative	Severe	Local	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH	• No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines. The table below illustrates this impact assessment.	HIGH

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Note: The number and type of sensitive receptors exposed to a visual impact influences the probability rating for each of the proposed lines.	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	Negative	Direct, cumulative	Severe	Local	Long-term	Improbable	Irreversible	Resource will be lost	Not achievable	MODERATE		MODERATE
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	Negative	Direct, cumulative	Severe	Local	Long-term	Probable	Irreversible	Resource will be lost	Not achievable	MODERATE		MODERATE
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 1 – high significance	Negative	Direct, cumulative	Severe	Local	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH		HIGH
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 2 - high significance	Negative	Direct, cumulative	Severe	Local	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH		HIGH

Impact of facility operations on sensitive visual receptors within the region	The visual impact of facility operations on sensitive visual receptors (i.e., users of the R349, residents of farm and homesteads, visitors to region, Haga Haga and Morgans Bays secondary roads) within the region (i.e., beyond the 5km offset) is expected to be of high significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates this impact assessment. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH	Site development & Operation: • Retain / re-establish and maintain large trees, natural features and noteworthy natural vegetation in all areas outside of the activity footprint. • Retain natural pockets (wetland, river and other sensitive vegetation zones) as buffers within the property and along the perimeter. • Dust suppression techniques should be in place at all times during the site development and operational phases. • Access roads will require an effective dust suppression management programme, such as regular wetting and/or the use of non-polluting chemicals that will retain moisture in the road surface. • Downscaling of operations. • Keeping infrastructure at minimum heights. • Introducing landscaping measures such as vegetating berms. • Avoid the use of highly reflective material. • Metal surfaces, where they occur, should be painted in natural soft colours that would blend in with the environment. Lighting • Lighting should be kept to a minimum wherever possible. • Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the activity – this is especially relevant where the edge of the activity is exposed to residential properties. • Wherever possible, lights should be directed downwards to avoid illuminating the sky. • Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on movement.	HIGH
												Decommissioning: • Remove infrastructure not required for the post-decommissioning use of the site. • Rehabilitate all areas as per the rehabilitation plan undertaken. Consult an ecologist regarding rehabilitation specifications. • Monitor rehabilitated areas post-	

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
												decommissioning and implement remedial actions as required	
Impact on sensitive visual receptors in close proximity to the facility OHL Note: The number and type of sensitive receptors exposed to a visual impact influences the probability rating for each of the proposed lines.	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH	• No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines. The table below illustrates this impact assessment.	HIGH
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Improbable	Irreversible	Resource will be lost	Not achievable	MODERATE		MODERATE
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Improbable	Irreversible	Resource will be lost	Not achievable	MODERATE		MODERATE
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Chaba Routes: Alternative 1 – high significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH		HIGH
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Chaba Routes: Alternative 2 - high significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH		HIGH

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Potential visual impact of the OHLs on residents of built-up areas within the region	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH	• No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines. The table below illustrates this impact assessment.	HIGH
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Improbable	Irreversible	Resource will be lost	Not achievable	MODERATE		MODERATE
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Improbable	Irreversible	Resource will be lost	Not achievable	MODERATE		MODERATE
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 1 – high significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH		HIGH
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - high significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH		HIGH

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Potential visual impact of the OHLs on conservation areas within the region	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will be lost	Not achievable	HIGH	• No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines. The table below illustrates this impact assessment.	HIGH
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 2 - negligible significance	Negative	Direct, cumulative	None	Regional	Long-term	Unlikely	Irreversible	Resource will not be lost	N/A	NEGLIGIBLE		NEGLIGIBLE
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 3 – negligible significance	Negative	Direct, cumulative	None	Regional	Long-term	Unlikely	Irreversible	Resource will not be lost	N/A	NEGLIGIBLE		NEGLIGIBLE
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 1 – negligible significance	Negative	Direct, cumulative	None	Regional	Long-term	Unlikely	Irreversible	Resource will not be lost	N/A	NEGLIGIBLE		NEGLIGIBLE
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - negligible significance	Negative	Direct, cumulative	None	Regional	Long-term	Unlikely	Irreversible	Resource will not be lost	N/A	NEGLIGIBLE		NEGLIGIBLE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Potential visual impact of the OHLs on the visual character of the landscape and sense of place of the region	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 1 - moderate significance	Negative	Direct	Severe	Regional	Permanent	Probable	Irreversible	Resource will not be lost	Not achievable	MODERATE	• No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines.	MODERATE
	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 2 - low significance	Negative	Direct	Moderate	Regional	Permanent	Improbable	Irreversible	Resource will not be lost	Not achievable	LOW		LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	Negative	Direct	Severe	Regional	Permanent	Probable	Irreversible	Resource will not be lost	Not achievable	MODERATE		MODERATE
	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Chaba Routes: Alternative 1 – high significance	Negative	Direct	Moderate	Regional	Permanent	Definite	Irreversible	Resource will not be lost	Not achievable	HIGH		HIGH

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Chaba Routes: Alternative 2 - high significance	Negative	Direct	Moderate	Regional	Permanent	Definite	Irreversible	Resource will not be lost	Not achievable	HIGH		HIGH
Potential cumulative visual impact of the OHL within the region	There are already existing power lines that traverse the study area and feed into both the existing Rivermouth and Chaba substations. The addition of the proposed new Latrodex substation and associated power lines will result in an increase in this type of infrastructure within the region and could result in a cumulative visual impact.	Negative	Cumulative	Moderate	Regional	Permanent	Probable	Irreversible	Resource will not be lost	Not achievable	MODERATE	• No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines.	MODERATE

Impact of operational lighting at night on sensitive visual receptors in the region	The receiving environment has a relatively small number of populated places, and it can be expected that any light trespass and glare from the security and after-hours operational lighting for the facility will have some significance. In addition, the remote sense of place and rural ambiance of the local area increases its sensitivity to such lighting intrusions. Another source of glare light is the aircraft warning lights mounted on top of the hub of the wind turbines. While these lights are less aggravating due to the toned-down red colour, they do have the potential to be visible from a greater distance then general operational lighting, especially due to the strobing effect of the lights, a function specially designed to attract the viewers' attention. The Civil Aviation Authority (CAA) prescribes these warning lights and the potential to mitigate their visual impacts is low. The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, is recommended to be investigated. Last is the potential lighting impact is known as sky glow. Sky glow is the condition where the night sky is illuminated when light reflects off particles in the atmosphere such as moisture, dust or smog. The sky glow intensifies with the increase in the number of light sources. Each new light source, especially upwardly directed lighting, contributes to the increase in sky glow. The general lighting of the facility may contribute to the effect of sky glow in an otherwise dark environment. The visual impacts as a result of operational lighting at night on sensitive visual receptors in the regions is likely to be of high significance and may be mitigated to moderate should the required CAA lighting be approved to be installed on the perimeter and/or the installation of needs-based night lights be allowed. Best practice guidelines for other general site lighting that may occur on the site have also been taken into consideration. The table below illustrates this impact assessment.	Negative	Direct, cumulative	Severe	Local	Long-term	Definite	Reversible	Resource will be partially lost	Achievable	HIGH	• Planning & operation: • Aviation standards and CAA Regulations for turbine lighting must be followed. • The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, must be investigated. • Install aircraft warning lights that only activate when the presence of an aircraft is detected, if permitted by CAA. • Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). • Limit mounting heights of lighting fixtures, or alternatively use foot-lights or bollard level lights. • Make use of minimum lumen or wattage in fixtures. • Make use of down-lighters, or shielded fixtures. • Make use of Low-Pressure Sodium lighting or other types of low impact lighting. • Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
	Cumulative impacts: The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased lighting and light pollution in an otherwise natural area increasing the cumulative visual impact of renewable energy facilities in the region. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.											•	
Shadow flicker on sensitive visual receptors in close proximity to the proposed development	Shadow flicker only occurs when the sky is clear, and when the turbine rotor blades are between the sun and the receptor (i.e. when the sun is low). De Gryse in Scenic Landscape Architecture (2006) found that "most shadow impact is associated with 3-4 times the height of the object". Based on this research, a 500m buffer along the edge of the outer most turbines is identified as the zone within which there is a risk of shadow flicker occurring. Since there are no public roads or places of residence within the 500m buffer. The structures that are located immediately adjacent to the turbines will be utilised as the workshop area for the proposed facility. The significance of shadow flicker is therefore anticipated to be low.	Negative	Direct	Low	Local	Long-term	Improbable	Reversible	Resource will not be lost	N/a	LOW	• N/A	LOW

Visual character of the landscape and sense of place of the region	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. In general, the landscape character of the greater study area and site itself presents as undeveloped and natural in character. The visual quality of the region is generally high and large tracts of intact vegetation characterise most of the visual environment, as well as the scenic rugged coastline. As such, the entire study area is considered sensitive to visual impacts due to its generally low levels of transformation. The key visual experience is linked to the use of the road network and associated views of the surrounding landscape. The anticipated visual impact on the visual character and sense of place of the study area is expected to be of high significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates the assessment of this anticipated impact. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region, especially WEF facilities visible from the coastline. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	Negative	Direct, cumulative	Severe	Regional	Long-term	Definite	Irreversible	Resource will not be lost	Not achievable	HIGH	• Maintain the general appearance of the facility as a whole. • Monitor rehabilitated areas, and implement remedial action as and when required. • Decommissioning: • Remove infrastructure not required for the post-decommissioning use of the site. • Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. • Monitor rehabilitated areas post-decommissioning and implement remedial actions.	HIGH

Impact of facility operations on tourist access routes and tourist destinations within the region.	The greater region is generally seen as having a high scenic value and tourism value potential. The landscape is characterised by rugged coastlines, undulating hills with a high visual quality and strong sense of place. The R349, Haga Haga and Morgans Bay secondary roads are the primary access roads to this area and are thus considered to be a route that is likely to carry tourists.Haga Haga, Marshstrand, Morgans Bay, Double Mouth Nature Resere, and Morgans Bays Cliffs are consider the tourist destinations for the area and are where vacation accommodation is most likely to be located. While this region is general a lesser known destination, it is a popular one in the busy peak seasons as a result of its proximinity to the rugged and fairly unspoilt coast line of the Wild Coast. The Morgans Bay Cliff are a popular view point for both residents and tourists visiting the region. Located further along the coastline is also the Double Mouth Nature Reserve a lesser known hidden gem known as one of the Eastern Cape's premier coastal camping destinations nestled between Morgans Bay and the Quko River Mouth. The entrance of Double Mouth Nature Reserve also has a photo frame point which is expected to be negatively affected by the proposed Latrodex WEF. The anticipated visual impact of the proposed Latrodex WEF on tourist access routes (i.e. the R349) and tourist destinations (i.e. accommodation and attracctions) within the region is therefore expected to be of moderate significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates the assessment of this anticipated impact. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region, especially WEF facilities visible from the coastline. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	Negative	Direct, cumulative	Severe	Regional	Long-term	Highly probable	Irreversible	Resource will not be lost	Not achievable	HIGH	• Maintain the general appearance of the facility as a whole. • Monitor rehabilitated areas and implement remedial action as and when required. • Decommissioning: • Remove infrastructure not required for the post-decommissioning use of the site. • Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. • Monitor rehabilitated areas post-decommissioning and implement remedial actions.	HIGH

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Expected visual impacts of the authorised Haga Haga WEF when considered in isolation	While a large overlap between the visual exposure of the two WEF layouts (Latrodex WEF and the Haga Haga WEF) is noted, a large portion of this overlap will be taking place within the property boundaries of the authorised Haga Haga WEF. It is therefore expected that these landowners and sensitive receptors will already be accepting of the visual intrusion of WEFs in general. A relatively small additional area of exposure previously not expected to be impacted on visually by the authorised Haga Haga WEF as a result of the five (5) additional turbines proposed was also noted. This additional area of exposure is mainly limited to the site itself, Marshstand and the high lying areas to the south west of the site between the site and Mtwentwe. In relation to the already large visually exposed area of the Haga Haga WEF and since the Latrodex WEF only consists of five (5) additional wind turbines, generally considered to be a small WEF in international and local standards, it is not expected that the addition of the Latrodex WEF will contribute in a significant way to the cumulative visual exposure of WEFs in the region. It is however expected that the proposed Latrodex WEF will contribute to the increase of WEF facilities visible from the coastline. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	Negative	Cumulative	Severe	Regional	Short-term	Probable	Reversible	Resource will not be lost	Not easily achievable	MODERATE	N/a	MODERATE
Cumulative visual impact with the addition of the Latrodex WEF to the Haga Haga WEF		Negative	Cumulative	Severe	Regional	Short-term	Probable	Reversible	Resource will not be lost	Not easily achievable	MODERATE	N/a	MODERATE
NOISE IMPACTS (AS PER NOISE IMPACT ASSESSMENT, APPENDIX D)													
Operational Activities at night – Vestas V90 2.0 MW	Projected noise levels during operation of the Wind Energy Facility were modelled using the methodology as proposed by ISO 9613-2. The resulting future noise projections indicated that the operation of the facility will comply with the acceptable rating levels (45 dBA) proposed in this report. The changes in ambient sound levels (as assumed) will not exceed the 7 dBA limit set by the National Noise Control Regulations for the surrounding receptors. Potential	Negative	Direct	Low	Local	Long-term	Improbable	Irreversible	Resource will be lost	Easily achievable	LOW	• The dwelling located at NSD01 should not be used for residential purposes.	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Operational Activities at night – Acciona 132/3300	impact include: • Increased noise levels at potentially sensitive receptors; • Changing ambient sound levels could change the acceptable land use capability; and • Disturbing character of noise from the wind turbines.	Negative	Direct	Low	Local	Long-term	Improbable	Irreversible	Resource will be lost	Easily achievable	LOW		LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
SOCIO-ECONOMIC (AS PER SOCIO-ECONOMIC IMPACT ASSESSMENT, APPENDIX D)													
Sustainable increase in production and GDP nationally, regionally and locally	The proposed development will require annual operational expenditure of R 3.75 million per annum for a long-term period (of greater than 30 years). This operational cost will largely cater for the operations of the wind farm operations and includes labour for maintenance of the development and the associated infrastructure. The total impact on production in the country as a result of the developments operations will equate to R 79.8 million in 2019 prices per annum. Industries that will experience the greatest stimulus from the project will include real estate and business services, manufacturing, transport and storage and trade and accommodation. Due to the annual spending on labour and procurement of local goods and services required in the maintenance of the proposed development, much of these new business sales will be generated on an annual basis in Great Kei Local Municipality. Some of the direct spend in operations especially for specialised items will, however, be from outside the local municipality. **Cumulative** A WEF has been built in the municipality (Chaba WEF) and another one under EIA Authorisation process is the Haga Haga Wind Farms (Pty) Ltd. In the province, some are already have already been constructed. This could provide sufficient economies of scale and thus open up opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the economy. This has already occurred to a certain extent with the manufacturing of WEF components in the country	Positive	Direct, cumulative	Low	National	Medium-term	Probable	Reversible	Resource will not be lost	Achievable	LOW	• The developer should be encouraged by the EPC contractor to increase the local procurement practices and promote the employment of people from local communities, as far as feasible, to maximise the benefits to the local economies. • The developer should engage with local authorities and business organisations to investigate the possibility of procuring construction materials, goods and products from local suppliers were feasible.	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Creation of sustainable employment positions nationally and locally	The proposed facility is anticipated to create new 12 permanent employment positions once fully operational throughout the country. This figure includes approximately 3-4 direct employment opportunities on site, and 3 indirect translating into the creation of a total of 12 new employment positions within Great Kei Local Municipality. Of the direct employment position created, 20% to 40% will be semi-skilled and unskilled labourers, the remainder being skilled and highly skilled. The skilled positions will comprise facilities managers, technicians and environmental engineers. Unskilled and low skilled staff will include positions such as security personnel. Due to the spatial allocation of procurement spending and direct employment created, most of the indirect and induced positions will also be created within the local Great Kei area. The trade, agriculture and community and personal services sectors will benefit the most from these new employment opportunities. **Cumulative** Improved living standards of the directly and indirectly affected households	Positive	Direct	Low	National	Medium-term	Probable	Reversible	Resource will not be lost	Achievable	LOW	• Where possible, local labour should be considered for employment so as to increase the positive impact on the local economy • As far as possible, local small and medium enterprises should be approached to investigate the opportunities for supply inputs required for the maintenance and operation of the facility	LOW

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Skills development of permanently employed workers	It is likely that the majority of the highly and semi-skilled employees required for the operation of the facility will likely to be recruited from larger Metropolitan areas and trained by the manufacturer. These employees will undertake a variety of maintenance activities throughout the lifetime of the turbines. A maintenance schedule usually involves an initial inspection after commissioning, semi-annual inspection, an annual inspection and two- and five-year inspections but this varies according to the turbine. Typical activities during maintenance include changing of oil, replacement of brake lining and cleaning of components. The continual development of these employees will add valuable skills to the municipality which is in desperate need throughout the country. **Cumulative** Development of new skills and expertise in the country to support the development of the wind energy industry	Positive	Direct, cumulative	Low	Regional	Long-term	Probable	Reversible	Resource will not be lost	Achievable	LOW	• The developer should consider establishing vocational training programmes for the local labour force to promote the development of skills required by the wind energy facility and thus provide for the opportunities for these people to be employed in other similar facilities elsewhere	MODERATE
Improved standards of living for benefiting households	The creation of approximately 5 FTE employment positions throughout the country will generate between about R 1.4 million of personal income (2019 prices) (direct), which will be sustained for the entire duration of the project's lifespan. The sustainable income generated as a result of the project's operation will positively affect the standard of living of all benefitting households. This is specifically applicable to the Great Kei Municipality as the average income per employee at the facility would far exceed the average household income within the region currently. In Great Kei Local Municipality alone, it is anticipated that total worker income to the region will increase by R 1.6 million on an annual basis. **Cumulative** Improved productivity of workers Improved health and living conditions of the affected households	Positive	Direct, cumulative	Low	Regional	Long-term	Probable	Reversible	Resource will not be lost	Achievable	LOW	• Where possible, the local labour supply should be considered for employment opportunities to increase the positive impact on the area's economy • As far as feasible, local small and medium enterprises should be approached to investigate the opportunities for supply inputs required for the maintenance and operation of the facility	MODERATE

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE													
Sustainable increase in national and local government revenue	The annual operation and related expenditure of the proposed facility will through property taxes and salaries and wages payments (PAYE) contribute towards both local and national government revenue in the form of a variety of tax payments i.e. to SARS and to the Local Municipality. On a national level, the revenue derived by the project during its operations, as well as the payment of salaries and wages to permanent employees will contribute to the national fiscus. Although it is impossible to trace exactly how such revenue is allocated, any additional revenue generated means that national governments can increase its spending on public goods and services. **Cumulative** Possible improvement in local service delivery.	Positive	Direct, cumulative	Low	National	Long-term	Definite	Sustainable over projects lifespan	Resource will not be lost	Very difficult	LOW	• None	LOW
Impact on the sense of place experienced by the local community as a result of visual and noise effects that appear during the operation phase	The effects on the community's sense of place will initially be felt during the construction period and will continue into the operational phase. **Cumulative** Change in perception of the area due to the operation of other wind turbine developments in the surrounding area.	Negative	Direct, cumulative	Moderate	Study area	Long-term	Definite	Reversible with decommissioning	Resource will not be lost	Achievable	MODERATE	• The mitigation measures proposed by the visual and noise specialists should be adhered to • Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during construction.	LOW

Assessment of impacts of the NO GO alternative

POTENTIAL ISSUES	SOURCE OF ISSUE	NATURE	TYPE	SEVERITY	EXTENT	DURATION	LIKLIHOOD	REVERSIBILITY	IRREPLACEABLE LOSS	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE OF IMPACT WITH MITIGATION
NO-GO ALTERNATIVE													
	(SIGNIFICANCE WITHOUT MITIGATION)											(SIGNIFICANCE WITH MITIGATION)	
Establishment of Alien Plant Species	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	Achievable	HIGH	• An alien monitoring and eradication plan needs to be implemented throughout the region.	MODERATE
Infestation of Alien Plant Species	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	Achievable	HIGH	• An alien monitoring and eradication plan needs to be implemented throughout the region.	N/A

Assessment of impacts of the decommissioning phase

As per the temporal scales indicated in the significance statement for the operational phase in the section above, the proposed water supply scheme will be used over an extensive period of time, and decommissioning is not foreseen in the near future. Should the infrastructure be decommissioned in the long term, the impacts associated with the decommissioning phase will be similar to those for the construction phase and the mitigation measures stipulated for the construction phase will, therefore, be relevant. However, it is recommended that the final construction phase EMPr be updated, based on the environmental conditions and relevant legislation at the time, and implemented during the decommissioning of the water supply scheme.

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

ENVIRONMENTAL IMPACT STATEMENT

The preferred (only) alternative for the proposed Latrodex WEF has numerous negative impacts associated with it. The majority of these impacts are of moderate negative significance, as indicated in the summary table above, and these can be reduced to low negative significance with the implementation of mitigation measures.

The powerline corridors all have numerous negative impacts associated with them. The majority of the impacts for Chaba Alternative 1 and 2 and Rivermouth 1 can be mitigated to low negative significance. Rivermouth 2 and 3 are fatally flawed and cannot be considered as they have high negative significance in terms of ecological sensitivity.

The no-go alternative (current status quo) will result in a few negative impacts and will also result in the loss of the potential positive impacts associated with the proposed development.

SIGNIFICANCE OF MITIGATION

The implementation of the mitigation measures will reduce the overall significance of the negative impacts as well as enhance the overall significance of the positive impacts. The location and the scale of the activity will not pose environmental impacts of any significance provided that the mitigation measures listed below, as well as those listed in the Environmental Management Programme (EMPr), are adequately adhered to.

CONCLUSION

Based on the findings stipulated in this report, it is the opinion of the EAP that the proposed Latrodex WEF near Marshstrand in the Eastern Cape Province should receive a positive authorisation provided that the applicant (and those employed by the applicant) complies with the mitigation measures listed in the Basic Assessment Report as well as those listed in the EMPr. In addition, the EAP recommends that the Chaba Powerline Corridor 1 and Rivermouth Powerline Corridor 1 be selected as these are the most suitable alignments for the two respective routes in which to place the 22kV connection powerline based on the outcomes of this report and its associated specialist assessments.

SUMMARY OF SIGNIFICANT IMPACTS:

Table 9: Summary of impacts for all project phases

Theme	Impacts	SIGNIFICANCE OF IMPACT WITHOUT MITIGATION	SIGNIFICANCE OF IMPACT WITH MITIGATION
PLANNING AND DESIGN PHASE			
GENERAL			
Legal and policy compliance	During the planning and design phase, failure to comply with existing policies and legal obligations can lead to the project conflicting with local, provincial and national policies, legislation, etc. This can result in legal non-compliances, fines, delays in construction activity, overall project failure and undue disturbance to the natural environment.	**HIGH**	**LOW**

Theme	Impacts	SIGNIFICANCE OF IMPACT WITHOUT MITIGATION	SIGNIFICANCE OF IMPACT WITH MITIGATION
CONSTRUCTION PHASE			
GENERAL			
Legal and policy compliance	During the construction phase, failure to adhere to existing policies, regulations, permits, authorisations and legal obligations will lead to the project being non-compliant with local, provincial and national policies, legislation, etc. and may lead to undue disturbance of the natural environment and/or closure of the facility.	**HIGH**	**LOW**
Dust associated with an increase in vehicles on site could result in health impacts	Dust is likely to be a potential nuisance during the construction due to an increase in vehicles transporting supplies during this period and also as a result of vegetation clearing. This is the main cause. Dust can have detrimental effects on human health for individuals within a close proximity to the site.	**MODERATE**	**LOW**
Noise pollution	Adverse noise effects will occur during the construction period due to movement and use of heavy machinery. Activities such as excavation of foundations, road construction and vegetation stripping could lead to adverse noise for individuals located within close proximity of the construction site.	**LOW**	**LOW**
Unnecessary disturbance of vegetation due to sprawl of campsite could cause a loss of biodiversity.	An unnecessary sprawl of the construction camp site beyond the demarcated area could result in an increase in the loss of vegetation and biodiversity surrounding the campsite.	**LOW**	**LOW**
Inappropriate storage and handling of hazardous substances could lead to surface and ground water pollution	Inappropriate storage and handling of hazardous substances such as diesel, paint, pesticides, etc. could lead to surface and ground water pollution due to, for example, oil leaks, spillage of diesel, etc.	**MODERATE**	**LOW**
Littering and the use of informal ablution facilities by construction workers could cause surface and ground water pollution	The littering of general waste and the use of the surrounding environmental as informal ablutions by construction workers could lead to pollution in the surrounding water sources and the general vegetation which could have a detrimental impact on plant and animal species in the surrounding areas.	**LOW**	**LOW**
Stormwater management and erosion prevention	During the construction phase, failure to implement effective stormwater management measures may result in increased surface soil erosion and contamination of stormwater and resulting surrounding watercourses.	**MODERATE**	**LOW**
Waste management	During the construction phase, poor management of handling, disposal and storage of general and hazardous waste may lead to the pollution of the surrounding environment.	**MODERATE**	**LOW**
AGRICULTURE AND SOILS			
Management of hazardous chemicals	The inadequate management of hazardous substances during the Construction Phase of the proposed Latrodex WEF could result in soil contamination and a loss of fertile soils due to hazardous substance spills.	**MODERATE**	**LOW**

Loss of Livestock and Wildlife Grazing	The clearance of grasses and shrubs during the Construction Phase for the placement of the wind turbine foundations, associated infrastructure and powerline pylons will result in the loss of land used for livestock and wildlife grazing which could impact on the wildlife and agriculture on the proposed properties.	**MODERATE**	**LOW**
		MODERATE	**LOW**
Soil Compaction	Soil will be compacted by construction vehicles and construction activities during the Construction Phase. Compacted soil results in the reduced ability for plant growth and water absorption as well as the increase in runoff.	**MODERATE**	**LOW**
		MODERATE	**LOW**
Increase in Soil Erosion	The clearing of vegetation during the Construction Phase will result in the exposure of soils. Exposed soils are susceptible to erosion by wind and water (i.e. run-off) during wind and/or rainfall events. Sections of the proposed Latrodex WEF site are currently eroded. It is envisioned that sections of the proposed site will continue to erode in the absence of the proposed Latrodex WEF development.	**MODERATE**	**LOW**
Management of Topsoil	The inadequate management of topsoil during the Construction Phase of the proposed Latrodex WEF, associated infrastructure and the powerline pylons could result in the loss of important topsoil and may cause irreversible damage to the landscape if left unmitigated. In addition, the loss or damage to topsoil will have a significant impact on the rehabilitation of the site.	**MODERATE**	**LOW**
Inappropriate and Inadequate Rehabilitation	Inadequate rehabilitation during the Construction Phase of the proposed Latrodex WEF and powerline could result in the loss of valuable topsoil, irreversible damage to the landscape and the invasion of alien vegetation.	**MODERATE**	**LOW**
		LOW	**LOW**
AVIFAUNA (AS PER AVIFAUNAL IMPACT ASSESSMENT – APPENDIX D)			
Habitat destruction	During construction, vegetation is altered or removed for the project footprint (Turbines, roads, hard stands and other components). This destroys avifauna habitat, makes it less useful to birds, or less attractive to sensitive species.	**LOW**	**LOW**
Disturbance of birds during construction	Birds are disturbed by construction or operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	**LOW**	**LOW**
BATS (AS PER BAT IMPACT ASSESSMENT – APPENDIX D)			
Roost disturbance, destruction, and fragmentation	During the construction phase there could occur the destruction of active bat roosts and/or features that could serve as potential roosts, such as rock formations and the removal of trees on site. In addition, the destruction of derelict holes, such as aardvark holes, and any fragmentation of woody habitat, which includes dense bushes. The removal of trees and bushes would have an impact on all bats that could potentially roost in trees, including fruit bats, and on the foraging range of clutter and clutter-edge species.	**MODERATE**	**LOW**
Construction activities during night-time	Construction noise, especially during night-time, as well as lighting disturbance to bats.	**LOW**	**LOW**
Creating new habitat amongst the turbines	Creating new habitats amongst the turbines which might attract bats. These include buildings with roofs that could serve as roosting spaces, open water sources from quarries or excavation where water could accumulate.	**MODERATE**	**LOW**
VISUAL (AS PER VISUAL IMPACT ASSESSMENT – APPENDIX D)			

Impact on sensitive visual receptors in close proximity to the WEF	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Within the region, dust as a result of construction activities may also be visible, as such it will result in a visual impact occurring during construction. This impact is likely to be of moderate significance both before and after mitigation.	**MODERATE**	**MODERATE**
Potential visual impact of construction on sensitive visual receptors in close proximity to the proposed OHLs	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 1 – moderate significance before and after mitigation,	**MODERATE**	**MODERATE**
	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 2 - moderate mitigated to low significance	**MODERATE**	**LOW**
	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 3 – moderate mitigated to low significance	**MODERATE**	**LOW**
	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Chaba Routes: Alternative 1 – moderate significance before and after mitigation	**MODERATE**	**MODERATE**

	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Chaba Routes: Alternative 2 - moderate mitigated to low significance	**MODERATE**	**LOW**
NOISE (AS PER NOISE IMPACT ASSESSMENT – APPENDIX D)			
Noise impact of day time construction activities (all turbines)	Projected noise levels during construction of the WEF were modelled using the methods as proposed by SANS 10357:2004. The resulting future noise projections indicated that the construction activities, as modelled for the worst case scenario will comply with the National Noise Control Regulations during both the day- and night-time periods. No additional mitigation measures were proposed or are required. Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities. Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low.	**LOW**	**LOW**
Noise impact of night time construction activities (all turbines)	Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities. Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low.	**LOW**	**LOW**
ECOLOGICAL IMPACTS AS PER ECOLOGICAL IMPACT ASSESSMENT – APPENDIX D)			
Loss of Natural Vegetation Loss of natural Hamburg Dune Thicket	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.	**LOW**	**LOW**
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**	

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.	**HIGH**	**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.	**MODERATE**	**LOW**
Loss of Plant Species of Conservation Concern	Although no threatened plant species were observed in the study site; several protected species in terms of the PNCO were recorded.	**MODERATE**	**LOW**
Disturbance to faunal species and potential reduction in abundance and mortality of faunal species	Habitat clearing of 5 ha 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 could be transient and use the site to move through the landscape.	**MODERATE**	**LOW**
Establishment of Alien Plant Species	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.	**HIGH**	**MODERATE**
AQUATIC ENVIRONMENT (AS PER AQUATIC COMPLIANCE IMPACT STATEMENT – APPENDIX D)			
Direct physical loss or modification of freshwater habitat	The most notable direct physical loss of freshwater ecosystem habitat will occur at turbine 1 and turbine 2, which are in close proximity to artificial dams and natural wetland areas, respectively.	**MODERATE**	**LOW**
Alteration of hydrological and geomorphological processes (erosion and sediment)	Potential sediment related risks associated with the construction phase of this project relate to an increase in sediment supply to watercourses associated with trenching taking place within and near watercourse units. Extensive watercourse and dryland erosion within the study area increases the risk of construction phase sediment mobilisation due to trenching or excavation activities, especially where pipelines are not associated with existing road crossings. Sediment related risks are however temporary in nature and are easily manageable during pipeline upgrades and installations. Trenching within	**MODERATE**	**LOW**

	wetlands to lay or upgrade pipes will also temporarily alter natural water distribution patterns. This is not expected to affect many watercourses as most pipe crossings are associated with roads, where the pipelines will be buried in the road fill, rather than in the wetland bed material. All pipeline crossings of large perennial river systems are at the location of existing bridges with the water reticulation pipelines expected to be attached to bridges. These are therefore no expected diversions of watercourses to create dry working areas.		
Impacts to water quality	Water quality impacts during construction will be limited to potential increased water turbidity associated with potential increased sediment supply to watercourses, and pollution related to potential spillages of fuels and chemicals during construction of the pipeline alignments. If poorly managed, this impact could be of a moderately low significance, where large sediment plumes are regularly deposited into onsite watercourses during construction, and where onsite spill related pollution risks are not mitigated properly.	**LOW**	**LOW**
Impacts to ecological connectivity and/or ecological disturbance impacts	During construction, the presence of workers and machinery in the general vicinity of onsite watercourses is likely to create noise, vibrations and dust which have the potential to temporarily disturb and displace fauna that make use of watercourse corridors for movement and refuge. Use of watercourses for refugia by fauna in the context of the study area is however likely to be limited due to the urban and per-urban nature of the area, and the generally degraded state of onsite watercourses. Additionally, construction phase disturbances will be temporary.	**LOW**	**LOW**
SOCIO-ECONOMIC (AS PER THE SOCIO-ECONOMIC IMPACT ASSESSMENT – APPENDIX D)			
Temporary stimulation of the national and local economy	The proposed Wild Coast Abalone WEF is expected to require R 300 million (2022 prices) to establish during construction. All of the funds will be invested into the local economy. Aspects such as aggregate, civil works for the substation and electrical infrastructure and fuel will be procured predominantly from Great Kei suppliers. Equipment and plant which is not available in Great Kei and other towns within the Amathole DM region will be procured from suppliers within the province. The localised expenditure on the project will stimulate the local and national economies. The availability of materials within South Africa will dictate where inputs are sourced from and which company will be awarded the tender, with closely proximity to site and BBBEE status given as preference. It is estimated that the construction of the project will increase the production in the country (i.e. new business sales) by R 375.6 million, which will translate into an additional R 70.5 million of GVA. Besides the value added that could be generated by local construction businesses through sub-contracting agreements and employment of free-lancers, the sectors that are expected to benefit the most from the production and consumption induced effects are tertiary services such as trade, accommodation, and transport services. The greatest effects on production and GVA stimulated during construction activities will be created through the multiplier effects, specifically through a combination of production and consumption induced effects. The former refers to the impact generated along backwards linkages when the project creates demand for goods and services required for construction and subsequently stimulates the business sales of the suppliers of inputs that are required to produce these goods and services. The latter refers to the effects of household spending which is derived from an increase in salaries and	**MODERATE**	**MODERATE**

	wages directly and indirectly stimulated by the project's expenditure.		
Temporary increase in employment in the national and local economies	The proposed facility will create 150 Full Time Equivalent (FTE) employment positions during construction. About 80% of the employment positions involve skilled and semi-skilled construction workers, with the remaining being managers, professional engineers and supervisors. It is anticipated that 80% of the employment will be filled by people from local communities. Given the size of the local construction sector it is anticipated that there will be sufficient local labour to satisfy the demand for unskilled workers. Beyond the direct employment opportunities that will be created by the project during the construction phase the development will also have a positive spin-off effect on the employment situation in other sectors of the national and local economies as shown in Table 13. Most of these positions will be in sectors such as construction, business services and trade. Given that a significant portion of the multiplier effects will be generated through backward linkages, more than half of these FTE employment positions will be created along the supply chain and amongst industries providing inputs to the businesses in the supply chain. Based on these figures the total contribution of the project towards employment creation in South Africa is estimated at 711 FTE employment positions throughout the construction phase. It is recommended that the developer encourage the EPC contractor to fill as many local positions as possible.	**LOW**	**MODERATE**
Contribution to skills development in the country and local economy	The construction of the proposed Wild Coast Abalone WEF is likely to have a positive impact on the skills development in South Africa particularly given the limited number of such facilities currently operating in the country. Since there are a limited number of operational wind energy facilities in South Africa, the local expertise in the construction of such facilities is very limited. During the turbine component assembly and tower manufacturing period which is included as part of the construction phase and is planned to be conducted in the Eastern Cape, it is likely that foreign technical experts will be involved. This will present an opportunity for skills and knowledge transfer between these technical experts and local manufactures. It is also expected that the construction crew involved in the project will gain knowledge and experience in respect of the development of wind energy facilities. This will be highly beneficial given South Africa's target of generating 9 200 MW from wind energy by 2030 (Department Energy, 2011). In addition to the direct effects of the project on skills development in the country and the local economy, the project could contribute to the development of the local R&D and manufacturing industries associated with wind technology. This could be achieved through partnerships with Rhodes University (situated in Makhanda) or the Nelson Mandela University (NMU) in Port Elizabeth. Partnerships of this nature could further enhance the development of new skills and expertise.	**LOW**	**MODERATE**

Temporary increase in household earnings	The proposed WEF will create a total of 711 FTE employment positions (direct, indirect and induced) during construction generating R 246 million of revenue for the affected households in the country through direct, indirect and induced effects. Of this figure R 19 million will be paid out in the form of salaries and wages to those individuals directly employed during the construction phase. The remaining R 227 million in households' earnings will be generated through indirect and induced effects resulting from project expenditure. Although temporary, this increase in household earnings will have a positive effect on the standard of living these households. This is especially applicable to the households benefiting from the project that reside in the Great Kei Local Municipality.	**LOW**	**MODERATE**
Temporary increase in government revenue	The investment in the Latrodex Wind Farm will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc. Government earnings will be distributed by national government to cover public spending which includes amongst others the provision and maintenance of transport infrastructure, health and education services as well as other public goods.	**MODERATE**	**MODERATE**
Negative changes to the sense of place	A community's sense of place is developed over time as it embraces the surrounding environment, becomes familiar with its physical properties and creates its own history. The sense of place is created through the interaction of different factors such as the areas visual resources, its aesthetics, climate, culture and heritage as well as the lifestyle of individuals that live in and visit the area. Most importantly, it is a highly subjective matter and dependent on the demographics of the population that resides in the area and their perceptions regarding trade-offs. Detailed trade-offs are discussed in the Socioeconomic Impact Assessment attached under Appendix D.	**MODERATE**	**MODERATE**
Temporary increase in social conflicts associated with the influx of people	The Great Kei economy is not sufficiently diversified to supply the entire workforce for the construction of the proposed WEF, particularly in terms of skilled positions. A significant number of the unskilled and semi-skilled workers required during the construction phase will, however, be sourced locally. It is estimated that 70-80% of employment that will be created during the construction phase could be filled by labour coming from the local municipality. Migrant workers will therefore comprise just over half of the total work force. The migration of people to the area is not likely to result in social conflicts between the local population and the migrant work force from the local population perceiving the migrant workers as "stealing" their employment opportunities. Given the low reliance on labour sourced externally, the potential of the influx of people into the area leading to a temporary increase in level of crime, illicit activity and possibly a deterioration of the health of the local community through the spread of infectious diseases is low. Semi-skilled and unskilled construction workers are unlikely to choose to remain in the area following the completion of the construction phase given the rural nature of the project site (with limited human settlements in the surrounding area). The risk of such individuals exacerbating the level of poverty within the Great Kei Local Municipality from living in the area without a source of income is thus low.	**LOW**	**LOW**
Traffic	During the construction phase, increased flow of traffic to the project site may negatively impact the neighbouring areas.	**MODERATE**	**LOW**
HERITAGE IMPACTS (AS PER HERITAGE IMPACT ASSESSMENT – APPENDIX D)			

Archaeology	One farmstead was identified. Structures older than 60 years are protected under Section 34 of the NHRA. The identified farmstead is currently in use by the Abalone facility and will not be directly impacted by the turbine locations. If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA).	**LOW**	**LOW**
Palaeontology	The direct impacts upon the palaeontological heritage of the project area are potentially: • Damage or destruction of fossil materials during the construction of project infrastructural elements to a maximum depth of those excavations. Many fossil taxa (particularly vertebrate taxa) are known from only a single fossil and, thus, any fossil material is potentially highly significant. Accordingly, the loss or damage to any single fossil can be potentially significant to the understanding of the fossil heritage of South Africa and to the understanding of the evolution of life on Earth in general. Where fossil material is present and will be directly affected by the building or construction of the projects infrastructural elements the result will potentially be the irreversible damage or destruction of the fossil(s). • Movement of fossil materials during the construction phase, such that they are no longer in situ when discovered. The fact that the fossils are not in situ would either significantly reduce or completely destroy their scientific significance. It is considered, herein, that only the rocks of the karoo Dolerite Suite will be directly impacted upon by the project. The indirect impacts upon the palaeontological heritage of the project area are potentially the loss of access for scientific study to any fossil materials present beneath infrastructural elements for the life span of the existence of those constructions and facilities. The emplacement of the wind turbine towers will directly impact upon the Karoo Dolerite Suite. The indirect impacts of the progression of the project will be that the rocks of the Adelaide Subgroup will be effectively sterilised from scientific investigation for the life-time of the turbine towers. The calculation of cumulative effects in the case of this proposed project it is possible to make the observation that the Karoo Dolerite Suite is unfossiliferous. Accordingly, there would be nothing in the form of regional negative impacts upon the palaeontological heritage of the unit resulting from this project. The potential for the project to add significantly to negative impacts upon the palaeontological heritage of the wider region must be assessed as having a nil cumulative impact.	**LOW**	**LOW**

Theme	Impacts	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE OF IMPACT WITH MITIGATION
OPERATION PHASE			
ENVIRONMENTAL POLICY			

Legal and policy compliance	During the operation phase, failure to adhere to all permits, authorisations and regulations may lead to financial penalties and closure of the facility.	**HIGH**	**LOW**
ECOLOGICAL IMPACT ASSESSMENT (AS PER ECOLOGICAL IMPACT ASSESSMENT – APPENDIX D)			
Infestation of Alien Plant Species	Poor rehabilitation and the lack of implementation of an alien invasive plant eradication during the operation phase will favour the establishment and spread of alien invasive plant species.	**HIGH**	**MODERATE**
AQUATIC ENVIRONMENT (AS PER AQUATIC COMPLIANCE IMPACT STATEMENT – APPENDIX D)			
Direct physical loss or modification of freshwater habitat	During the operational phase of the WEF direct impacts to freshwater habitat may occur during maintenance of pipeline infrastructure within the vicinity of watercourses. This is likely to occur very infrequently and where sensitive areas are avoided during repairs or maintenance,	**LOW**	**LOW**
Impacts to water quality	Water quality impacts during the operation of the WEF are mostly unlikely to take place. Where these could occur is during pipeline crossing repairs or maintenance, where any potential pollutants used (fuels etc.) are poorly managed and there is a risk of spillage	**LOW**	**LOW**
Impacts to ecological connectivity and/or ecological disturbance impacts	During operation phase maintenance and repairs the presence of workers and machinery in the general vicinity of onsite watercourses is likely to create noise, vibrations and dust which have the potential to temporarily disturb and displace fauna that make use of watercourse corridors for movement and refuge	**LOW**	**LOW**
AVIFAUNAL (AS PER AVIFAUNAL IMPACT ASSESSMENT – APPENDIX D)			
Disturbance of birds during operations	Birds are disturbed by construction or operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	**LOW**	**LOW**

Displacement of birds during operational phase	As for disturbance above, the indications from operational wind farms are that this impact may be of low importance. At Latrodex Wind Farm we consider this impact to be of Low Negative significance with the mitigation measures already recommended above.	**LOW**	**LOW**
Turbine collision fatalities	The risk of turbine collision is high for two species: Jackal Buzzard; and Yellow-billed Kite. This is due to their frequent flight activity and the fact that some of these flights pass through proposed turbine areas (unlike some of the other recorded species which flew mostly off site). Since these two species are not regionally Red Listed, we conclude that overall this impact will be of Low Negative significance.	**LOW**	**LOW**
Collision & electrocution on overhead power line and in substation/switching station	The impact of bird collision and electrocution with power lines is likely to be of Moderate significance and require mitigation.	**MODERATE**	**MODERATE**
VISUAL (AS PER VISUAL IMPACT ASSESSMENT – APPENDIX D)			
Impact on sensitive visual receptors in close proximity to the facility WEF	The visual impacts of facility operations on sensitive visual receptors (i.e., residents of settlements, coastal towns, farm and homestead, as well as, visitors to the area) in close proximity to the proposed Latrodex WEF (i.e., within 5km) is expected to be of high significance. Potential sensitive receptors are Residents of Haga Haga, Marschstrand, Kimbali Farms, Fish Bay and Haga Haga Retreat. No mitigation is possible for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates this impact assessment.	**HIGH**	**HIGH**
Impact on sensitive visual receptors in close proximity to the facility OHL Note: The number and type of sensitive receptors exposed to a visual impact influences the probability rating for each of the proposed lines.	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	**HIGH**	**HIGH**
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	**MODERATE**	**MODERATE**
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	**MODERATE**	**MODERATE**

	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 1 – high significance	**HIGH**	**HIGH**
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 2 - high significance	**HIGH**	**HIGH**
Impact of facility operations on sensitive visual receptors within the region	The visual impact of facility operations on sensitive visual receptors (i.e., users of the R349, residents of farm and homesteads, visitors to region, Haga Haga and Morgans Bays secondary roads) within the region (i.e., beyond the 5km offset) is expected to be of high significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates this impact assessment. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	**HIGH**	**HIGH**
Impact on sensitive visual receptors in close proximity to the facility **OHL** Note: The number and type of sensitive receptors exposed to a visual impact influences the probability rating for each of the proposed lines.	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	**HIGH**	**HIGH**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	**MODERATE**	**MODERATE**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	**MODERATE**	**MODERATE**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Chaba Routes: Alternative 1 – high significance	**HIGH**	**HIGH**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Chaba Routes: Alternative 2 - high significance	**HIGH**	**HIGH**
Potential visual impact of the OHLs on residents of built-up areas within the region	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	**HIGH**	**HIGH**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	**MODERATE**	**MODERATE**

	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	**MODERATE**	**MODERATE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 1 – high significance	**HIGH**	**HIGH**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - high significance	**HIGH**	**HIGH**
Potential visual impact of the OHLs on conservation areas within the region	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	**HIGH**	**HIGH**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 2 - negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 3 – negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 1 – negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
Potential visual impact of the OHLs on the visual character of the landscape and sense of place of the region	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 1 - moderate significance	**MODERATE**	**MODERATE**

	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 2 - low significance	**LOW**	**LOW**
	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	**MODERATE**	**MODERATE**
	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Chaba Routes: Alternative 1 – high significance	**HIGH**	**HIGH**
	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Chaba Routes: Alternative 2 - high significance	**HIGH**	**HIGH**
Potential cumulative visual impact of the OHL within the region	There are already existing power lines that traverse the study area and feed into both the existing Rivermouth and Chaba substations. The addition of the proposed new Latrodex substation and associated power lines will result in an increase in this type of infrastructure within the region and could result in a cumulative visual impact.	**MODERATE**	**MODERATE**

Impact of operational lighting at night on sensitive visual receptors in the region	The receiving environment has a relatively small number of populated places, and it can be expected that any light trespass and glare from the security and after-hours operational lighting for the facility will have some significance. In addition, the remote sense of place and rural ambiance of the local area increases its sensitivity to such lighting intrusions. Another source of glare light is the aircraft warning lights mounted on top of the hub of the wind turbines. While these lights are less aggravating due to the toned-down red colour, they do have the potential to be visible from a greater distance then general operational lighting, especially due to the strobing effect of the lights, a function specially designed to attract the viewers' attention. The Civil Aviation Authority (CAA) prescribes these warning lights and the potential to mitigate their visual impacts is low. The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, is recommended to be investigated. Last is the potential lighting impact is known as sky glow. Sky glow is the condition where the night sky is illuminated when light reflects off particles in the atmosphere such as moisture, dust or smog. The sky glow intensifies with the increase in the number of light sources. Each new light source, especially upwardly directed lighting, contributes to the increase in sky glow. The general lighting of the facility may contribute to the effect of sky glow in an otherwise dark environment. The visual impacts as a result of operational lighting at night on sensitive visual receptors in the regions is likely to be of high significance and may be mitigated to moderate should the required CAA lighting be approved to be installed on the perimeter and/or the installation of needs-based night lights be allowed. Best practice guidelines for other general site lighting that may occur on the site have also been taken into consideration. The table below illustrates this impact assessment. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	**HIGH**	**MODERATE**	
Shadow flicker on sensitive visual receptors in close proximity to the proposed development	Shadow flicker only occurs when the sky is clear, and when the turbine rotor blades are between the sun and the receptor (i.e. when the sun is low). De Gryse in Scenic Landscape Architecture (2006) found that "most shadow impact is associated with 3-4 times the height of the object". Based on this research, a 500m buffer along the edge of the outer most turbines is identified as the zone within which there is a risk of shadow flicker occurring. Since there are no public roads or places of residence within the 500m buffer. The structures that are located immediately adjacent to the turbines will be utilised as the workshop area for the proposed facility. The significance of shadow flicker is therefore anticipated to be low.	**LOW**	**LOW**	

Visual character of the landscape and sense of place of the region	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. In general, the landscape character of the greater study area and site itself presents as undeveloped and natural in character. The visual quality of the region is generally high and large tracts of intact vegetation characterise most of the visual environment, as well as the scenic rugged coastline. As such, the entire study area is considered sensitive to visual impacts due to its generally low levels of transformation. The key visual experience is linked to the use of the road network and associated views of the surrounding landscape. The anticipated visual impact on the visual character and sense of place of the study area is expected to be of high significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates the assessment of this anticipated impact. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	**HIGH**	**HIGH**	
Impact of facility operations on tourist access routes and tourist destinations within the region.	The greater region is generally seen as having a high scenic value and tourism value potential. The landscape is characterised by rugged coastlines, undulating hills with a high visual quality and strong sense of place. The R349, Haga Haga and Morgans Bay secondary roads are the primary access roads to this area and are thus considered to be a route that is likely to carry tourists.Haga Haga, Marshstrand, Morgans Bay, Double Mouth Nature Resere, and Morgans Bays Cliffs are consider the tourist destinations for the area and are where vacation accommodation is most likely to be located. While this region is general a lesser known destination, it is a popular one in the busy peak seasons as a result of its proximinity to the rugged and fairly unspoilt coast line of the Wild Coast. The Morgans Bay Cliff are a popular view point for both residents and tourists visiting the region. Located further along the coastline is also the Double Mouth Nature Reserve a lesser known hidden gem known as one of the Eastern Cape's premier coastal camping destinations nestled between Morgans Bay and the Quko River Mouth. The entrance of Double Mouth Nature Reserve also has a photo frame point which is expected to be negatively affected by the proposed Latrodex WEF. The anticipated visual impact of the proposed Latrodex WEF on tourist access routes (i.e. the R349) and tourist destinations (i.e. accommodation and attracctions) within the region is therefore expected to be of moderate significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates the assessment of this anticipated impact. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	**HIGH**	**HIGH**	

Expected visual impacts of the authorised Haga Haga WEF when considered in isolation	While a large overlap between the visual exposure of the two WEF layouts (Latrodex WEF and the Haga Haga WEF) is noted, a large portion of this overlap will be taking place within the property boundaries of the authorised Haga Haga WEF. It is therefore expected that these landowners and sensitive receptors will already be accepting of the visual intrusion of WEFs in general. A relatively small additional area of exposure previously not expected to be impacted on visually by the authorised Haga Haga WEF as a result of the five (5) additional turbines proposed was also noted. This additional area of exposure is mainly limited to the site itself, Marshstand and the high lying areas to the south west of the site between the site and Mtwentwe. It is expected that the proposed Latrodex WEF will contribute to the increase of WEF facilities visible from the coastline. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	**MODERATE**	**MODERATE**
Visual impact with the addition of the Latrodex WEF to the Haga Haga WEF		**MODERATE**	**MODERATE**
NOISE IMPACTS (AS PER NOISE IMPACT ASSESSMENT – APPENDIX D)			
Operational Activities at night – Vestas V90 2.0 MW	Projected noise levels during operation of the Wind Energy Facility were modelled using the methodology as proposed by ISO 9613-2. The resulting future noise projections indicated that the operation of the facility will comply with the acceptable rating levels (45 dBA) proposed in this report. The changes in ambient sound levels (as assumed) will not exceed the 7 dBA limit set by the National Noise Control Regulations for the surrounding receptors. Potential impact include: • Increased noise levels at potentially sensitive receptors; • Changing ambient sound levels could change the acceptable land use capability; and • Disturbing character of noise from the wind turbines.	**LOW**	**LOW**
Operational Activities at night – Acciona 132/3300		**LOW**	**LOW**
SOCIO-ECONOMIC (AS PER SOCIO-ECONOMIC IMPACT ASSESSMENT – APPENDIX D)			
Sustainable increase in production and GDP nationally, regionally and locally	The proposed development will require annual operational expenditure of R 3.75 million per annum for a long-term period (of greater than 30 years). This operational cost will largely cater for the operations of the wind farm operations and includes labour for maintenance of the development and the associated infrastructure. The total impact on production in the country as a result of the developments operations will equate to R 79.8 million in 2019 prices per annum. Industries that will experience the greatest stimulus from the project will include real estate and business services, manufacturing, transport and storage and trade and accommodation. Due to the annual spending on labour and procurement of local goods and services required in the maintenance of the proposed development, much of these new business sales will be generated on an annual basis in Great Kei Local Municipality. Some of the direct spend in operations especially for specialised items will, however, be from outside the local municipality.	**LOW**	**MODERATE**
Creation of sustainable employment positions nationally and locally	The proposed facility is anticipated to create new 12 permanent employment positions once fully operational throughout the country. This figure includes approximately 3-4 direct employment opportunities on site, and 3 indirect translating into the creation of a total of 12 new employment positions within Great Kei Local Municipality. Of the direct employment position created, 20% to 40% will be semi-skilled and unskilled labourers, the remainder being skilled and highly skilled. The skilled positions will comprise facilities managers, technicians and environmental engineers. Unskilled and low skilled staff will include positions such as security personnel. Due to the spatial allocation of procurement spending and direct employment created, most of the indirect and induced positions will also be created within the local Great Kei area. The trade, agriculture and community and personal services sectors will benefit the most from these new employment opportunities.	**LOW**	**LOW**

Skills development of permanently employed workers	It is likely that the majority of the highly and semi-skilled employees required for the operation of the facility will likely to be recruited from larger Metropolitan areas and trained by the manufacturer. These employees will undertake a variety of maintenance activities throughout the lifetime of the turbines. A maintenance schedule usually involves an initial inspection after commissioning, semi-annual inspection, an annual inspection and two- and five-year inspections but this varies according to the turbine. Typical activities during maintenance include changing of oil, replacement of brake lining and cleaning of components. The continual development of these employees will add valuable skills to the municipality which is in desperate need throughout the country.	**LOW**	**MODERATE**
Improved standards of living for benefiting households	The creation of approximately 5 FTE employment positions throughout the country will generate between about R 1.4 million of personal income (2019 prices) (direct), which will be sustained for the entire duration of the project's lifespan. The sustainable income generated as a result of the project's operation will positively affect the standard of living of all benefitting households. This is specifically applicable to the Great Kei Municipality as the average income per employee at the facility would far exceed the average household income within the region currently. In Great Kei Local Municipality alone, it is anticipated that total worker income to the region will increase by R 1.6 million on an annual basis.	**LOW**	**MODERATE**
Sustainable increase in national and local government revenue	The annual operation and related expenditure of the proposed facility will through property taxes and salaries and wages payments (PAYE) contribute towards both local and national government revenue in the form of a variety of tax payments i.e. to SARS and to the Local Municipality. On a national level, the revenue derived by the project during its operations, as well as the payment of salaries and wages to permanent employees will contribute to the national fiscus. Although it is impossible to trace exactly how such revenue is allocated, any additional revenue generated means that national governments can increase its spending on public goods and services.	**LOW**	**LOW**
Impact on the sense of place experienced by the local community as a result of visual and noise effects that appear during the operation phase	The effects on the community's sense of place will initially be felt during the construction period and will continue into the operational phase.	**MODERATE**	**LOW**

CUMULATIVE IMPACTS			
Theme	**Impacts**	**Significance pre-mitigation**	**Significance post-mitigation**
CONSTRUCTION PHASE			
AGRICULTURE AND SOILS			
Loss of Livestock and Wildlife Grazing	The clearance of grasses and shrubs during the Construction Phase for the placement of the wind turbine foundations, associated infrastructure and powerline pylons will result in the loss of land used for livestock and wildlife grazing which could impact on the wildlife and agriculture on the proposed properties.	**MODERATE**	**LOW**
Soil Compaction	Soil will be compacted by construction vehicles and construction activities during the Construction Phase. Compacted soil results in the reduced ability for plant growth and water absorption as well as the increase in runoff.	**MODERATE**	**LOW**
Increase in Soil Erosion	The clearing of vegetation during the Construction Phase will result in the exposure of soils. Exposed soils are susceptible to erosion by	**MODERATE**	**LOW**

	wind and water (i.e. run-off) during wind and/or rainfall events. Sections of the proposed Latrodex WEF site are currently eroded. It is envisioned that sections of the proposed site will continue to erode in the absence of the proposed Latrodex WEF development.		
Inappropriate and Inadequate Rehabilitation	Inadequate rehabilitation during the Construction Phase of the proposed Latrodex WEF and powerline could result in the loss of valuable topsoil, irreversible damage to the landscape and the invasion of alien vegetation.	**LOW**	**LOW**
ECOLOGICAL IMPACTS (AS PER THE ECOLOGICAL IMPACT ASSESSMENT – APPENDIX D)			
Loss of Natural Vegetation	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.	**LOW**	**LOW**
Loss of Plant Species of Conservation Concern	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 develop is therefore slight.	**MODERATE**	**LOW**
Disturbance to faunal species and potential reduction in abundance and mortality of faunal species	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.	**LOW**	**LOW**
SOCIO-ECONOMIC (AS PER THE SOCIO-ECONOMIC IMPACT ASSESSMENT – APPENDIX D)			
Temporary stimulation of the national and local economy	A WEF has been built in the municipality (Chaba WEF) and another one under EIA Authorisation process is the Haga Haga Wind Farms (Pty) Ltd. In the province, some are already have already been constructed. This could provide sufficient economies of scale and thus open opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the economy. This has already occurred to a certain extent with the manufacturing of WEF components in the country.	**MODERATE**	**MODERATE**
Contribution to skills development in the country and local economy	Improved labour productivity and employability of construction workers for similar projects Possible development of local skills and expertise in R&D and manufacturing industries related to wind technology through partnerships with Rhodes University and NMU	**LOW**	**MODERATE**
Temporary increase in household earnings	Improved standard of living of the affected households	**LOW**	**MODERATE**
Temporary increase in government revenue	Lower government debt and servicing costs	**MODERATE**	**MODERATE**
Negative changes to the sense of place	Change in perception of the area due to the construction of other wind turbine developments in the surrounding area albeit temporarily.	**MODERATE**	**MODERATE**
HERITAGE IMPACTS (AS PER THE HERITAGE IMPACT ASSESSMENT – APPENDIX D)			
Archaeology	One farmstead was identified. Structures older than 60 years are protected under Section 34 of the NHRA. The identified farmstead is currently in use by the Abalone facility and will not be directly impacted by the turbine locations. If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA).	**LOW**	**LOW**
Palaeontology	The calculation of cumulative effects in the case of this proposed project it is possible to make the observation that the Karoo Dolerite Suite is unfossiliferous. Accordingly, there would be nothing in the form of regional negative impacts upon the palaeontological heritage of the unit resulting from this project. The potential for the project to	**LOW**	**LOW**

	add significantly to negative impacts upon the palaeontological heritage of the wider region must be assessed as having a nil cumulative impact.		
OPERATION PHASE			
VISUAL (AS PER VISUAL IMPACT ASSESSMENT – APPENDIX D)			
Impact on sensitive visual receptors in close proximity to the facility **WEF**	The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region.	**HIGH**	**HIGH**
Impact on sensitive visual receptors in close proximity to the facility **OHL** Note: The number and type of sensitive receptors exposed to a visual impact influences the probability rating for each of the proposed lines	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	**HIGH**	**HIGH**
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	**MODERATE**	**MODERATE**
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	**MODERATE**	**MODERATE**
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 1 – high significance	**HIGH**	**HIGH**
	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 2 - high significance	**HIGH**	**HIGH**
Impact of facility operations on sensitive visual receptors within the region	The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region.	**HIGH**	**HIGH**
Impact on sensitive visual receptors in close proximity to the facility **OHL** Note: The number and type of sensitive receptors exposed to a visual impact influences the probability rating for each of the proposed lines.	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	**HIGH**	**HIGH**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	**MODERATE**	**MODERATE**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	**MODERATE**	**MODERATE**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Chaba Routes: Alternative 1 – high significance	**HIGH**	**HIGH**
	The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Chaba Routes: Alternative 2 - high significance	**HIGH**	**HIGH**
Potential visual impact of the OHLs on residents of built-up areas within the region	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows:	**HIGH**	**HIGH**

	Rivermouth Routes: Alternative 1 - high significance		
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	**MODERATE**	**MODERATE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	**MODERATE**	**MODERATE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 1 – high significance	**HIGH**	**HIGH**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - high significance	**HIGH**	**HIGH**
Potential visual impact of the OHLs on conservation areas within the region	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	**HIGH**	**HIGH**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 2 - negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 3 – negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 1 – negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - negligible significance	**NEGLIGIBLE**	**NEGLIGIBLE**
Potential cumulative visual impact of the OHL within the region	There are already existing power lines that traverse the study area and feed into both the existing Rivermouth and Chaba substations. The addition of the proposed new Latrodex substation and associated power lines will result in an increase in this type of infrastructure within the region and could result in a cumulative visual impact.	**MODERATE**	**MODERATE**
Impact of operational lighting at night on sensitive visual receptors in the region	The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased lighting and light pollution in an otherwise natural area increasing the cumulative visual impact of renewable energy facilities in the region.	**HIGH**	**MODERATE**
Visual character of the landscape and sense of place of the region	The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region, especially WEF facilities visible from the coastline.	**HIGH**	**HIGH**
Impact of facility operations on tourist access routes and tourist destinations within the region.	The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region, especially WEF facilities visible from the coastline.	**HIGH**	**HIGH**

Cumulative visual impact with the addition of the Latrodex WEF to the Haga Haga WEF	In relation to the already large visually exposed area of the Haga Haga WEF and since the Latrodex WEF only consists of five (5) additional wind turbines, generally considered to be a small WEF in international and local standards, it is not expected that the addition of the Latrodex WEF will contribute in a significant way to the cumulative visual exposure of WEFs in the region. It is however expected that the proposed Latrodex WEF will contribute to the increase of WEF facilities visible from the coastline.	**MODERATE**	**MODERATE**
SOCIO-ECONOMIC (AS PER SOCIO-ECONOMIC IMPACT ASSESSMENT – APPENDIX D)			
Sustainable increase in production and GDP nationally, regionally and locally	A WEF has been built in the municipality (Chaba WEF) and another one under EIA Authorisation process is the Haga Haga Wind Farms (Pty) Ltd. In the province, some are already have already been constructed. This could provide sufficient economies of scale and thus open up opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the economy. This has already occurred to a certain extent with the manufacturing of WEF components in the country	**LOW**	**MODERATE**
Creation of sustainable employment positions nationally and locally	Improved living standards of the directly and indirectly affected households.	**LOW**	**LOW**
Skills development of permanently employed workers	Development of new skills and expertise in the country to support the development of the wind energy industry	**LOW**	**MODERATE**
Improved standards of living for benefiting households	Improved productivity of workers Improved health and living conditions of the affected households	**LOW**	**MODERATE**
Sustainable increase in national and local government revenue	Possible improvement in local service delivery.	**LOW**	**LOW**
Impact on the sense of place experienced by the local community as a result of visual and noise effects that appear during the operation phase	Change in perception of the area due to the operation of other wind turbine developments in the surrounding area.	**MODERATE**	**LOW**

NO-GO IMPACTS			
Theme	**Impacts**	**SIGNIFICANCE WITHOUT MITIGATION**	**SIGNIFICANCE OF IMPACT WITH MITIGATION**
NO-GO ALTERNATIVE			
Establishment of Alien Plant Species	Alien plant species are already present and established in the study site.	**HIGH**	**MODERATE**
Infestation of Alien Plant Species	Alien plant species are already present and established in the study site.	**HIGH**	**N/A**

In summary,
Table 10 below provides a breakdown of the total significance ratings for all impacts, pre- and post-mitigation.

Table 10: Summary of Impact assessment significance, pre- and post-mitigation

		PRE-MITIGATION	POST-MITIGATION

	NEGLIGIBLE	LOW	MODERATE	HIGH	LOW	MODERATE	HIGH
Planning and Design		1	6	1	8	0	0
Construction		15(3+)	27(2+)	3	40	5 (5+)	0
Operation		10(5+)	13	19	12(2+)	14(3+)	16
Cumulative	4	5(7+)	14(2+)	15	10(2+)	10(7+)	14
TOTAL	**4**	**31 (15+)**	**60(4+)**	**38**	**70(4+)**	**29(15+)**	**30**
No-go		0	0	2	0	1	0

Alternative A (preferred alternative)

No-go alternative (compulsory)

SECTION E. RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES
Is an EMPr attached?	YES

The EMPr must be attached as Appendix F.

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

N/A

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

GENERAL CONSTRUCTION PHASE		
Activity		**Mitigation and/or Management Measure**
1.	SITE DEMARCATION	The location, layout and method of establishment of the construction camp, including the following, must be clearly indicated and demarcated prior to the commencement of construction: → All Contractors' offices; → Lay down areas; → Vehicle wash areas (if any); → Workshops and drip trays; → Fuel storage areas (including filling and dispensing from storage tanks); → Cement/concrete mixing areas (including the methods employed for the mixing of concrete and particularly the containment of runoff water from such areas and the method of transportation of concrete); and → Other infrastructure required for the running of the project.
		→ The Contractor must erect and maintain permanent and/or temporary fences in the locations directed by the ECO. Such fences should, if so specified, be erected before undertaking designated activities; and → Should "no-go" areas exist on the site, the Contractor must ensure that, insofar as he/she has the authority, no person, machinery, equipment or materials enter the "no-go" areas at any time.
2.	SITE ACCESS	Details, including a drawing, showing where and how the access points and routes will be located and managed must be submitted to the ECO and the Applicant. These should be supported by the following management requirements: → On the site and within such distance of the site as may be stated, the Contractor should control the movement of all vehicles, including vehicles of suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and that all relevant laws are complied with. In addition, such vehicles should be routed and operated in a manner that minimises the disruption to regular users of the routes; → On gravel or earth roads on site and within 500 m of the site, the Contractor's vehicles as well as the suppliers' must not exceed a speed of 45 km/h or as directed by the ECO; and → The Contractor must supply the ECO with a Method Statement detailing the location and management of all access points and roads.
3.	MATERIALS HANDLING, USE & STORAGE	→ The Contractor must ensure that any delivery drivers are informed of all procedures and restrictions (including identified "no-go" areas) required to comply with this EMPr;

			→ The Contractor must ensure that these delivery drivers are supervised during offloading, by someone with an adequate understanding of the requirements of the EMPr; → Materials must be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to, sand, stone chip, fine vegetation, refuse, paper and cement, should have appropriate cover to prevent them spilling from the vehicle during transit.; → The Contractor will be responsible for any clean up resulting from the failure by his/her employees or suppliers to properly secure transported materials; → All manufactured and/or imported material should be stored within the Contractor's camp, and, if so required by the EMPr, out of the rain; → All laydown areas outside of the construction camp will be subject to the ECO's approval; and → Imported gravel, fill, soil and sand materials should be free of weeds, alien invasive seed matter, plant material, litter and contaminants and must be obtained from sources approved by the ECO.
	4.	STOCKPILING	→ Any stockpiling of gravel, cut, fill or any other material including spoil must only be in areas that have been approved by the ECO within the defined working area; → The Contractor should ensure that the material does not blow or wash away. If the stockpiled material is in danger of being washed or blown away, the Contractor should spray it with Dustex or cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil must not be covered with plastic; and → No stockpiling of any material will be allowed within 20 m of any "no-go" areas (if applicable).
	5.	SOLID WASTE MANAGEMENT	→ Onsite burning, burying or dumping of any waste materials, litter or refuse must not occur; → The Contractor should provide vermin and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids must be kept firmly on the bins at all times; → Bins must not be allowed to become overfull and should be emptied daily; → The waste from bins may be temporarily stored onsite in a central waste area that is weatherproof and scavenger proof, and which the ECO has approved; → Recyclable waste should be disposed of into separate skips/bins and removed offsite for recycling; → All solid waste must be disposed of offsite at an approved registered landfill site. The Contractor must supply the ECO with the appropriate disposal certificates; and → The Contractor must submit a solid waste management plan, as part of the Pollution Control Method Statement, to the ECO.
	6.	WATER USE	→ All sources of water for construction purposes must be approved by the ECO in writing before any such sources can be used to obtain water; and → All wash water should be recycled for use as wash water again or for dust suppression, where applicable.
	7.	HAZARDOUS SUBSTANCES	→ The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations as well as SABS 0228 and SABS 0229; → The Contractor must also comply with all other applicable regional and local legislation and regulations with regard to the transport, use and disposal of hazardous substances. Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction must be stored in secondary containers. The relevant Material Safety Data Sheets (MSDS) must be available onsite; → Procedures detailed in the MSDSs must be followed in the event of an emergency situation; → The Contractor will be responsible for the training and education of all personnel onsite who will be handling hazardous materials about their proper use, handling and disposal; and → If potentially hazardous substances are to be stored or used onsite, the Contractor must submit a Method Statement to the ECO detailing the substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances.
	8.	CEMENT & MIXING OF CONCRETE	→ The proposed location of cement mixing areas (including the location of cement stores and sand and aggregate stockpiles) must be indicated on the site layout plan and approved by the ECO;

			→ All wastewater generated from the operation and cleaning of concrete mixing equipment and other sources of concrete should be passed through a concrete wastewater settlement system; → The Contractor must ensure that minimal water is used for washing of concrete and cement mixing equipment; → Used cement bags must be disposed of in weatherproof bins onsite to prevent the generation of wind-blown cement dust and the bags from blowing away; → The Contractor must ensure that concrete is mixed on mortar boards, all visible remains of concrete are removed and disposed of as waste and that all surplus aggregate is removed; and → As part of the Pollution Control and Concrete Mixing Method Statement, a plan detailing all actions to be taken to comply with the requirements must be submitted to the ECO.	
	9.	FUEL & OIL	<u>Fuel Storage</u> → All construction materials including fuels and oil should be stored in demarcated areas that are contained within berms/bunds. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion; → All necessary approvals with respect to fuel storage and dispensing must be obtained from the appropriate authorities. Symbolic safety signs depicting "No Smoking" and "Danger", conforming to the requirement of SABS 1186, must be prominently displayed in and around the fuel storage area. There must be adequate fire-fighting equipment at the fuel storage area; → The Contractor must ensure that all liquid fuels and oils are stored in tanks with lids, which are kept firmly shut and under lock and key at all times. The capacity of the tank should be clearly displayed, and the product contained within the tank clearly identified using the emergency information system detailed in SABS 0232 part 1. Fuel storage tanks capacity must not exceed 9 000 litres and must be kept on site only for as long as fuel is needed for construction activities, on completion of which they must be removed; → Tanks onsite should not be linked or joined via any pipe work but should remain as separate entities. The tanks must be situated on a smooth impermeable base with a bund. The volume inside the bund should be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The impermeable lining should extend to the crest of the bund. The floor of the bund should be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed. Appropriate material, approved by the ECO that absorbs / breaks-down or encapsulates minor hydrocarbon spillage and which is effective in water should be installed in the sump; → The tanks and bunded areas should be covered by a roofed structure, taken offsite to a disposal site approved by the ECO, and the material that absorbs / breaks-down or encapsulates minor hydrocarbon spillage should be replenished; → Adequate precautions should be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. The dispensing mechanism for the fuel storage tanks should be stored in a waterproof container when not in use; and → As part of the required site layout for the construction camp, a plan must be submitted to the ECO detailing the design, location and construction of the fuel storage area as well as for the filling and dispensing from storage tanks and for the type of absorbing / breaking-down or encapsulating material to be used. <u>Refuelling</u> → Where reasonably practical, the plant should be refuelled at a designated re-fuelling area/depot or at a workshop as applicable. If this is not reasonably practical then the surface under the refuelling area must be protected and appropriately bunded against pollution to the reasonable satisfaction of the ECO prior to any refuelling activities; → If fuel is dispensed from 200 litre drums, the proper dispensing equipment must be used, and the drum should not be tipped in order to dispense fuel. The Contractor should ensure that the appropriate fire-fighting equipment is present during refuelling operations; and → The Contractor must ensure that there is always a supply of absorbent material readily available to absorb / breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials should	

			be able to handle a minimum of 200 ℓ of hydrocarbon liquid spill. Prior to any refuelling or maintenance activities, the ECO must approve this material. → Used oil and hydrocarbon contaminated materials → Used oil should be stored at a central location onsite prior to removal offsite for disposal at an approved disposal or recycling site; and → Old oil filters and oil, petrol and diesel-soaked material must be treated as hazardous waste. The Contractor should remove all oil, petrol, and diesel-soaked sand immediately and should dispose of it as hazardous waste or treat it onsite with material that breaks-down or encapsulates such spillages as approved by the ECO.
	10.	WORKSHOP, EQUIPMENT MAINTENANCE & STORAGE	→ The Contractor should ensure that in his workshop and other plant maintenance facilities, including those areas where, after obtaining the ECO's approval, the Contractor carries out emergency plant maintenance, there is no contamination of the soil or vegetation. The workshop must have a smooth impermeable (concrete or thick plastic covered with sand) floor; → The floor should be bunded and sloped towards an oil trap or sump to contain any spillages. When servicing equipment, drip trays should be used to collect the waste oil and other lubricants. Drip trays should also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles); → All vehicles and equipment must be kept in good working order and serviced regularly. Leaking equipment must be repaired immediately or removed from the site; → All vehicle and equipment washing must be undertaken in the workshop or maintenance areas, and these areas must be equipped with a suitable impermeable floor and sump/oil trap. The use of detergents for washing should be restricted to low phosphate and nitrate products and low sudsing-type detergents; and → As part of the site layouts, a plan must be submitted to the ECO detailing the design of the bunding of the workshop and how run-off from the workshop will be managed as well as how drip trays used under plant will be managed.
	11.	ABLUTION FACILITIES	→ Washing, whether of a person or of personal effects, and acts of excretion and urination are strictly prohibited other than at the facilities provided. The Contractor must provide the necessary ablution facilities for all his/her personnel prior to the commencement of work; → Ablution facilities must be supplied by the Contractor for the workers at a ratio of at least 1 toilet per 20 workers in areas approved by the ECO. Toilets should be situated within 200 m of any area where work is taking place in numbers sufficient to meet the ratio depicted above for the workers in the area; → The facilities should be maintained in a hygienic state and serviced regularly. Toilet paper must be provided. Temporary/portable toilets should be secured to the ground to prevent them toppling due to wind or any other cause, to the satisfaction of the ECO; and → Discharge into the environment and burial of waste is strictly prohibited. The Contractor must ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the site. Toilets must be emptied before any temporary site closure.
	12.	EATING AREAS	→ The Contractor should designate eating area(s), subject to the approval of the ECO. No cooking is allowed outside of the Contractor's camp area onsite; → At mealtimes all workers must eat in designated eating areas. These areas should have shade for the workers; → Sufficient bins must be present in these areas. All disposable food packaging must be disposed of in the bins after every meal; and → The feeding- or leaving of food for animals is strictly prohibited.
	13.	SITE STRUCTURES	→ All site establishment components (as well as equipment) should be positioned to limit visual intrusion on neighbouring areas and the size of the land area disturbed. The type and colour of roofing and cladding materials of the Contractor's temporary structures should be selected to reduce reflection; and → The Contractor should supply and maintain adequate and suitable sheds for the storage of materials. Sheds for the storage of materials that may deteriorate or corrode if exposed to the weather should be weatherproof, adequately ventilated and provided with raised floors.
	14.	LIGHTING	→ The Contractor should ensure that any lighting installed on the site for his/her activities does not cause a reasonably avoidable disturbance to neighbouring residents or the naturally occurring fauna.

	15.	NOISE	→ The Contractor should take precautions to minimise noise generated on site (e.g. install and maintain silencers on machinery); → The Contractor must comply with the Noise Induced Hearing Loss Regulations published under the Occupational Health and Safety Act; → Appropriate directional and intensity settings are to be maintained on all hooters and sirens; → Work should be limited to daylight hours – between 06:00 and 18:00; and → No amplified music must be allowed on site. The Contractor must not use sound amplification equipment on site unless in emergency situations.
	16.	DUST CONTROL	→ The Contractor will be responsible for the continued control of dust arising from his/her operations. The Contractor must take all reasonable measures to minimize the generation of dust as a result of construction activities to the satisfaction of the ECO. Appropriate dust suppression measures include spraying or dampening with water, using a commercial dust binder (such as Hydropam or Dustex), rotovating straw bales, planting of open cleared space and the scheduling of dust-generating activities. If the conditions are such that the Contractor cannot satisfactorily dampen the dust, then the ECO may halt operations until such time as the conditions are more suitable for lower dust generating construction activities; → Areas that are to have the topsoil stripped for construction purposes must be limited and only stripped when work is about to take place; → Other activities and situations that may result in a dust nuisance include site clearance and other earth moving operations, open cleared space, stockpiles of topsoil or sand and activities associated with concrete mixing; and → The appropriate health and safety equipment (e.g. dust masks) should be worn by workers during the phases of dust-producing construction activity.
	17.	ENVIRONMENTAL AWARENESS TRAINING	→ Environmental awareness training courses should be run for all personnel onsite (See Annexure A for a proposed Basic Environmental Education Course). Two courses should be run, one for the Contractor's and Subcontractor's management and one for all site staff and labourers. Courses should be run in the morning during normal working hours at a suitable venue provided by the Contractor. All attendees should remain for the duration of the course and sign an attendance register on completion, that clearly indicates participant's names, a copy of which must be handed to the ECO; → The size of each session should be limited to 30 people. The Contractor should allow for sufficient sessions to train all personnel. Subsequent sessions should be run for any new personnel coming onto site. A Method Statement with respect to the organisation of these courses should be submitted; and → Notwithstanding the specific provisions of this clause it is incumbent upon the Contractor to convey the sentiments of the EMPr to all personnel and Subcontractors involved with the Works.
	18.	FIRE CONTROL	→ The Contractor must take all the necessary precautions to ensure that fires are not started as a result of site activities; → No open fires must be permitted on the site; → Smoking must not be permitted in areas where there is a fire hazard. Such areas include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to support the rapid spreading of an initial flame; → The Contractor should appoint a Fire Officer who will be responsible for ensuring immediate and appropriate actions in the event of a fire and will ensure that employees are aware of the procedures to be followed. The Contractor must forward the name of the Fire Officer to the ECO for approval within 7 days of being on site; → The Contractor must ensure that there is basic firefighting equipment available onsite at all times. This should include at least rubber beaters when working in urban open spaces and natural areas, and at least one fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken; and → The Contractor will be liable for any expenses incurred by any organisations called to assist with fighting fires that were started as a result of his/her activities or personnel, and for any cost relating to the rehabilitation of burnt areas, or consequential damages.
	19.	EMERGENCY PROCEDURES	→ Emergency procedures, including the names and contact details of responsible personnel and emergency services must be made available to all staff and should be clearly displayed at relevant locations at the site. The Contractor should advise the ECO of any emergencies onsite, together with a record of action taken, within 24 hours of the emergency occurring; and

			→ The Contractor must submit a Method Statement covering the procedures for the following emergencies: <u>Fire</u> → The Contractor should advise the relevant authority of a fire as soon as one starts and must not wait until it is out of control; and → The Contractor must ensure that all employees are aware of the procedures to be followed in the event of a fire. <u>Accidental leaks and spillages</u> → The Contractor must ensure that all employees are aware of the procedures to be followed for dealing with spills and leaks, which must include notifying the ECO and the relevant authorities. The Contractor must ensure that all the necessary materials and equipment for dealing with spills and leaks are available onsite at all times. Treatment and remediation of the spill areas must be undertaken to the reasonable satisfaction of the ECO; → In the event of a hydrocarbon spill, the source of the spillage must be isolated, and the spillage contained. The area should be cordoned off and secured. The Contractor should ensure that there is always a supply of absorbent material readily available to absorb / breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials should be able to handle a minimum of 200 ℓ of hydrocarbon liquid spill; and → Any spills must be cleared, and the contaminated soil or sludge disposed of in an appropriate manner, approved by the ECO, or at a licensed hazardous waste disposal site.
	20.	PROTECTION OF NATURAL FEATURES	→ The Contractor must not deface, paint, damage or mark any natural features (e.g. rock formations or trees) situated in or around the site for survey or other purposes unless agreed upon beforehand with the ECO. Any features affected by the Contractor in contravention of this clause must be restored/rehabilitated to the satisfaction of the ECO; and → The Contractor and onsite staff must not at any stage enter dense, intact vegetation without written approval from the ECO.
	21.	PROTECTION OF FLORA & FAUNA	→ A Botanist should identify the need for plant search and rescue (prior to construction) to identify Species of Conservation Concern (SCC) to be relocated; → Protected plant species should then be removed from the designated construction footprint and relocated to adjacent areas of similar habitat that should not be affected by construction activities. The plants should be used in landscaping once construction is complete (if applicable); → Except to the extent necessary for the carrying out of the works, flora should not be removed, damaged or disturbed; → The removal and stockpiling of topsoil must also be carried out in accordance with this EMPr; → Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted onsite; → The use of chemicals of all forms should be carefully controlled and monitored to avoid contamination of surrounding areas; and → Construction phases should allow for education of staff as to the significance of species of conservation concern.
	22.	PROTECTION OF HERITAGE FEATURES	→ Construction managers and/or foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites; → If concentrations of palaeontological and/or archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken; and → Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalised or legally prosecuted in terms of the National Heritage Resources Act 25 of 1999.
	23.	VEGETATION CLEARANCE	→ Vegetation clearing and trampling should be avoided in areas demarcated as “no-go” areas (if any); → Temporary infrastructure such as the site camp, lay down areas and storage areas must not be placed in any other area than the area approved by the ECO;

			→ The Contractor must work according to a plan, which demarcates areas to be cleared. The plan should be part of the Project Layout Plan developed in the Site Design Phase; → The minimum amount of vegetation clearance must take place; and → Collection of, or wilful damage to, any plants outside of the areas demarcated for clearing is not allowed.
	24.	TOPSOIL	→ Topsoil should only be stripped from the areas as indicated below: o Any area which is to be used for temporary storage of materials; o Areas which could be polluted by any aspect of the construction activity; and o Areas designated for the dumping of soil. → Stripping of topsoil should be undertaken in such a manner as to minimise erosion by wind or runoff; → Outside of the development footprint, topsoil will be stripped to a depth not exceeding 150 mm from the original ground level; → Areas from which the topsoil is to be removed must be cleared of any foreign material which could form part of the topsoil during removal including bricks, rubble, any waste material, litter, excess vegetation and any other material which could reduce the quality of the topsoil; → The Contractor must ensure that subsoil and topsoil are not mixed during stripping, excavation, reinstatement and rehabilitation. If mixed with clay sub-soil the usefulness of the topsoil for rehabilitation of the site will be lost; → Soils should be exposed for the minimum time possible once cleared; → Topsoil should be temporarily stockpiled, separately from (clay) subsoil and rocky materials; → Topsoil should only be stockpiled in areas designated by the ECO; → Stockpiles will either be vegetated with indigenous grasses or covered by a suitable fabric to prevent erosion and invasion of weeds; and → Stockpiled topsoil must not be compacted.
	25.	STORMWATER MANAGEMENT	→ Stormwater should be managed using suitable structures such as swales, gabions and rock rip-wrap so that any run-off from the development site is attenuated prior to discharge. Silt and sedimentation should be kept to a minimum, through the use of the above-mentioned structures by also ensuring that all structures don't create any form of erosion; and → Natural run-off must be diverted to stormwater drains where these are available.
	26.	EROSION & SEDIMENTATION CONTROL	→ The Contractor must take all reasonable measures to limit erosion and sedimentation due to construction activities and must comply with such detailed measures as may be required by the EMPr; → Revegetate areas that have been disturbed as soon as possible; → Where erosion and/or sedimentation occur, whether on or off the site, despite the Contractor complying with the aforementioned, rectification should be carried out in accordance with details specified by the ECO. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification must be carried out to the reasonable requirements of the ECO and at the expense of the Contractor; and → Actions must also be taken in the event of heavy rains and potential flooding, whereby diversion barriers must not cause excessive erosion.
	27.	AESTHETICS	→ The Contractor must take reasonable measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area.
	28.	COMMUNITY RELATIONS	→ The Contractor must keep a "Complaints Register" onsite. The Register should contain all contact details of the person who made the complaint, and information regarding the complaint itself as well as the date and time that the complaint was resolved; → The ECO will be responsible for responding to queries and/or complaints and may request assistance from the Contractor's Management Staff; and → Construction materials and other purchases relating to the project should be done, where possible, within the nearby community and at local shops.
	29.	TEMPORARY SITE CLOSURE	→ If the Site is closed for a period exceeding 5 days, the Contractor's Safety, Health and Environment (SHE) Officer in consultation with the ECO should carry out the following checklist procedure and ensure that the following conditions pertain and report on compliance with this clause: <u>Fuels / flammables / hazardous materials stores</u> → Fuel stores are as low in volume as practicable; → There are no leaks;

			→ The outlet is secure and locked; → The bund is empty; → Fire extinguishers are serviced and accessible; → The area is secure from accidental damage through vehicle collision and the like; → Emergency and contact numbers are available and displayed; and → There is adequate ventilation in enclosed spaces. <u>Safety</u> → Check that site safety checks have been carried out in accordance with the Occupational Health and Safety Act (No. 85 of 1993) prior to site closure; → An inspection schedule and log for use by security or contracts staff is developed; → All trenches and manholes are secured; → Applicable notice boards are in place and secured; → Emergency and Management contact details are prominently displayed; → Security personnel have been briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; → Night hazards such as reflectors, lighting, traffic signage etc. have been checked; → Fire hazards identified and the local authority notified of any potential threats e.g. large brush stockpiles, fuels etc.; → Pipe stockpiles are wedged / secured; → Scaffolds are secure; and → Structures vulnerable to high winds are secure. <u>Erosion</u> → Wind and dust mitigation measures such as straw, brush packs, irrigation etc. are in place; → Excavated and filled slopes and stockpiles are at a stable angle; → Re-vegetated areas have a watering schedule and the supply to such areas is secured; and → There are sufficient detention ponds or channels in place. <u>Water contamination and pollution</u> → Hazardous fuel stores are secure; → Cement and materials stores are secure; → Toilets are empty and secured; → Refuse bins are empty and secured; → Bunding is clean and treated with appropriate material that will absorb / breakdown and where possible be designed to encapsulate minor hydrocarbon spillage; and → Drip trays are empty and secure.

PLANNING & DESIGN PHASE			
Impact		**Impact Description**	**Mitigation**
1.	**LEGISLATION AND POLICY COMPLIANCE**	During the planning and design phase, failure to comply with existing policies and legal obligations can lead to the project conflicting with local, provincial and national policies, legislation, etc. This can result in legal non-compliances, fines, delays in construction activity, overall project failure and undue disturbance to the natural environment.	→ The development must adhere to the relevant legislation and/or policy, e.g. ECBCP, Municipal By-laws, etc. → All legal matters pertaining to permitting must be completed prior to any construction activity. → All relevant permits must be obtained from the competent authority in order to remove/relocate any protected plant species. → All necessary permits must be in place prior to the removal/destruction of any potential heritage or paleontological resources found on site, should it be required.
2.	**INADEQUATE PLANNING FOR THE TRANSPORTATION OF TURBINE AND POWERLINE PARTS**	Inadequate planning for the transportation of turbine and powerline parts and specialists construction equipment to the site by long and/or slow moving vehicles could cause traffic congestion, especially if temporary road closures are required.	→ Project planning must include a plan for transport management plan that will be implemented especially during the construction phase of the development. → The necessary road traffic permits must be obtained for transporting parts, containers,

	COULD LEAD TO TRAFFIC CONGESTION		materials and construction equipment to the site.
3.	**DEGRADATION OF EXISTING ROAD INFRASTRUCTURE DUE TO HEAVY VEHICLE TRAFFIC**	The integrity of existing highway infrastructure such as bridges and barriers may be compromised by the burden of heavy vehicle traffic delivering components to site.	→ Careful planning of the routes taken by heavy vehicles must highlight areas of road that may need to be upgraded in order to accommodate these vehicles. Once identified these areas must be upgraded if necessary
4.	**INAPPROPRIATE PLANNING FOR THE STORAGE OF HAZARDOUS SUBSTANCES COULD LEAD TO SURFACE AND GROUND WATER POLLUTION**	Inappropriate planning for the storage of hazardous substances such as diesel, paint, pesticides, etc. could lead to surface and ground water pollution due to, for example, oil leaks, spillage of diesel, etc.	→ All hazardous substances must be stored in a bunded area with an impermeable surface beneath them. Ensure that such areas are designed into the layout plan for the site camp. → A Spill Response Contingency Plan must be drafted and implemented.
5.	**GROUND WATER CONTAMINATION DUE TO MIXING OF CEMENT IN INAPPROPRIATE AREAS ON SITE**	The mixing of cement on site could result in ground water and surface water contamination from compounds in the cement. In addition, a large number of cement mixing stations on site could increase the presence of impermeable areas of hard standing which could in turn increase rates of runoff thereby increasing the risk of localised flooding, soil erosion, siltation, sedimentation and the formation of gullies.	→ Cement mixing must be conducted at a single location which should be centrally located, where practical. Ensure that this site is chosen and agreed to by the ECO prior to construction. → Wash water from cleaning vehicles and implements must be managed: stored on site and disposed off-site at a licenced WWTW; waste manifests to prove legal disposal.
6.	**AN INCREASE IN IMPERMEABLE SURFACES COULD LEAD TO INCREASED LOCALISED FLOODING AND EROSION**	The construction of roads and impermeable areas of hard standing (both turbines and powerline pylons) could increase rates of run-off and lead to an increase in localised flooding and erosion. An inappropriate stormwater management plan could result in a higher severity of flooding and erosion.	→ All structures must be located at least 32m away from identified drainage lines unless authorised by the Department of Water and Sanitation. → All structures must be located at least 500m from the delineated edge of wetlands unless authorised by the Department of Water and Sanitation. No non-linear structures will be allowed within 50m of the delineated edge unless authorised by the DWS. A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of the water flow → The Stormwater Management Plan must also include management mitigation measures for water pollution, waste water management and the management of surface erosion.
7.	**THE BLOCKING OR DELAYING OF SIGNAL TO ELECTRONIC DEVICES CAUSED BY WIND TURBINES**	WEFs can cause television, radio and microwave interference by blocking and/or causing part of the signal to be delayed.	→ Accurate siting of wind turbines in the planning and design phase will reduce the possibility of these impacts → If complaints are received by neighbouring landowners regarding the issue, then the developer must investigate and mitigate these issues to the best of their abilities.
8.	**SHADOW FLICKER, WHICH COULD RESULT IN HEALTH IMPACTS TO INDIVIDUALS EXPOSED FOR EXTENDED PERIODS OF TIME**	Rotating wind turbine blades interrupt the sunlight producing unavoidable flicker bright enough to pass through closed eyelids, and moving shadows cast by the blades on windows can affect illumination inside buildings. This effect is commonly known as shadow flicker. Wind turbine shadow flicker has the potential to induce photosensitive epilepsy seizures however	→ Planning should ensure the flash frequency does not exceed three per second, and the shadows cast by one turbine on another should not have a cumulative flash rate exceeding three per second.

		the risk is low with large modern models and if proper planning is adhered to. It is possible to model the potential shadow flicker and determine potential negative impacts.	
CONSTRUCTION PHASE			
IMPACT		**Impact Description**	**Mitigation**
9.	**LEGAL AND POLICY COMPLIANCE**	During the construction phase, failure to adhere to existing policies, regulations, permits, authorisations and legal obligations will lead to the project being non-compliant with local, provincial and national policies, legislation, etc. and may lead to undue disturbance of the natural environment and/or closure of the facility.	→ The Applicant must employ an independent Environmental Control Officer (ECO) for the duration of the construction phase to audit the contractor's compliance with the specifications in the EA, EMPr and any other permits/authorisations
10.	**DUST ASSOCIATED WITH AN INCREASE IN VEHICLES ON SITE COULD RESULT IN HEALTH IMPACTS**	Dust is likely to be a potential nuisance during the construction due to an increase in vehicles transporting supplies during this period and also as a result of vegetation clearing. This is the main cause. Dust can have detrimental effects on human health for individuals within a close proximity to the site.	→ Nuisance dust can be reduced by implementing the following: → Damping down of un-surfaced and un-vegetated areas using water from a licensed source; → Retention of vegetation where possible; → Only clear what is strictly necessary at any one time, i.e. do not clear the entire site at the beginning of construction; → Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of dust to surrounding areas → Surface all access roads with a gravel layer before commencing any construction activities; and → A speed limit of 40km/h must not be exceeded on dirt roads. → Any complaints or claims emanating from the lack of dust control should be attended to immediately by the Contractor. →
11.	**NOISE POLLUTION**	Adverse noise effects will occur during the construction period due to movement and use of heavy machinery. Activities such as excavation of foundations, road construction and vegetation stripping could lead to adverse noise for individuals located within close proximity of the construction site.	→ Ensure that all equipment is properly maintained, and faulty silencers are replaced immediately. → Follow the recommendations provided in the Environmental Management Programme (EMPr) to limit disturbance created by noise and vibration. These include: → Concentrate all construction activities during the daytime hours (between sunrise and sunset), where feasible. → Provide ear protection equipment to staff working directly with noise generating machinery, also during short stays in areas with excessive noise. → Install silencers and noise control mechanisms (insulates) in equipment and machines that generate high levels of noise. → Avoid unnecessary idling times. → Minimizing the need for trucks/equipment to reverse. This will reduce the frequency at which disturbing but necessary reverse warnings will occur. Alternatives to the traditional reverse 'beeper' alarm such as a 'self-adjusting' or 'smart' alarm could be

			considered. These alarms include a mechanism to detect the local noise level and automatically adjust the output of the alarm is so that it is 5 to 10 dB above the noise level in the vicinity of the moving equipment. The promotional material for some smart alarms does state that the ability to adjust the level of the alarm is of advantage to those sites 'with low ambient noise level' (Burgess & McCarty, 2009).
12.	**UNNECESSARY DISTURBANCE OF VEGETATION DUE TO SPRAWL OF CAMPSITE COULD CAUSE A LOSS OF BIODIVERSITY.**	An unnecessary sprawl of the construction camp site beyond the demarcated area could result in an increase in the loss of vegetation and biodiversity surrounding the campsite.	→ The ECO must assist in the siting of all construction camp related structures (including any concrete batching plants or centralised concrete mixing areas) and supervise any bush clearing for the construction camp. → The construction camp should be clearly demarcated and fenced to avoid sprawl. → The construction area must be located in a degraded area where very little to no bush clearing is required to the extent possible. Where permits are required to remove plants, these will be applied for by the developer prior to the start of construction; → The camp site may not be located in the Coega IDZ; and → If there is a concrete batching site, it should be fenced. Shade cloth should be attached to the fence to stop sand blowing around.
13.	**INAPPROPRIATE STORAGE AND HANDLING OF HAZARDOUS SUBSTANCES COULD LEAD TO SURFACE AND GROUND WATER POLLUTION**	Inappropriate storage and handling of hazardous substances such as diesel, paint, pesticides, etc. could lead to surface and ground water pollution due to, for example, oil leaks, spillage of diesel, etc.	→ All hazardous substances must be stored in a bunded area with an impermeable surface beneath them. Ensure that such areas are designed into the layout plan for the site camp. → A Spill Response Contingency Plan must be drafted and implemented.
14.	**LITTERING AND THE USE OF INFORMAL ABLUTION FACILITIES BY CONSTRUCTION WORKERS COULD CAUSE SURFACE AND GROUND WATER POLLUTION**	The littering of general waste and the use of the surrounding environmental as informal ablutions by construction workers could lead to pollution in the surrounding water sources and the general vegetation which could have a detrimental impact on plant and animal species in the surrounding areas.	→ Littering must be avoided and litter bins must be made available at various strategic points onsite. → Refuse from the construction site must be collected on a regular basis and deposited at an appropriate landfill site. → The bins should be animal proof i.e. the lids must not allow animals to get in and scavenge. → There must be sufficient litter bins on site and they should be emptied regularly and as necessary. Waste manifests to be provided by the municipality to prove legal disposal. → Portable ablution facilities must be located on site and must be situated away from (>50m) from any watercourses.
15.	**STORMWATER MANAGEMENT AND EROSION PREVENTION**	During the construction phase, failure to implement effective stormwater management measures may result in increased surface soil erosion and contamination of stormwater and resulting surrounding watercourses.	→ The construction site must be managed in a manner that prevents pollution watercourses or groundwater, due to suspended solids, silt or chemical pollutants. → Berms and swathes must be placed in areas that may be prone to erosion.

			→ Temporary cut-off drains and berms may be required to capture storm water and promote infiltration. → The unnecessary removal of groundcover from slopes must be prevented, especially on steep slopes which will not be developed. → If re-vegetation of exposed surfaces cannot be established, temporary erosion and sediment control measures must be maintained until such a time that re-vegetation can commence. → All temporary erosion and sediment control measures must be monitored for the duration of the construction phase and repaired immediately when damaged. All temporary erosion and sediment control structures must only be removed once vegetation cover has successfully recolonised the affected areas. → After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and silt fences or fascine work must be established along the gulley for additional protection until vegetation has re-colonised the rehabilitated area.
16.	**WASTE MANAGEMENT**	During the construction phase, poor management of handling, disposal and storage of general and hazardous waste may lead to the pollution of the surrounding environment.	→ Waste Management must be included in the contractor's method statements for handling onsite general and hazardous waste during the construction phase must be developed and implemented. → An appropriate area must be identified where construction waste/rubble can be stored prior to disposal. → All general waste must be disposed of in bins/waste skips labelled "general waste". → Sufficient waste bins must be provided throughout the construction site for collecting waste. → All general waste collected on site must be disposed of at a licensed general waste disposal site. → All hazardous waste generated on site must be placed in a temporary impermeable bunded containment area which must be disposed of at a hazardous landfill site or be collected by the appropriate service provider. → The contractor must retain paperwork proving the correct disposal of waste at a registered landfill site. → Proof of receipt of hazardous waste by a licenced service provider must be maintained on the site. → Adequate sanitary facilities must be provided for construction workers and they must be properly secured to the ground. → Maintenance of the chemical toilets should be done on a regular basis to prevent any leakages.

			→ Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment and stored in suitable containers until appropriate disposal. → Drums must be kept on site to collect contaminated soil. These should be disposed of at a registered waste site. → Contaminated water containing fuel, oil or other hazardous substances must never be released into the environment. It must be disposed of at an appropriate registered site. → Vehicle maintenance should not take place on site unless a specific bunded area is constructed for such a purpose.
AGRICULTURE AND SOILS			
17.	**MANAGEMENT OF HAZARDOUS CHEMICALS**	The inadequate management of hazardous substances during the Construction Phase of the proposed Latrodex WEF could result in soil contamination and a loss of fertile soils due to hazardous substance spills.	→ Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 must be adhered to. This applies to solvents and other chemicals possibly used during the construction process; → Cement must not be mixed directly on the ground, or mixed during rainfall events when the potential for transportation into the stormwater system is the greatest; → Cement must only be mixed in the area demarcated for this purpose and on impermeable surfaces; → Drip trays must be placed under construction machinery to avoid soil contamination; → The appointed ECO must determine the precise method of treatment of polluted soil. This could involve the application of soil absorbent materials, oil-digestive powders to the contaminated soil or the excavation of the contaminated soil depending on the nature of the spill; → If refuelling occurs on site, a dedicated area should be established and refuelling should only take place on impermeable surfaces; → All fuel should be stored in a bunded area; → Ensure all construction machinery is in sound working order to prevent oil leaks; and → Any hazardous materials that need to be stored on site must be locked away.
18.	**LOSS OF LIVESTOCK AND WILDLIFE GRAZING**	The clearance of grasses and shrubs during the Construction Phase for the placement of the wind turbine foundations, associated infrastructure and powerline pylons will result in the loss of land used for livestock and wildlife grazing which could impact on the wildlife and agriculture on the proposed properties.	→ The clearance of vegetation should be limited to the demarcated construction footprint.
19.	**SOIL COMPACTION**	Soil will be compacted by construction vehicles and construction activities during the Construction Phase. Compacted soil results in the reduced ability for plant growth and water absorption as well as the increase in runoff.	→ Heavy construction activities should be scheduled to avoid excessively wet periods, where possible; and → Topsoil stockpiles must not be compacted.

20.	**INCREASE IN SOIL EROSION**	The clearing of vegetation during the Construction Phase will result in the exposure of soils. Exposed soils are susceptible to erosion by wind and water (i.e. run-off) during wind and/or rainfall events. Sections of the proposed Latrodex WEF site are currently eroded. It is envisioned that sections of the proposed site will continue to erode in the absence of the proposed Latrodex WEF development.	→ Disturbance and clearing of vegetation should be kept to the minimum required for the construction of the Latrodex WEF and associated structures; → All reasonable measures to limit erosion caused by construction activities must be taken; and → The appointed ECO must monitor the soil erosion and remedial action must be taken at the first signs of erosion.
21.	**MANAGEMENT OF TOPSOIL**	The inadequate management of topsoil during the Construction Phase of the proposed Latrodex WEF, associated infrastructure and the powerline pylons could result in the loss of important topsoil and may cause irreversible damage to the landscape if left unmitigated. In addition, the loss or damage to topsoil will have a significant impact on the rehabilitation of the site.	→ Stripping of topsoil should be undertaken in such a manner as to minimise erosion by wind or runoff; → Areas from which the topsoil is to be removed must be cleared of any foreign material which could form part of the topsoil during removal including rubble, any waste material, litter, excess vegetation and any other material which could reduce the quality of the topsoil; → Ensure that subsoil and topsoil are not mixed during stripping, excavation, reinstatement and rehabilitation. If topsoil is mixed with clay subsoil the usefulness of the topsoil for rehabilitation of the site will be lost; → Once cleared, soils should be exposed for the minimum time possible; → Topsoil should be temporarily stockpiled, separate from subsoil and rocky materials; → Topsoil should only be stockpiled in areas designated by the appointed ECO; → Stockpiled topsoil must not be compacted; and → Any excess topsoil that is not used for rehabilitation must be removed from the site
22.	**INAPPROPRIATE AND INADEQUATE REHABILITATION**	Inadequate rehabilitation during the Construction Phase of the proposed Latrodex WEF and powerline could result in the loss of valuable topsoil, irreversible damage to the landscape and the invasion of alien vegetation.	→ If the topsoil is sterile or the seedbank is affected then topsoil should be supplemented with an indigenous seed mix; → Soils outside of the development footprint that are exposed during the construction of the WEF and the powerline must only be bare for the minimum time possible; → Stockpiled topsoil must not be compacted; and → The site must be rehabilitated to the satisfaction of the appointed ECO.
AVIFAUNA (AS PER AVIFAUNAL IMPACT ASSESSMENT, APPENDIX D)			
23.	**HABITAT DESTRUCTION**	During construction, vegetation is altered or removed for the project footprint (Turbines, roads, hard stands and other components). This destroys avifauna habitat, makes it less useful to birds, or less attractive to sensitive species.	→ No changes to the current turbine positions should be made without consulting the specialist. → A pre-construction avifaunal walk down should be conducted to confirm final layout and identify any sensitivities that may arise between the conclusion of the EIA process and the construction phase. → All construction activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment. → All temporary disturbed areas should be rehabilitated according to the site's rehabilitation plan, following construction.

24.	**DISTURBANCE OF BIRDS DURING CONSTRUCTION**	Birds are disturbed by construction or operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	→ No changes to the current turbine positions should be made without consulting the specialist. → An avifaunal walk down should be conducted to confirm final layout and identify any sensitivities that may arise between the conclusion of the EIA process and the construction phase. → All construction activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment.
BATS (AS PER BAT IMPACT ASSESSMENT, APPENDIX D)			
25.	**ROOST DISTURBANCE, DESTRUCTION, AND FRAGMENTATION**	During the construction phase there could occur the destruction of active bat roosts and/or features that could serve as potential roosts, such as rock formations and the removal of trees on site. In addition, the destruction of derelict holes, such as aardvark holes, and any fragmentation of woody habitat, which includes dense bushes. The removal of trees and bushes would have an impact on all bats that could potentially roost in trees, including fruit bats, and on the foraging range of clutter and clutter-edge species.	→ Construction activities to be kept out of possible bat roosting areas, such as the farm dwelling structures. → Rock formations should be avoided during construction, as these serve as roosting space for bats, but with the current layout, it is not expected that there will be any rock formations along the turbine positions. → Care should be taken if any bushes or trees are destroyed. → Aardvark holes or any large derelict holes or excavations should not be destroyed before careful examination for bats. → The Environmental Control Officer (ECO), a responsible appointed person or site manager should contact a bat specialist before construction commences so that they know what to look out for during construction.
26.	**CONSTRUCTION ACTIVITIES DURING NIGHT-TIME**	Construction noise, especially during night-time, as well as lighting disturbance to bats.	→ Nightly construction activities should be avoided, or if necessary, minimised to the shortest period possible. → With the exception of compulsory civil aviation lighting, artificial lighting during construction should be minimised, especially bright lights or spotlights. → Lights should avoid skyward illumination. → Turbine tower lights should be switched off when not in operation, where possible, depending on regulations.
27.	**CREATING NEW HABITAT AMONGST THE TURBINES**	Creating new habitats amongst the turbines which might attract bats. These include buildings with roofs that could serve as roosting spaces, open water sources from quarries or excavation where water could accumulate.	→ Completely seal off roofs of new buildings (e.g., substations and site buildings). Note: a small bat species could enter a hole the size of 1 cm^2. → Carefully inspect roofs of existing buildings and if there are no bat roosts, it is recommended that these roofs are sealed. → Roofs need to be regularly inspected during the lifetime of the wind farm and any new holes need to be sealed. → Excavation areas or artificial depressions should be filled and rehabilitated to avoid creating areas of open water sources which could attract bats during the rainy season.
VISUAL (AS PER VISUAL IMPACT ASSESSMENT, APPENDIX D)			
28.	**IMPACT ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE WEF**	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity.	→ Ensure that vegetation is not unnecessarily removed during the construction period. → Reduce the construction period through careful logistical planning and productive implementation of resources.

		Within the region, dust as a result of construction activities may also be visible, as such it will result in a visual impact occurring during construction. This impact is likely to be of moderate significance both before and after mitigation.	→ Plan the placement of lay-down areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e., in already disturbed areas) wherever possible. → Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. → Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities. → Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent). → Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. → Rehabilitate all disturbed areas immediately after the completion of construction works.
29.	**POTENTIAL VISUAL IMPACT OF CONSTRUCTION ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE PROPOSED OHLS**	During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 1 – moderate significance before and after mitigation. During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 2 - moderate mitigated to low significance During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Rivermouth Routes: Alternative 3 – moderate mitigated to low significance	→ Proper planning, management and rehabilitation of the construction sites. → Ensure that vegetation is not unnecessarily removed during the construction period. → Reduce the construction period through careful logistical planning and productive implementation of resources. → Plan the placement of lay-down areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e., in already disturbed areas) wherever possible. → Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. → Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities. → Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent). → Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. → Rehabilitate all disturbed areas immediately after the completion of construction works.

		During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Chaba Routes: Alternative 1 – moderate significance before and after mitigation	
		During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users and landowners in the area in close proximity. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts. The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure. Visual impacts are likely to be as follows: Chaba Routes: Alternative 2 - moderate mitigated to low significance	
NOISE (AS PER NOISE IMPACT ASSESSMENT, APPENDIX D)			
30.	**NOISE IMPACT OF DAY TIME CONSTRUCTION ACTIVITIES (ALL TURBINES)**	Projected noise levels during construction of the WEF were modelled using the methods as proposed by SANS 10357:2004. The resulting future noise projections indicated that the construction activities, as modelled for the worst case scenario will comply with the National Noise Control Regulations during both the day- and night-time periods. No additional mitigation measures were proposed or are required. Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities. Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low.	→ Ensure equivalent A-weighted daytime noise levels below 45 dBA at potentially sensitive receptors. → Ensure that maximum noise levels at potentially sensitive receptors be less than 65 dBA; → Prevent the generation of disturbing or nuisance noises; → Ensure acceptable noise levels at surrounding stakeholders and potentially sensitive receptors; → Ensuring compliance with the National Noise Control Regulations. → Ensure a good working relationship between the developer/contractor and all potentially noise-sensitive receptors. Communication channels should be established to ensure prior notice to the sensitive receptor if work is to take place close to them (especially if work is to take place within 500m from them at night). → Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures if available. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised; → Locate access routes as far as possible from identified receptors, especially if these roads will be used during night-time construction activities.
31.	**NOISE IMPACT OF NIGHT TIME CONSTRUCTION ACTIVITIES (ALL TURBINES)**	Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities. Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low.	
			→

			→
ECOLOGICAL IMPACTS (AS PER ECOLOGICAL IMPACT ASSESSMENT, APPENDIX D)			
32.	**LOSS OF NATURAL VEGETATION LOSS OF NATURAL HAMBURG DUNE THICKET**	The Latrodex WEF and the associated infrastructure will result in the loss of a maximum of 5ha (including construction layout down areas and roads)	→ 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.
33.	**LOSS OF DENSE THICKET/FOREST VEGETATION POWERLINE ROUTE TO THE RIVERMOUTH SUBSTATION ALTERNATIVE – RED AND PURPLE LINE**	**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.	→ No mitigation measures provided.
34.	**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.	→ This route will not be considered.
35.	**LOSS OF RIPARIAN THICKET/FOREST**	The north and south powerline alternatives to the Chaba Substation may result in localised woody	→ Riparian thicket/forest at headwaters of streams must be avoided. There are 3 small areas that are affected along the route to

	VEGETATION **POWERLINE ROUTE TO THE CHABA SUBSTATION NORTH AND SOUTH ALTERNATIVES**	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.	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.
36.	**LOSS OF NATURAL VEGETATION** **LOSS OF DENSE THICKET/FOREST VEGETATION**	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.	→ No mitigation measures provided.
37.	**LOSS OF PLANT SPECIES OF CONSERVATION CONCERN**	Although no threatened plant species were observed in the study site; several protected species in terms of the PNCO were recorded.	→ Where possible avoid sites with
		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 develop is therefore slight.	→ 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
38.	**DISTURBANCE TO FAUNAL SPECIES AND POTENTIAL REDUCTION IN ABUNDANCE AND MORTALITY OF FAUNAL SPECIES**	Habitat clearing of 5 ha 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 could be transient and use the site to move through the landscape.	→ 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.
		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	→ 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.
39.	**ESTABLISHMENT OF ALIEN PLANT SPECIES**	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.	→ 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.
AQUATIC ECOLOGICAL ENVIRONMENT			
40.	**DIRECT PHYSICAL LOSS OR MODIFICATION OF FRESHWATER HABITAT**	The most notable direct physical loss of freshwater ecosystem habitat will occur at turbine 1 and turbine 2, which are in close proximity to artificial dams and natural wetland areas, respectively.	→ Turbine 2 should be adjusted to be more than 32m from the water storage dams. → Turbine 3 and 4 must be adjusted to be more than 50m from the natural wetland area. No infrastructure should be within these areas. → Underground cabling crossings points should be aligned along areas or corridors of existing disturbance, e.g., along existing roads, and should ideally be buried within the road fill if possible. → Prior to the commencement of any construction activities, the following features must be staked out by a surveyor and demarcated using brightly coloured shade cloth: → - The construction servitude at all watercourses crossings extending 15m either side of the crossing. → - Artificial dams and natural wetlands. → Demarcations are to remain until construction is complete. → All areas outside of this demarcated working areas must be considered no-go areas for the entire construction phase. Any contractor found working within No-Go
41.	**ALTERATION OF HYDROLOGICAL AND GEOMORPHOLOGICAL PROCESSES (EROSION AND SEDIMENT)**	Potential sediment related risks associated with the construction phase of this project relate to an increase in sediment supply to watercourses associated with trenching taking place within and near watercourse units. Extensive watercourse and dryland erosion within the study area increases the risk of construction phase sediment mobilisation due to trenching or excavation activities, especially where pipelines are not associated with existing road crossings. Sediment related risks are however temporary in nature and are easily manageable during pipeline upgrades and installations. Trenching within wetlands to lay or upgrade pipes will also temporarily alter natural water distribution patterns. This is not expected to affect many watercourses as most pipe crossings are associated with roads, where the pipelines will be buried in the road fill, rather than in the wetland bed material. All pipeline crossings of	

		large perennial river systems are at the location of existing bridges with the water reticulation pipelines expected to be attached to bridges. These are therefore no expected diversions of watercourses to create dry working areas.	areas must be fined as per fining schedule/system setup for the project. → Access to and from the project site should be either via existing roads or within the construction servitude.
42.	**IMPACTS TO WATER QUALITY**	Water quality impacts during construction will be limited to potential increased water turbidity associated with potential increased sediment supply to watercourses, and pollution related to potential spillages of fuels and chemicals during construction of the pipeline alignments. If poorly managed, this impact could be of a moderately low significance, where large sediment plumes are regularly deposited into onsite watercourses during construction, and where onsite spill related pollution risks are not mitigated properly.	→ All disturbed areas beyond the construction site that are intentionally or accidentally disturbed during the construction phase must be rehabilitated immediately to the satisfaction of the ECO. All disturbed areas must be prepared and then re-vegetated to the satisfaction of the ECO as per the relevant rehabilitation plan.
43.	**IMPACTS TO ECOLOGICAL CONNECTIVITY AND/OR ECOLOGICAL DISTURBANCE IMPACTS**	During construction, the presence of workers and machinery in the general vicinity of onsite watercourses is likely to create noise, vibrations and dust which have the potential to temporarily disturb and displace fauna that make use of watercourse corridors for movement and refuge. Use of watercourses for refugia by fauna in the context of the study area is however likely to be limited due to the urban and per-urban nature of the area, and the generally degraded state of onsite watercourses. Additionally, construction phase disturbances will be temporary.	
SOCIO-ECONOMIC (AS PER THE SOCIO-ECONOMIC IMPACT ASSESSMENT – APPENDIX D)			
44.	**TEMPORARY STIMULATION OF THE NATIONAL AND LOCAL ECONOMY**	The proposed Wild Coast Abalone WEF is expected to require R 300 million (2022 prices) to establish during construction. All of the funds will be invested into the local economy. Aspects such as aggregate, civil works for the substation and electrical infrastructure and fuel will be procured predominantly from Great Kei suppliers. Equipment and plant which is not available in Great Kei and other towns within the Amathole DM region will be procured from suppliers within the province. The localised expenditure on the project will stimulate the local and national economies. The availability of materials within South Africa will dictate where inputs are sourced from and which company will be awarded the tender, with closely proximity to site and BBBEE status given as preference. It is estimated that the construction of the project will increase the production in the country (i.e. new business sales) by R 375.6 million, which will translate into an additional R 70.5 million of GVA. Besides the value added that could be generated by local construction businesses through sub-contracting agreements and employment of free-lancers, the sectors that are expected to benefit the most from the production and consumption induced effects are tertiary services such as trade, accommodation, and transport services. The greatest effects on	→ The developer should be encouraged by the EPC contractor to increase the local procurement practices and promote the employment of people from local communities, as far as feasible, to maximise the benefits to the local economies. → The developer should engage with local authorities and business organisations to investigate the possibility of procuring construction materials, goods and products from local suppliers were feasible.

		production and GVA stimulated during construction activities will be created through the multiplier effects, specifically through a combination of production and consumption induced effects. The former refers to the impact generated along backwards linkages when the project creates demand for goods and services required for construction and subsequently stimulates the business sales of the suppliers of inputs that are required to produce these goods and services. The latter refers to the effects of household spending which is derived from an increase in salaries and wages directly and indirectly stimulated by the project's expenditure. Sectors and industries that will experience the greatest stimulus from this indirect and induced impacts include: - Basic metals, structural metal products and other fabricated metal products industries - Trade - Insurance - Transport services - Electrical machinery and apparatus **Cumulative** A WEF has been built in the municipality (Chaba WEF) and another one under EIA Authorisation process is the Haga Haga Wind Farms (Pty) Ltd. In the province, some are already have already been constructed. This could provide sufficient economies of scale and thus open opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the economy. This has already occurred to a certain extent with the manufacturing of WEF components in the country.	
45.	**TEMPORARY INCREASE IN EMPLOYMENT IN THE NATIONAL AND LOCAL ECONOMIES**	The proposed facility will create 150 Full Time Equivalent (FTE) employment positions during construction. About 80% of the employment positions involve skilled and semi-skilled construction workers, with the remaining being managers, professional engineers and supervisors. It is anticipated that 80% of the employment will be filled by people from local communities. Given the size of the local construction sector it is anticipated that there will be sufficient local labour to satisfy the demand for unskilled workers. Beyond the direct employment opportunities that will be created by the project during the construction phase the development will also have a positive spin-off effect on the employment situation in other sectors of the national and local economies as shown in Table 13. Most of these positions will be in sectors such as construction, business services and trade.	→ Organise local community meetings to advise the local labour force about the project that is planned to be established and the employment that can potentially applied for → Establish a local skills desk (in Great Kei) to determine the potential skills that could be sourced in the area → Recruit local labour as far as feasible → Employ labour-intensive methods in construction where feasible → Sub-contract to local construction companies particularly SMMEs and BBBEE compliant enterprises where possible → Use local suppliers where feasible and arrange with the local SMMEs to provide transport, catering and other services to the construction crews.

		Given that a significant portion of the multiplier effects will be generated through backward linkages, more than half of these FTE employment positions will be created along the supply chain and amongst industries providing inputs to the businesses in the supply chain. Based on these figures the total contribution of the project towards employment creation in South Africa is estimated at 711 FTE employment positions throughout the construction phase. It is recommended that the developer encourage the EPC contractor to fill as many local positions as possible.	
46.	**CONTRIBUTION TO SKILLS DEVELOPMENT IN THE COUNTRY AND LOCAL ECONOMY**	The construction of the proposed Wild Coast Abalone WEF is likely to have a positive impact on the skills development in South Africa particularly given the limited number of such facilities currently operating in the country. Since there are a limited number of operational wind energy facilities in South Africa, the local expertise in the construction of such facilities is very limited. During the turbine component assembly and tower manufacturing period which is included as part of the construction phase and is planned to be conducted in the Eastern Cape, it is likely that foreign technical experts will be involved. This will present an opportunity for skills and knowledge transfer between these technical experts and local manufactures. It is also expected that the construction crew involved in the project will gain knowledge and experience in respect of the development of wind energy facilities. This will be highly beneficial given South Africa's target of generating 9 200 MW from wind energy by 2030 (Department Energy, 2011). In addition to the direct effects of the project on skills development in the country and the local economy, the project could contribute to the development of the local R&D and manufacturing industries associated with wind technology. This could be achieved through partnerships with Rhodes University (situated in Makhanda) or the Nelson Mandela University (NMU) in Port Elizabeth. Partnerships of this nature could further enhance the development of new skills and expertise. **Cumulative** Improved labour productivity and employability of construction workers for similar projects Possible development of local skills and expertise in R&D and manufacturing industries related to wind technology through partnerships with Rhodes University and NMU	→ Facilitate knowledge and skills transfer between foreign technical experts and South African professionals during the pre-establishment and construction phases → Set up apprenticeship programmes to build onto existing skill levels or develop new skills amongst construction workers especially those from local communities
47.	**TEMPORARY INCREASE IN HOUSEHOLD EARNINGS**	The proposed WEF will create a total of 711 FTE employment positions (direct, indirect and induced) during construction generating R 246	→ Recruit local labour as far as feasible to increase the benefits to the local households

		million of revenue for the affected households in the country through direct, indirect and induced effects. Of this figure R 19 million will be paid out in the form of salaries and wages to those individuals directly employed during the construction phase. The remaining R 227 million in households' earnings will be generated through indirect and induced effects resulting from project expenditure. Although temporary, this increase in household earnings will have a positive effect on the standard of living these households. This is especially applicable to the households benefiting from the project that reside in the Great Kei Local Municipality. **Cumulative** Improved standard of living of the affected households	→ Employ labour intensive methods in construction where feasible → Sub-contract to local construction companies where possible → Use local suppliers where feasible and arrange with local SMMEs and BBBEE compliant enterprises to provide transport, catering and other services to the construction crews →
48.	**TEMPORARY INCREASE IN GOVERNMENT REVENUE**	The investment in the Latrodex Wind Farm will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc. Government earnings will be distributed by national government to cover public spending which includes amongst others the provision and maintenance of transport infrastructure, health and education services as well as other public goods. **Cumulative** Lower government debt and servicing costs	→ None suggested
49.	**NEGATIVE CHANGES TO THE SENSE OF PLACE**	A community's sense of place is developed over time as it embraces the surrounding environment, becomes familiar with its physical properties and creates its own history. The sense of place is created through the interaction of different factors such as the areas visual resources, its aesthetics, climate, culture and heritage as well as the lifestyle of individuals that live in and visit the area. Most importantly, it is a highly subjective matter and dependent on the demographics of the population that resides in the area and their perceptions regarding trade-offs. Detailed trade-offs are discussed in the Socioeconomic Impact Assessment attached under Appendix D. **Cumulative** Change in perception of the area due to the construction of other wind turbine developments in the surrounding area albeit temporarily.	→ The mitigation measures proposed by the visual and noise specialists should be adhered to → Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during construction
50.	**TEMPORARY INCREASE IN SOCIAL CONFLICTS ASSOCIATED WITH THE INFLUX OF PEOPLE**	The Great Kei economy is not sufficiently diversified to supply the entire workforce for the construction of the proposed WEF, particularly in terms of skilled positions. A significant number of the unskilled and semi-skilled workers required during the construction phase will, however, be	→ Adhere to strict labour recruitment practices that would reduce the desire of potential employment seekers to loiter around the properties in the hope of finding temporary employment → Control the movement of workers between the site and areas of residence to minimise

		sourced locally. It is estimated that 70-80% of employment that will be created during the construction phase could be filled by labour coming from the local municipality. Migrant workers will therefore comprise just over half of the total work force. The migration of people to the area is not likely to result in social conflicts between the local population and the migrant work force from the local population perceiving the migrant workers as "stealing" their employment opportunities. Given the low reliance on labour sourced externally, the potential of the influx of people into the area leading to a temporary increase in level of crime, illicit activity and possibly a deterioration of the health of the local community through the spread of infectious diseases is low. Semi-skilled and unskilled construction workers are unlikely to choose to remain in the area following the completion of the construction phase given the rural nature of the project site (with limited human settlements in the surrounding area). The risk of such individuals exacerbating the level of poverty within the Great Kei Local Municipality from living in the area without a source of income is thus low.	loitering around the facility. This should be achieved through the provision of scheduled transportation services between the construction site and area of residence → Employ locals as far as feasible through the creation of a local skills database → Establish a management forum comprising key stakeholders to monitor and identify potential problems that may arise due to the influx of employment seekers to the area → Ensure that any damages or losses to nearby affected farms that can be linked to the conduct of construction workers are adequately reimbursed → Assign a dedicated person to deal with complaints and concerns of affected parties
51.	**TRAFFIC**	During the construction phase, increased flow of traffic to the project site may negatively impact the neighbouring areas.	→ Appropriate warning signs must be in place to notify the public regarding construction activities. → Construction vehicles are to adhere to traffic regulations. → Appropriate traffic safety measures, such as flagmen and speedbumps, must be used where deemed necessary.
HERITAGE IMPACTS			
52.	**ARCHAEOLOGY**	One farmstead was identified. Structures older than 60 years are protected under Section 34 of the NHRA. The identified farmstead is currently in use by the Abalone facility and will not be directly impacted by the turbine locations. If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA).	→ If any intervention of the farmhouse is anticipated, a permit for alteration or destruction will be required by the Eastern Cape Provincial Heritage Authority (ECPHRA). → Portions of the proposed area for development are covered in dense vegetation and sites/features may be covered by soil and vegetation and will only be located once this has been removed. A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. → If concentrations pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the Eastern Cape Provincial

			Heritage Resources Agency (ECPHRA) (043 745 0888) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue. → The developer / ECO / or construction manager must apply to the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) for a destruction permit for any heritage material that is found prior to the commencement of the development activities.
53.	**PALAEONTOLOGY**	The direct impacts upon the palaeontological heritage of the project area are potentially: • Damage or destruction of fossil materials during the construction of project infrastructural elements to a maximum depth of those excavations. Many fossil taxa (particularly vertebrate taxa) are known from only a single fossil and, thus, any fossil material is potentially highly significant. Accordingly, the loss or damage to any single fossil can be potentially significant to the understanding of the fossil heritage of South Africa and to the understanding of the evolution of life on Earth in general. Where fossil material is present and will be directly affected by the building or construction of the projects infrastructural elements the result will potentially be the irreversible damage or destruction of the fossil(s). • Movement of fossil materials during the construction phase, such that they are no longer in situ when discovered. The fact that the fossils are not in situ would either significantly reduce or completely destroy their scientific significance. It is considered, herein, that only the rocks of the karoo Dolerite Suite will be directly impacted upon by the project. The indirect impacts upon the palaeontological heritage of the project area are potentially the loss of access for scientific study to any fossil materials present beneath infrastructural elements for the life span of the existence of those constructions and facilities. The emplacement of the wind turbine towers will directly impact upon the Karoo Dolerite Suite. The indirect impacts of the progression of the project will be that the rocks of the Adelaide Subgroup will be effectively sterilised from scientific investigation for the life-time of the turbine towers.	→ No fossil material were identified during the progress of the site investigation that underpins this report. The only lithological unit that will be directly impacted upon by this project is considered to be unfossiliferous. Accordingly, no damage mitigation protocols are required to preserve fossil assemblages. → Should scientifically or culturally significant fossil material exist within the project area, and these are discovered during the emplacement of the project's infrastructure elements, any negative impact upon it should be mitigated. This mitigation should take the form its evaluation by a palaeontologist and if considered scientifically significant it should be excavated (under permit from SAHRA) by a palaeontologist and the resultant material being lodged with an appropriately permitted institution. In the event that the fossil materials excavation is impossible or inappropriate the fossil or fossil locality could be protected and the site of any planned construction moved

		The calculation of cumulative effects in the case of this proposed project it is possible to make the observation that the Karoo Dolerite Suite is unfossiliferous. Accordingly, there would be nothing in the form of regional negative impacts upon the palaeontological heritage of the unit resulting from this project. The potential for the project to add significantly to negative impacts upon the palaeontological heritage of the wider region must be assessed as having a nil cumulative impact.	
OPERATIONAL PHASE			
IMPACT		**Impact Description**	**Mitigation**
ENVIRONMENTAL POLICY			
1.	**LEGAL AND POLICY COMPLIANCE**	During the operation phase, failure to adhere to all permits, authorisations and regulations may lead to financial penalties and closure of the facility.	→ The proponent must ensure that operation of the facility is compliant with the relevant legislation and policy and authorisations. → These should include (but are not restricted to): NEMA, EA plant removal permits and any other permits/authorisations.
ECOLOGICAL IMPACTS (AS PER ECOLOGICAL IMPACT ASSESSMENT, APPENDIX D)			
2.	**INFESTATION OF ALIEN PLANT SPECIES**	Poor rehabilitation and the lack of implementation of an alien invasive plant eradication during the operation phase will favour the establishment and spread of alien invasive plant species.	→ 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.
AQUATIC ECOLOGICAL ENVIRONMENT (AS PER AQUATIC COMPLIANCE IMPACT STATEMENT, APPENDIX D)			
3.	**DIRECT PHYSICAL LOSS OR MODIFICATION OF FRESHWATER HABITAT**	During the operational phase of the WEF direct impacts to freshwater habitat may occur during maintenance of pipeline infrastructure within the vicinity of watercourses. This is likely to occur very infrequently and where sensitive areas are avoided during repairs or maintenance.	→ Mitigation impacts discussed above for the construction phase apply to maintenance activities during operation.
4.	**IMPACTS TO WATER QUALITY**	Water quality impacts during the operation of the WEF are mostly unlikely to take place. Where these could occur is during pipeline crossing repairs or maintenance, where any potential pollutants used (fuels etc.) are poorly managed and there is a risk of spillage	→ Mitigation impacts discussed above for the construction phase apply to maintenance activities during operation.
5.	**IMPACTS TO ECOLOGICAL CONNECTIVITY AND/OR ECOLOGICAL DISTURBANCE IMPACTS**	During operation phase maintenance and repairs the presence of workers and machinery in the general vicinity of onsite watercourses is likely to create noise, vibrations and dust which have the potential to temporarily disturb and displace fauna that make use of watercourse corridors for movement and refuge	→ Mitigation impacts discussed above for the construction phase apply to maintenance activities during operation.
AVIFAUNAL (AS PER AVIFAUNAL IMPACT ASSESSMENT, APPENDIX D)			
6.	**DISTURBANCE OF BIRDS DURING OPERATIONS**	Birds are disturbed by construction or operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	→ None.
7.	**DISPLACEMENT OF BIRDS DURING OPERATIONAL PHASE**	As for disturbance above, the indications from operational wind farms are that this impact may be of low importance. At Latrodex Wind Farm we consider this impact to be of Low Negative significance with the mitigation measures already recommended above.	→ None.

8.	**TURBINE COLLISION FATALITIES**	The risk of turbine collision is high for two species: Jackal Buzzard; and Yellow-billed Kite. This is due to their frequent flight activity and the fact that some of these flights pass through proposed turbine areas (unlike some of the other recorded species which flew mostly off site). Since these two species are not regionally Red Listed, we conclude that overall this impact will be of Low Negative significance.	→ No changes to the current turbine positions should be made without consulting the specialist. → A post construction inspection must be conducted by an avifaunal specialist to confirm that all aspects have been appropriately handled. → Given that the impact of bird collision with turbines could occur once the wind farm is operational and require mitigation, we recommend strongly that an appropriate mitigation budget be provided for by the Applicant. At this stage it is not possible to determine what mitigation may be appropriate, and in the time between writing this report and the mitigation need arising (likely several years) new mitigation methods may be developed. However if such a need arises and suitable mitigation is identified it cannot be argued by the wind farm operator that mitigation was not budgeted for. Mitigation could cost the operator either in the form of additional costs or lost productivity as a result of changes to turbine operations. → It is also important that the Applicant be aware that mitigation measures may require the installation of equipment on turbines, or possibly the painting of blades. Potential technical and warrantee challenges should be noted where possible throughout the planning process so that they do not prevent the implementation of reasonable mitigation if required. → Post construction monitoring should inform an adaptive management programme to mitigate any identified impacts to acceptable levels. We recommend that all turbines are searched for collision fatalities every week once operational.
9.	**COLLISION & ELECTROCUTION ON OVERHEAD POWER LINE AND IN SUBSTATION/SWITCHING STATION**	The impact of bird collision and electrocution with power lines is likely to be of Moderate significance and require mitigation.	→ The length of overhead power line is kept to an absolute minimum. → All internal power cables connecting turbines to the onsite substation should be underground. The overhead power line to connect to the grid will need to be routed optimally, have anti bird collision line marking devices installed on all spans, and be a bird friendly pylon design.
VISUAL (AS PER VISUAL IMPACT ASSESSMENT, APPENDIX D)			
10.	**IMPACT ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE FACILITY WEF**	The visual impacts of facility operations on sensitive visual receptors (i.e., residents of settlements, coastal towns, farm and homestead, as well as, visitors to the area) in close proximity to the proposed Latrodex WEF (i.e., within 5km) is expected to be of high significance. Potential sensitive receptors are Residents of Haga Haga, Marschstrand, Kimbali Farms, Fish Bay and Haga Haga Retreat. No mitigation is possible for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates this impact assessment. **Cumulative impacts:**	→ Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint. → Maintain the general appearance of the facility as a whole. → Monitor rehabilitated areas, and implement remedial action as and when required. → Remove infrastructure not required for the post-decommissioning use of the site. → Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. → Monitor rehabilitated areas post-decommissioning and implement remedial actions.

		The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region.	
11.	**IMPACT ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE FACILITY** **OHL** **NOTE: THE NUMBER AND TYPE OF SENSITIVE RECEPTORS EXPOSED TO A VISUAL IMPACT INFLUENCES THE PROBABILITY RATING FOR EACH OF THE PROPOSED LINES.**	The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 1 – high significance The visual impacts on sensitive visual receptors (i.e., residents of homesteads, tourist facilities, protected areas and users of roads) in close proximity to the proposed infrastructure (i.e., within 250m) is expected to be as follows: Chaba Routes: Alternative 2 - high significance	→ No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines. The table below illustrates this impact assessment.
12.	**IMPACT OF FACILITY OPERATIONS ON SENSITIVE VISUAL RECEPTORS WITHIN THE REGION**	The visual impact of facility operations on sensitive visual receptors (i.e., users of the R349, residents of farm and homesteads, visitors to region, Haga Haga and Morgans Bays secondary roads) within the region (i.e., beyond the 5km offset) is expected to be of high significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates this impact assessment. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region. **Residual impacts:**	Site development & Operation: → Retain / re-establish and maintain large trees, natural features and noteworthy natural vegetation in all areas outside of the activity footprint. → Retain natural pockets (wetland, river and other sensitive vegetation zones) as buffers within the property and along the perimeter. → Dust suppression techniques should be in place at all times during the site development and operational phases. → Access roads will require an effective dust suppression management programme, such as regular wetting and/or the use of non-polluting chemicals that will retain moisture in the road surface. → Downscaling of operations. → Keeping infrastructure at minimum heights. → Introducing landscaping measures such as vegetating berms. → Avoid the use of highly reflective material.

		The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	→ Metal surfaces, where they occur, should be painted in natural soft colours that would blend in with the environment. Lighting → Lighting should be kept to a minimum wherever possible. → Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the activity – this is especially relevant where the edge of the activity is exposed to residential properties. → Wherever possible, lights should be directed downwards to avoid illuminating the sky. → Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on movement. Decommissioning: → Remove infrastructure not required for the post-decommissioning use of the site. → Rehabilitate all areas as per the rehabilitation plan undertaken. Consult an ecologist regarding rehabilitation specifications. → Monitor rehabilitated areas post-decommissioning and implement remedial actions as required
13.	**IMPACT ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE FACILITY** **OHL** **NOTE: THE NUMBER AND TYPE OF SENSITIVE RECEPTORS EXPOSED TO A VISUAL IMPACT INFLUENCES THE PROBABILITY RATING FOR EACH OF THE PROPOSED LINES.**	residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	→ No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines.
		The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 2 - moderate significance	
		The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	
		The visual impact on sensitive visual receptors (i.e., residents of homesteads, settlements and users of roads.) within the region (i.e., beyond the 250m offset) is expected to be as follows: Chaba Routes: Alternative 1 – high significance	
		The potential visual impact on residents of residents of built-up areas and populated places (i.e., Marshstrand, Morgans Bay, Soto, Magrangxeni, Mgcogo, Ziphunzana) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - high significance	
14.	**POTENTIAL VISUAL IMPACT OF THE OHLS ON CONSERVATION AREAS WITHIN THE REGION**	The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 1 - high significance	→ No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines. The table below illustrates this impact assessment
		The potential visual impact on residents of	

		residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 2 - negligible significance	
		The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Rivermouth Routes: Alternative 3 – negligible significance	
		The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 1 – negligible significance	
		The potential visual impact on residents of residents of built-up areas and populated places (i.e., Double Mouth Nature Reserve) within the region beyond the 250m offset is expected to be as follows: Chaba Routes: Alternative 2 - negligible significance	
15.	**POTENTIAL VISUAL IMPACT OF THE OHLS ON THE VISUAL CHARACTER OF THE LANDSCAPE AND SENSE OF PLACE OF THE REGION**	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 1 - moderate significance	→ No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines.
		Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 2 - low significance	
		Sense of place refers to a unique experience of an environment by a user, based on his or her	

		cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Rivermouth Routes: Alternative 3 – moderate significance	
		Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Chaba Routes: Alternative 1 – high significance	
		Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The table below illustrates the assessment of this anticipated impact. The anticipated visual impact on the visual character and sense of place of the study area is expected to be as follows: Chaba Routes: Alternative 2 - high significance	
16.	**POTENTIAL CUMULATIVE VISUAL IMPACT OF THE OHL WITHIN THE REGION**	There are already existing power lines that traverse the study area and feed into both the existing Rivermouth and Chaba substations. The addition of the proposed new Latrodex substation and associated power lines will result in an increase in this type of infrastructure within the region and could result in a cumulative visual impact.	→ No mitigation is possible for this type of infrastructure, but measures have been included as best practice guidelines.
17.	**IMPACT OF OPERATIONAL LIGHTING AT NIGHT ON SENSITIVE**	The receiving environment has a relatively small number of populated places, and it can be expected that any light trespass and glare from the security and after-hours operational lighting	→ Planning & operation: → Aviation standards and CAA Regulations for turbine lighting must be followed.

	VISUAL RECEPTORS IN THE REGION	for the facility will have some significance. In addition, the remote sense of place and rural ambiance of the local area increases its sensitivity to such lighting intrusions. Another source of glare light is the aircraft warning lights mounted on top of the hub of the wind turbines. While these lights are less aggravating due to the toned-down red colour, they do have the potential to be visible from a greater distance then general operational lighting, especially due to the strobing effect of the lights, a function specially designed to attract the viewers' attention. The Civil Aviation Authority (CAA) prescribes these warning lights and the potential to mitigate their visual impacts is low. The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, is recommended to be investigated. Last is the potential lighting impact is known as sky glow. Sky glow is the condition where the night sky is illuminated when light reflects off particles in the atmosphere such as moisture, dust or smog. The sky glow intensifies with the increase in the number of light sources. Each new light source, especially upwardly directed lighting, contributes to the increase in sky glow. The general lighting of the facility may contribute to the effect of sky glow in an otherwise dark environment. The visual impacts as a result of operational lighting at night on sensitive visual receptors in the regions is likely to be of high significance and may be mitigated to moderate should the required CAA lighting be approved to be installed on the perimeter and/or the installation of needs-based night lights be allowed. Best practice guidelines for other general site lighting that may occur on the site have also been taken into consideration. The table below illustrates this impact assessment. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased lighting and light pollution in an otherwise natural area increasing the cumulative visual impact of renewable energy facilities in the region. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	→ The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, must be investigated. → Install aircraft warning lights that only activate when the presence of an aircraft is detected, if permitted by CAA. → Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). → Limit mounting heights of lighting fixtures, or alternatively use foot-lights or bollard level lights. → Make use of minimum lumen or wattage in fixtures. → Make use of down-lighters, or shielded fixtures. → Make use of Low-Pressure Sodium lighting or other types of low impact lighting. → Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.
18.	**SHADOW FLICKER ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE PROPOSED DEVELOPMENT**	Shadow flicker only occurs when the sky is clear, and when the turbine rotor blades are between the sun and the receptor (i.e. when the sun is low). De Gryse in Scenic Landscape Architecture (2006) found that "most shadow impact is associated with 3-4 times the height of	→ N/A

		the object". Based on this research, a 500m buffer along the edge of the outer most turbines is identified as the zone within which there is a risk of shadow flicker occurring. Since there are no public roads or places of residence within the 500m buffer. The structures that are located immediately adjacent to the turbines will be utilised as the workshop area for the proposed facility. The significance of shadow flicker is therefore anticipated to be low.	
19.	**VISUAL CHARACTER OF THE LANDSCAPE AND SENSE OF PLACE OF THE REGION**	Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role. A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. In general, the landscape character of the greater study area and site itself presents as undeveloped and natural in character. The visual quality of the region is generally high and large tracts of intact vegetation characterise most of the visual environment, as well as the scenic rugged coastline. As such, the entire study area is considered sensitive to visual impacts due to its generally low levels of transformation. The key visual experience is linked to the use of the road network and associated views of the surrounding landscape. The anticipated visual impact on the visual character and sense of place of the study area is expected to be of high significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates the assessment of this anticipated impact. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region, especially WEF facilities visible from the coastline. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	→ Maintain the general appearance of the facility as a whole. → Monitor rehabilitated areas, and implement remedial action as and when required. → Decommissioning: → Remove infrastructure not required for the post-decommissioning use of the site. → Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. → Monitor rehabilitated areas post-decommissioning and implement remedial actions.

20.	**IMPACT OF FACILITY OPERATIONS ON TOURIST ACCESS ROUTES AND TOURIST DESTINATIONS WITHIN THE REGION.**	The greater region is generally seen as having a high scenic value and tourism value potential. The landscape is characterised by rugged coastlines, undulating hills with a high visual quality and strong sense of place. The R349, Haga Haga and Morgans Bay secondary roads are the primary access roads to this area and are thus considered to be a route that is likely to carry tourists.Haga Haga, Marshstrand, Morgans Bay, Double Mouth Nature Reserve, and Morgans Bays Cliffs are consider the tourist destinations for the area and are where vacation accommodation is most likely to be located. While this region is general a lesser known destination, it is a popular one in the busy peak seasons as a result of its proximinity to the rugged and fairly unspoilt coast line of the Wild Coast. The Morgans Bay Cliff are a popular view point for both residents and tourists visiting the region. Located further along the coastline is also the Double Mouth Nature Reserve a lesser known hidden gem known as one of the Eastern Cape's premier coastal camping destinations nestled between Morgans Bay and the Quko River Mouth. The entrance of Double Mouth Nature Reserve also has a photo frame point which is expected to be negatively affected by the proposed Latrodex WEF. The anticipated visual impact of the proposed Latrodex WEF on tourist access routes (i.e. the R349) and tourist destinations (i.e. accommodation and attractions) within the region is therefore expected to be of moderate significance. No mitigation is possible within this environment and for a facility of this scale, but measures have been included as best practice guidelines. The table below illustrates the assessment of this anticipated impact. **Cumulative impacts:** The construction of the Latrodex WEF (5 turbines) together with the authorised Haga Haga WEF (36 Turbines), is expected to contribute to the increased cumulative visual impact of renewable energy facilities in the region, especially WEF facilities visible from the coastline. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	→ Maintain the general appearance of the facility as a whole. → Monitor rehabilitated areas and implement remedial action as and when required. → Decommissioning: → Remove infrastructure not required for the post-decommissioning use of the site. → Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. → Monitor rehabilitated areas post-decommissioning and implement remedial actions.
21.	**EXPECTED VISUAL IMPACTS OF THE AUTHORISED HAGA HAGA WEF WHEN CONSIDERED IN ISOLATION** **CUMULATIVE VISUAL IMPACT WITH THE ADDITION OF THE LATRODEX WEF TO THE HAGA HAGA WEF**	While a large overlap between the visual exposure of the two WEF layouts (Latrodex WEF and the Haga Haga WEF) is noted, a large portion of this overlap will be taking place within the property boundaries of the authorised Haga Haga WEF. It is therefore expected that these landowners and sensitive receptors will already be accepting of the visual intrusion of WEFs in general. A relatively small additional area of exposure previously not expected to be impacted on visually by the authorised Haga Haga WEF as a result of the five (5) additional turbines	→ N/A

		proposed was also noted. This additional area of exposure is mainly limited to the site itself, Marshstand and the high lying areas to the south west of the site between the site and Mtwentwe. In relation to the already large visually exposed area of the Haga Haga WEF and since the Latrodex WEF only consists of five (5) additional wind turbines, generally considered to be a small WEF in international and local standards, it is not expected that the addition of the Latrodex WEF will contribute in a significant way to the cumulative visual exposure of WEFs in the region. It is however expected that the proposed Latrodex WEF will contribute to the increase of WEF facilities visible from the coastline. **Residual impacts:** The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.	
NOISE IMPACTS (AS PER NOISE IMPACT ASSESSMENT, APPENDIX D)			
22.	**OPERATIONAL ACTIVITIES AT NIGHT – VESTAS V90 2.0 MW** **OPERATIONAL ACTIVITIES AT NIGHT – ACCIONA 132/3300**	Projected noise levels during operation of the Wind Energy Facility were modelled using the methodology as proposed by ISO 9613-2. The resulting future noise projections indicated that the operation of the facility will comply with the acceptable rating levels (45 dBA) proposed in this report. The changes in ambient sound levels (as assumed) will not exceed the 7 dBA limit set by the National Noise Control Regulations for the surrounding receptors. Potential impact include: • Increased noise levels at potentially sensitive receptors; • Changing ambient sound levels could change the acceptable land use capability; and Disturbing character of noise from the wind turbines.	→ The dwelling located at NSD01 should not be used for residential purposes.
23.	**SUSTAINABLE INCREASE IN PRODUCTION AND GDP NATIONALLY, REGIONALLY AND LOCALLY**	The proposed development will require annual operational expenditure of R 3.75 million per annum for a long-term period (of greater than 30 years). This operational cost will largely cater for the operations of the wind farm operations and includes labour for maintenance of the development and the associated infrastructure. The total impact on production in the country as a result of the developments operations will equate to R 79.8 million in 2019 prices per annum. Industries that will experience the greatest stimulus from the project will include real estate and business services, manufacturing, transport and storage and trade and accommodation. Due to the annual spending on labour and procurement of local goods and services required in the maintenance of the proposed development, much of these new business sales will be generated on an	→ The developer should be encouraged by the EPC contractor to increase the local procurement practices and promote the employment of people from local communities, as far as feasible, to maximise the benefits to the local economies. → The developer should engage with local authorities and business organisations to investigate the possibility of procuring construction materials, goods and products from local suppliers were feasible.

		annual basis in Great Kei Local Municipality. Some of the direct spend in operations especially for specialised items will, however, be from outside the local municipality. **Cumulative** A WEF has been built in the municipality (Chaba WEF) and another one under EIA Authorisation process is the Haga Haga Wind Farms (Pty) Ltd. In the province, some are already have already been constructed. This could provide sufficient economies of scale and thus open up opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the economy. This has already occurred to a certain extent with the manufacturing of WEF components in the country	
24.	**CREATION OF SUSTAINABLE EMPLOYMENT POSITIONS NATIONALLY AND LOCALLY**	The proposed facility is anticipated to create new 12 permanent employment positions once fully operational throughout the country. This figure includes approximately 3-4 direct employment opportunities on site, and 3 indirect translating into the creation of a total of 12 new employment positions within Great Kei Local Municipality. Of the direct employment position created, 20% to 40% will be semi-skilled and unskilled labourers, the remainder being skilled and highly skilled. The skilled positions will comprise facilities managers, technicians and environmental engineers. Unskilled and low skilled staff will include positions such as security personnel. Due to the spatial allocation of procurement spending and direct employment created, most of the indirect and induced positions will also be created within the local Great Kei area. The trade, agriculture and community and personal services sectors will benefit the most from these new employment opportunities. **Cumulative** Improved living standards of the directly and indirectly affected households	→ Where possible, local labour should be considered for employment so as to increase the positive impact on the local economy → As far as possible, local small and medium enterprises should be approached to investigate the opportunities for supply inputs required for the maintenance and operation of the facility
25.	**SKILLS DEVELOPMENT OF PERMANENTLY EMPLOYED WORKERS**	It is likely that the majority of the highly and semi-skilled employees required for the operation of the facility will likely to be recruited from larger Metropolitan areas and trained by the manufacturer. These employees will undertake a variety of maintenance activities throughout the lifetime of the turbines. A maintenance schedule usually involves an initial inspection after commissioning, semi-annual inspection, an annual inspection and two- and five-year inspections but this varies according to the turbine. Typical activities during maintenance include changing of oil, replacement of brake lining and cleaning of components. The continual	→ The developer should consider establishing vocational training programmes for the local labour force to promote the development of skills required by the wind energy facility and thus provide for the opportunities for these people to be employed in other similar facilities elsewhere

		development of these employees will add valuable skills to the municipality which is in desperate need throughout the country. **Cumulative** Development of new skills and expertise in the country to support the development of the wind energy industry	
26.	**IMPROVED STANDARDS OF LIVING FOR BENEFITING HOUSEHOLDS**	The creation of approximately 5 FTE employment positions throughout the country will generate between about R 1.4 million of personal income (2019 prices) (direct), which will be sustained for the entire duration of the project's lifespan. The sustainable income generated as a result of the project's operation will positively affect the standard of living of all benefitting households. This is specifically applicable to the Great Kei Municipality as the average income per employee at the facility would far exceed the average household income within the region currently. In Great Kei Local Municipality alone, it is anticipated that total worker income to the region will increase by R 1.6 million on an annual basis. **Cumulative** Improved productivity of workers Improved health and living conditions of the affected households	→ Where possible, the local labour supply should be considered for employment opportunities to increase the positive impact on the area's economy → As far as feasible, local small and medium enterprises should be approached to investigate the opportunities for supply inputs required for the maintenance and operation of the facility
27.	**SUSTAINABLE INCREASE IN NATIONAL AND LOCAL GOVERNMENT REVENUE**	The annual operation and related expenditure of the proposed facility will through property taxes and salaries and wages payments (PAYE) contribute towards both local and national government revenue in the form of a variety of tax payments i.e. to SARS and to the Local Municipality. On a national level, the revenue derived by the project during its operations, as well as the payment of salaries and wages to permanent employees will contribute to the national fiscus. Although it is impossible to trace exactly how such revenue is allocated, any additional revenue generated means that national governments can increase its spending on public goods and services. **Cumulative** Possible improvement in local service delivery.	→ None.
28.	**IMPACT ON THE SENSE OF PLACE EXPERIENCED BY THE LOCAL COMMUNITY AS A RESULT OF VISUAL AND NOISE EFFECTS THAT APPEAR DURING THE OPERATION PHASE**	The effects on the community's sense of place will initially be felt during the construction period and will continue into the operational phase. **Cumulative** Change in perception of the area due to the operation of other wind turbine developments in the surrounding area.	→ The mitigation measures proposed by the visual and noise specialists should be adhered to → Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during construction.
NO GO ALTERNATIVES			

1.	**ESTABLISHMENT OF ALIEN PLANT SPECIES**	Alien plant species are already present and established in the study site.	→ An alien monitoring and eradication plan needs to be implemented throughout the region
2.	**INFESTATION OF ALIEN PLANT SPECIES**	Alien plant species are already present and established in the study site.	→ An alien monitoring and eradication plan needs to be implemented throughout the region

SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

- Appendix E1: Advertisement
- Appendix E2: Notification
  - Appendix E2a: Landowner Notification
  - Appendix E2b: I&AP Notification
- Appendix E3: Notice Board.
- Appendix E4: Issues & Response Trail.
- Appendix E5: Original correspondence from I&APs.
- Appendix E6: Pre-Application Meeting Minutes.
- Appendix E7: DFFE site visit Meeting Minutes
- Appendix E8: Stakeholder/Landowner/Surrounding Landowner/I&AP Database.

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information