Nordex Concrete Wind Tower Manufacturing Facility, Kouga Municipality: Terrestrial Biodiversity and Plant Species Assessment

Prepared By

Clayton Weatherall-Thomas

Prepared for

Habitat Link Consulting

HABITAT LINK CONSULTING

20 February 2023

1 Contents

Table of Figures

List of Tables

ACRONYMS

AIP	ALIEN INVASIVE PLANTS
BID	BACKGROUND INFORMATION DOCUMENT
BP	BIOREGIONAL PLAN
CAP	CONSERVATION ASSESSMENT AND PLAN
CBA	CRITICAL BIODIVERSITY AREA
DFFE	DEPARTMENT OF FORESTRY, FISHERIES AND ENVIRONMENT
DEDEAT	DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENTAL AFFAIRS AND TOURISM
EA	ENVIRONMENTAL AUTHORISATION
EAP	ENVIRONMENTAL ASSESSMENT PRACTITIONER
ECBCP	EASTERN CAPE BIODIVERSITY CONSERVATION PLAN
ESA	ECOLOGICAL SUPPORT AREA
FBAR	FINAL BASIC ASSESSMENT REPORT
HSR	HUMANSDORP SHALE RENOSTERVELD
NECO	NATURE AND ENVIRONMENTAL CONSERVATION ORDINANCE OF 1974
NFA	NATIONAL FORESTS ACT 84 OF 1998
NFEPA	NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREA
NPAES	NATIONAL PRIORITY AREAS FOR EXPANSION OF TERRESTRIAL AREAS
PAOI	PROJECT AREA OF INFLUENCE
POSA	PLANTS OF SOUTHERN AFRICA
SAPAD	SOUTH AFRICAN PROTECTED AND CONSERVATION AREAS DATABASE
SANBI	SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE
SANParks	SOUTH AFRICAN NATIONAL PARKS
SCC	SPECIES OF CONSERVATION CONCERN
SEI	SITE OF ECOLOGICAL IMPORTANCE
SWSA	STRATEGIC WATER SOURCE AREA
TOPS	THREATENED OR PROTECTED SPECIES

1 Introduction

Habitat Link Consulting has approached Clayton Weatherall-Thomas to do a terrestrial biodiversity impact assessment for a potential Environmental Impact Assessment (EIA) for the construction of a precast concrete tower manufacturing facility for wind turbines on the Remainder of Portion 3 of the farm 854, near Papiesfontein, Kouga Local Municipality. The size of the footprint of the facility is approximately 10-12 ha.

The report will be prepared in compliance with the assessment protocols published under NEMA, namely the Protocol for the Specialist Assessment and minimum report content requirements for environmental impacts on Terrestrial Biodiversity (GN 320, published 20 March 2020) and Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species (GN 1150 published on 30 October 2020). The protocols state that if the web-based screening tool report identifies the site to have a Medium, High or Very High sensitivity, an impact assessment by a relevant specialist is required. A compliance statement by a specialist is necessary if the sensitivity is identified as Low.

The Screening Tool has identified the site to have a VERY HIGH terrestrial biodiversity sensitivity and a LOW plant species sensitivity. An initial site sensitivity verification (SSV) and report was done to determine whether the obligatory screening report accurately identifies the sensitivity of the proposed site. If the site is not sensitive, a compliance statement must be provided. The initial investigation may be followed by a comprehensive biodiversity assessment report. The impact assessment methodology of the Species Impact Assessment Guidelines (SANBI 2020) was utilised to determine the impact of the proposed development on both faunal and floral species.

The objectives of the assessment are to:

1. Identify the Environmental Sensitivity of the site using desktop and online resources
2. Describe the vegetation types and faunal habitat units on site, and identified sensitivities
3. Determine the threat status and sensitivity of the vegetation, plant species and animal species on site
4. Describe the level of degradation of the vegetation and habitats on site
5. Assess the impact of the proposed development on the vegetation, inclusive of plant species, animal species and ecological processes, of the site

6. Provide recommendations to mitigate the negative environmental impacts of the proposed development

1.1 Details of Specialist and Declaration of Interest

Name of specialist: Clayton Richard Weatherall-Thomas

Qualifications and Expertise: Please see *Curriculum Vitae* attached as Appendix 1

SACNASP (Ecologist): 128641

Declaration of Interest: Please see Appendix 2

1.2 Project Description

The proposed activity entails the construction of a precast concrete manufacturing facility for the manufacturing of 80 concrete wind towers to supply wind turbine towers to nearby wind farms under construction. The site is approximately 100 ha, whereas the footprint of the facility is approximately 9.5 ha in size. It is situated in a rural agricultural environment but does neighbour an active hard rock quarry and an unutilised railway. Cattle grazing is the dominant land use, but there is evidence that cultivation has occurred in the past. The site is relatively flat but does contain a number of drainage lines.

The concrete segments are typically manufactured in custom-built precast concrete factories situated as close as possible to the wind farm locations. Concrete will be produced from 2x on-site batch plants at approximately 200m³ per day. The precast concrete manufacturing facility will typically be comprised of two production lines, under a gantry, with the first production line being approximately 360 m long and the second production line approximately 305 m long complete with:

- Reinforcing steel storage yard complete with off-loading bays;
- Storage area for insert containers;
- Enclosed casting yard is approximately 110 m long for production line 1 and 85 m long for production line two;
- Each production line will have one 64 tons and one 16 tons overhead gantry crane;
- Keystone repair yard;
- Keystone storage yard complete with loading bays; and
- Workshop for general maintenance and area for lacing table and ducting preparation.

The Facility will consist of the flowing:

- Manufacturing plant;
- Batching plant;
- Laboratory;
- Water treatment facility;
- Aggregates Shed;
- Water Tanks:
- Equipment warehouse;
- Staff facilities;
- Offices;
- Roadways, walkways, and parking; and
- Stormwater infrastructure.

The 80 concrete wind towers consist of 1 425 keystones or precast elements of approximately 20 m x 6 m each. The basic process that will take place on site will include material reception, steel assembly, concrete pouring, finishing stage, storage and quality control. The resources to be kept on site will include 1 000 m^3 sand, 1 000 m^3 gravel, 350 tonnes of steel (6 towers); 400 tons of cement and 600 keystones.

The site will include the installation of a waterborne sewer gravitational network including a conservancy tank, potable water distribution network including a reservoir, electricity network and unpaved access roads. Access from the R102 towards the nearest boundary of the property is gained along a 2.3 km gravel road section. The Gravel road is in fair condition and is being used by construction vehicles to and from the Vlakteplaas Quarry. The operation will generate approximately 141 trips a week, mostly by trucks between 34 and 70 tonnes.The lifespan of the facility is expected to be between two and five years.

In accordance with the amended 2014 Environmental Impact Assessment (EIA) Regulations (2014). The proposed activity may trigger EIA Regulations (Government Notice No. 983 and 985) as amended (Government Notice No. 327 and 324) promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

Figure 1 Location of the proposed concrete tower manufacturing facility on the Remainder of portion 5 of the farm 854, near Jeffrey's Bay, Kouga Municipality.

1.3 Terms of Reference

The Scope of this Terrestrial Biodiversity and Plant Species Assessment is designed to meet the requirements the Protocol for the assessment and reporting of impacts on the Terrestrial Biodiversity and Terrestrial Plant Species Themes, and the Species Environmental Assessment Guideline.

1. Consult all relevant Biodiversity Assessments, including Bioregional Plans and other Conservation Assessments and Plans for the municipality, including the ECBCP, NEMBA List of Threatened Ecosystems, NEMPAA Protected Areas and Priority Areas for Expansion of Terrestrial Areas, Strategic Water Source Areas, Freshwater Ecosystem Priority Areas, and areas of Indigenous Forest as identified by the Dept of DFFE.
2. Identify the biodiversity features of the site, including CBAs, EPAs.
3. Identify the vegetation types and faunal habitat types using available online information, including VEGMAP and BMR.
4. Identify the threat status and sensitivities of the vegetation type.
5. Compile a list of Species of Conservation Concern (SCCs) by consulting various local experts and online databases, including SANBI .

6. Complete a site visit to determine the status of the vegetation and habitat types on the surrounding area of the site, including the presence of Species of Conservation Concern, Threatened of Protected Species (ToPS) and the presence of Alien Invasive Plants (AIPs).
7. Determine the ecological drivers, process and corridors of the site
8. Map the present vegetation types/habitats of the site.
9. Determine the Site Ecological Importance (SEI) of the sensitive receptors (vegetation types, plant SCCs) on site.
10. Determine the environmental impact on the biodiversity features, vegetation and plant SCCs of the site.
11. Make recommendations to mitigate the negative environmental impacts on the vegetation of the site.
12. Prepare a report indicating the current environmental sensitivities and Land Use guidelines for the site.

1.4 Assumptions and Limitations

A number of assumptions and limitations:

1. The information regarding the proposed development received from the client and EAP is deemed accurate.
2. The historical vegetation on site will be based on the surrounding remaining indigenous vegetation, which are assumed to be the same.
3. All reasonable measures will be done to compile a species list for the site, including consulting existing species databases and site visit. However, it is not guaranteed that the report will produce a comprehensive species list, as only a single site visit will be done for this assessment.
4. The initial field sampling was conducted in December 2022, in summer, which is not the ideal season to sample renosterveld vegetation. However, as it is obvious that the site has been historically cultivated and the species diversity is low due to the disturbance, the single site visit was deemed to be sufficient.

2 Methods

The terrestrial biodiversity assessment involved a desktop literature survey, as well a site assessment that took place on 5 December 2022. The initial site visit was conducted by Clayton Weatherall-Thomas. A comprehensive observed plant species list was produced and annotated according to the relevant legislation. All Threatened or Protected Species were identified, as well as any Invasive Alien Plants (AIPs).

The approach used in this terrestrial biodiversity assessment, inclusive of terrestrial plant species, is as follows:

2.1 Project Area of Influence (PAOI)

The Project Area of Influence is defined by the important ecosystem processes and functions that may be affected by the proposed development and its activities. The Species Environmental Assessment Guideline (2020) requires that the EAP and Specialists define the taxon-specific Project Area of Influence (PAOI) based on the spatial location of the project (footprint) and the potential extent of the impacts of the anticipated activities of the project. For this proposed development, the boundary of the site is identified as the PAOI.

2.2 Desktop Assessment

A desktop assessment of the potential plant species, vegetation types and sensitivities of the site based on data extracted from:

- Mucina and Rutherford's (2009) vegetation map and 2018 updated vegetation map and vegetation descriptions
- Baviaanskloof MegaReserve Biodiversity Assessment (Skowno 2007)
- National Environmental Management: Biodiversity Act (Act No. 10 of 2004): National List of Threatened Ecosystems (2011)
- Eastern Cape Biodiversity Conservation Plan (ECBCP) (2019)

2.3 Site Assessment

A site sensitivity verification (SSV) was done to determine whether an impact assessment or compliance statement will be necessary to meet the requirements of the protocols for the terrestrial biodiversity, plant species and animal species screening report themes. The site visit and subsequent investigations determined that intact vegetation occurred on site, but one plant Species of Conservation Concern (SCC) was identified. Therefore the report will meet

the requirements of a compliance statement for both the Terrestrial Biodiversity screening report theme, and the requirements of an impact assessment for the plant species theme.

The site assessment included a site investigation on foot:

- Describing habitats and species present. Most plants were identified down to their lowest possible taxonomic level using Plants of Southern Africa (POSA), accessed during January 2023, and the Red List of South African plants (SANBI 2017), accessed during January 2023
- Document and describing present land use, as well as evidence of past land use activities.
- A species list was created and annotated to indicate Species of Conservation Concern (SCCs) according to the SANBI Red List (2020.1); Threatened or Protected Species (ToPS) (2023) according to the National Environmental Management: Biodiversity Act (Act 10 of 2004); Protected tree species according to National Forests Act 84 of 1998 (NFA), the Nature and Environmental Conservation Ordinance of 1974, and declared Alien Invasive Plant (AIPs) species according the National Environmental Management: Biodiversity Act: Alien and Invasive Species List (2020).

- A vegetation map was produced illustrating the various vegetation communities identified
- A sensitivity map was produced to classify and illustrate the sensitivity of the various identified vegetation types
- Recommend possible measures to reverse, avoid, manage or mitigate possible environmental impacts.

2.4 Site Ecological Importance (SEI)

Site Ecological Importance (SEI) is a standardised methodology to spatially identify the importance of a development site for species (SANBI 2020). SEI is considered to be a function of the biodiversity importance (BI) of the receptor (e.g. species of conservation concern, the vegetation/fauna community or habitat type present on the site20) and its resilience to impacts (receptor resilience [RR]) as follows:

$$SEI = BI + RR$$

BI in turn is a function of conservation importance (CI) and the functional integrity (FI) of the receptor as follows:

$$BI = CI + FI$$

Conservation importance (CI) is evaluated in accordance with recognised established internationally acceptable principles and criteria for the determination of biodiversity-related value, including the IUCN Red List of Species, Red List of Ecosystems and Key Biodiversity Areas (KBA; IUCN [2016]). Conservation importance is defined here as: 'The importance of a site for supporting biodiversity features of conservation concern present, e.g. populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.'

Functional integrity (FI) of the receptor (e.g. the vegetation/ fauna community or habitat type) is defined here as the receptors' current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions. Simply stated, FI is: 'A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.'

Receptor resilience (RR) is defined here as: 'The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.'

The details of the methodology can be further studied in the Species Environmental Assessment Guidelines (SANBI 2020).

2.5 Impact Assessment Methodology

The Impact Assessment methodology was received from the EAP, namely Habitat Link Consulting.

Types of impacts

Different types of impacts may occur from the undertaking of an activity. The impacts may be positive or negative and may be categorized as being direct (primary), indirect (secondary) or cumulative impacts.

Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious.

Indirect impacts of an activity are indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply

water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (e.g. discharges of nutrients and heated water to a river that combine to cause algal blooms and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

Factors that should be taken into account in impact prediction and assessment include:

- the nature of the impact i.e. positive, negative, direct, indirect, cumulative;
- the magnitude of the impact i.e. severe, moderate, low;
- the extent and location of the impact in terms of the area covered, volume distribution, etc;
- when the impact will occur i.e. during construction, operation and/or decommissioning as well as whether the impact will occur immediately or be delayed;
- the duration of the impact i.e. short term, long term, intermittent or continuous;
- the extent to which the impact can be reversed or not;
- the likelihood or probability of the impact actually occurring ; and
- the significance of the impact on a local, regional or global level

Table 1 Impact Assessment Methodology and categories.

CRITERIA	CATEGORIES	EXPLANATION
Overall nature	**Negative**	Negative impact on affected biophysical or human environment.
	Positive	Benefit to the affected biophysical or human environment.
Type	**Direct**	Are caused by the action and occur at the same time and place.
	Indirect or Secondary	Are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. May include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

CRITERIA	CATEGORIES	EXPLANATION
	Cumulative	Is the impact on the environment, which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Extent: Spatial Extent over which impact may be experienced (E)	**Site (1)**	Immediate area of activity incorporating a 50m zone which extends from the edge of the affected area.
	Local (2)	Area up to and/or within 10km of the 'Site' as defined above.
	Regional (3)	Entire community, drainage basin, landscape etc.
	National (4)	South Africa.
Duration of impact (D)	**Very Short-term (1)**	Impact would last for the duration of activities such as land clearing, land preparation, fertilising, weeding, pruning and thinning. Quickly reversible. (0–1 years).
	Short-term (2)	The lifetime of the impact will be of a short duration (2-5 years).
	Medium-term (3)	Impact would last for the duration of project activity, such as harvesting. Reversible over time (>5 - <15 years).
	Long-term (4)	Impact would continue beyond harvesting/ extraction of the trees (> 15 years).
	Permanent (5)	Impact would continue beyond decommissioning.
Severity (S)	**Negative**	Based on separately described categories examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning or slightly alters the environment itself. • 0 is small and will have no meaningful effect on the environment; • 2 is minor and will not result in an impact on processes; • 4 is low and will cause a slight impact on processes; • 6 is moderate and will result in processes continuing but in a modified way; • 8 is high (processes are altered to the extent that they temporarily cease); • 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
	Positive	
Reversibility (R)	**Completely Reversible (0)**	The impact can be completely reversed with the implementation of correct mitigation and rehabilitation measures.
	Partly Reversible (0.5)	The impact can be partly reversed providing mitigation measures are implemented and rehabilitation measures are undertaken
	Irreversible (1)	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures.
Irreplaceable Loss (I)	**Resource will not be lost (0)**	The resource will not be lost or destroyed provided mitigation and rehabilitation measures are implemented.

CRITERIA	CATEGORIES	EXPLANATION
	Resource may be partly destroyed (0.5)	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented.
	Resource cannot be replaced (1)	The resource cannot be replaced no matter which management or mitigation measures are implemented.
Probability of occurrence (P)	**Unlikely (1)**	<40% probability. Very improbable (probably will not happen).
	Possible (2)	40% probability. Improbable (some possibility, but low likelihood).
	Probable (3)	>70% probability. Probable (distinct possibility).
	Highly Probable (4)	>80 %. Highly probable (most likely).
	Definite (5)	>90% probability. Definite (impact will occur regardless of any prevention measures).
Mitigation Potential [i.e. the ability to manage or mitigate an impact given the necessary resources and feasibility of application.]	**High or Completely Mitigatible**	Relatively easy and cheap to manage. Specialist expertise or equipment is generally not required. The nature of the impact is understood and may be mitigated through the implementation of a management plan or through 'good housekeeping'. Regular monitoring needs to be undertaken to ensure that any negative consequences remain within acceptable limits. The significance of the impact after mitigation is likely to be low or negligible.
	Moderate or Partially Mitigatible	Management of this impact requires a higher level of expertise and resources to maintain impacts within acceptable levels. Such mitigation can be tied up in the design of the Project. The significance of the impacts after mitigation is likely to be low to moderate. May not be possible to mitigate the impact entirely, with a residual impact(s) resulting.
	Low or Unmitigatible	Will not be possible to mitigate this impact entirely regardless of the expertise and resources applied. The potential to manage the impact may be beyond the scope of the Project. Management of this impact is not likely to result in a measurable change in the level of significance.
Impact Significance [Dur+Ext+R+I+ Sev] X Probability	**Negligible (0-22)**	Risk/impact may result in very minor alternations of the environment and can easily be avoided by implementing appropriate mitigation measures and will not have an influence on decision-making
	Low (>22 ≤ 45)	Risk/impact may result in very minor alternations of the environment and can easily be avoided by implementing appropriate mitigation measures and will not have an influence on decision-making
	Moderate **(>45 ≤ 68.5)**	Risk/impact will result in moderate alternation of the environment and can be reduced or avoided by implementing appropriate mitigation measures and will only have an influence on decision-making if not properly mitigated
	High (>68.5 ≤ 90)	Risk/impact will result in high alternation of the environment even with the implementation of appropriate mitigation measures and will have an influence on decision-making

CRITERIA	CATEGORIES	EXPLANATION
	Very High) (>90 - 105)	Risk/impact will result in major alternation of the environment even with the implementation of appropriate mitigation measures and will have an influence on decision-making

3 Study Site Description

3.1 Vegetation Type

3.1.1 National Vegetation Assessment

The Vegetation Map for South Africa, Lesotho and Swaziland (VegMap) by Mucina & Rutherford (2006) is most widely accepted classification of South Africa's vegetation. It includes information on the conservation status and indicator species for each recognised vegetation type in the country. This biodiversity planning product also forms the basis for the NEM Biodiversity Act list of Threatened Ecosystems. The 2018 (SANBI 2006-2018) version of the VegMap has recently been released. This version resulted in a comprehensive re-classification of the Thicket biome, affecting the vegetation types recorded on site (Figure 2).

The site is situated in **Humansdorp Shale Renosterveld,** a vegetation type that occurs on clays and loams derived from the Ceres Subgroup of the Bokkeveld Group shales on the coastal forelands from Humansdorp to Port Elizabeth. It is composed of low, medium dense graminoid, dense cupressoid-leaved shrubland, dominated by renosterbos. Dominant species are indicated in Table 1. There are both grassland and shrubland forms of the renosterveld present, probably depending on grazing and fire regimes. The vegetation type is classified as Endangered, as 61% has been previously transformed, mostly due to agriculture. Approximately 6% of the vegetation type is conserved, with the conservation target being 29%.

Table 2 List of plant species in Algoa Sandstone Fynbos. (d=dominant, e=South African endemic, et=possibly endemic to a vegetation type).

Growth Form	Species
Trees	Succulent Tree: Aloe africana
Shrubs	Tall Shrubs: *Cliffortia strobilifera, Metalasia densa, Morella serrata*. Low Shrubs: *Elytropappus rhinocerotis* (d), *Helichrysum anomalum* (d), *Oedera genistifolia*, (d), *Anthospermum galioides* subsp. *galioides*, *Barleria pungens, Chaetacanthus setiger*, *Clutia rubricaulis*, *Euryops munitus, Felicia filifolia* subsp. *filifolia*, *Hermannia flammea*, *Indigofera denudata*, *I. heterophylla*, *Lotononis acuminata*, *Metalasia aurea, Muraltia alopecuroides*, *Passerina rubra*, *Pelargonium sidoides, Tephrosia capensis*.
Herbs	Herbaceous Climber: *Thunbergia capensis.* Herbs: *Arctotis acaulis*, *Berkheya heterophylla* var. *radiata*, *Centella asiatica*[W], *Gazania linearis*, *Gerbera piloselloides*, *Helichrysum nudifolium*, *Hibiscus pusillus*, *Senecio othonniflorus*. Geophytic Herbs: *Bobartia orientalis*, *Geissorhiza heterostyla*, *Ledebouria cooperi, Oxalis punctata*, *O. smithiana*, *Satyrium membranaceum*.
Graminoids:	Graminoids: *Eustachys paspaloides* (d), *Themeda triandra* (d), *Aristida junciformis* subsp. *galpinii*, *Brachiaria serrata*, *Cymbopogon marginatus*, *Cynodon dactylon*, *Eragrostis capensis*, *E. curvula*, *Ficinia nigrescens*, *F. tristachya, Merxmuellera disticha*, *Paspalum dilatatum*, *Pentaschistis pallida, Restio tetragonus*, *Sporobolus africanus*, *Tribolium hispidum*, *Tristachya leucothrix*.

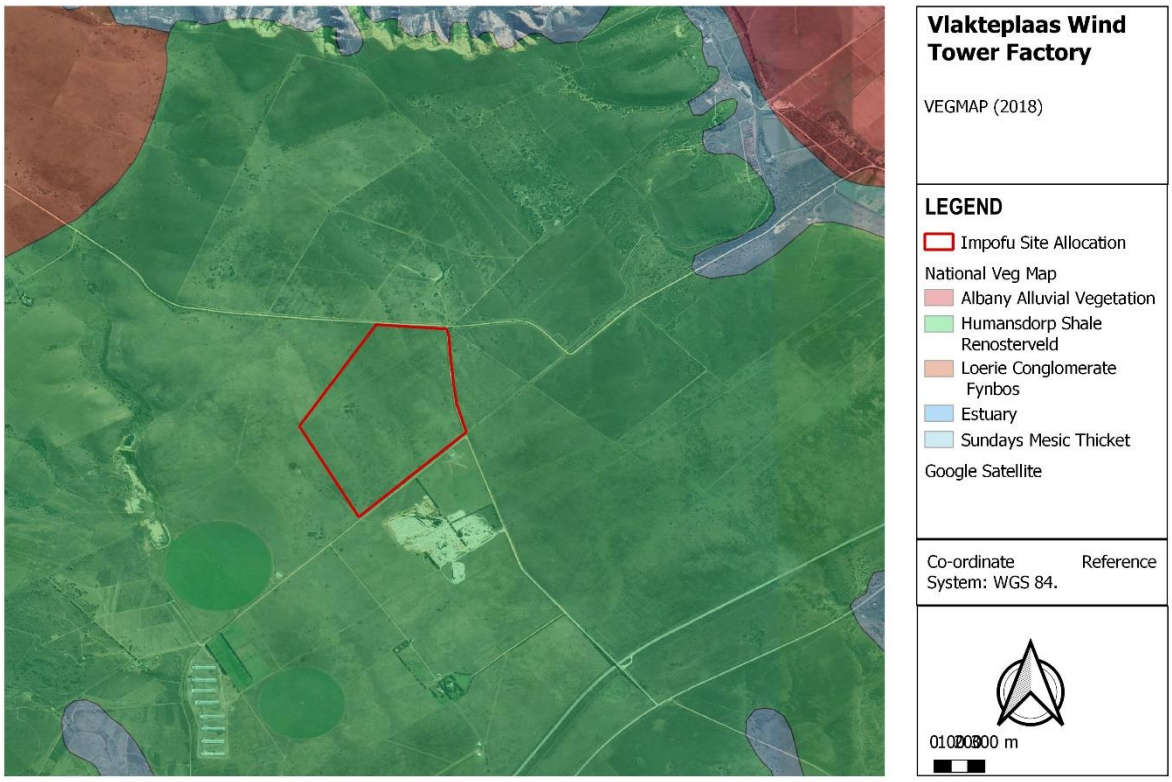


Figure 2 The National Vegetation Map of South Africa (SANBI 2006-2018).

3.1.2 Regional Context

3.1.2.1 Eastern Cape Biodiversity Conservation Plan (ECBCP) (2019)

The Eastern Cape Biodiversity Conservation Plan (ECBCP 2019) is a regional systematic biodiversity conservation plan for the Eastern Cape, gazetted October 2020. Its aim is to avoid further loss or degradation of biodiversity priority areas and ecological support areas. The plan sets certain development guidelines based on calculated biodiversity score for different landscapes. The terrestrial areas covered by the plan are designated as Critical Biodiversity 1 or 2 areas, each with specific development recommendations. A complete revision of the ECBCP was published in 2019. In terms of Aquatic CBAs identified by the ECBCP, the appointed aquatic specialist will include it in their assessment.

The development site contains both a CBA2 and ESA1, identified as drainage lines. The CBA2 drainage line runs through the centre of the site, whereas the ESA1 occurs in the west. Industry, including manufacturing, is not a recommended land use for both CBA2 and ESA1.

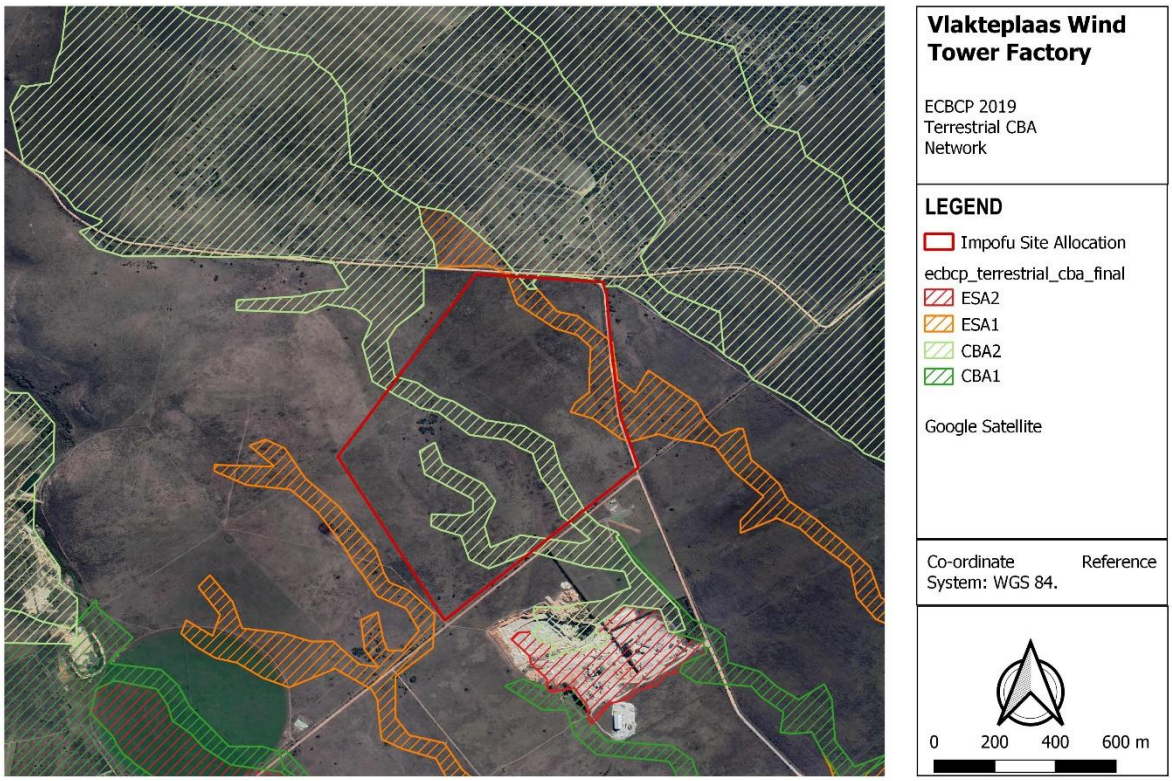


Figure 3 Map of Critical Biodiversity Areas (CBA) and Ecological Supports Areas (ESA) on site, as identified by the ECBCP (2019).

3.1.2.2 Baviaanskloof Megareserve Biodiversity Assessment (Skowno 2007)

The Baviaanskloof region in the Eastern Cape was identified as on of the three priority areas by the Cape Action Plan for People and the Environment (CAPE). The Baviaanskloof Megareserve Project seeked to expand and consolidate the existing protected area and create a mega-reserve in which the conservation of the regions biodiversity and natural resources is aligned with rural and agricultural development needs.

The vegetation type identified on site is Kabeljous Renoster Thicket, a Subtropical Thicket mosaic (Vlock & Euston-Brown 2002). Common species in the Gamtoos Valley Thicket bushclumps are *Aloe africana, Capparis sepiaria*, *Cotyledon orbiculata, Ehretia rigida, Euclea undulata, Gymnosporia polyacantha, Ptaeroxylon obliquum, Putterlickia pyracantha, Rhus glauca, Rhus pterota, Sarcostemma viminale* and *Scutia myrtina*. The matrix vegetation consists of a renosterveld vegetation dominated by Elytropappus rhinocerotis, as well as *Themeda trianda* and *Aspalathus nivea* after fire.

As part of the project, a conservation assessment was done (Skowno 2007). The assessment identified CBA 1, CBA2 and CBA 3 areas, each with their own biodiversity land management

class. CBA 1 should be managed as natural landscapes with no loss of biodiversity, CBA 2 as near natural landscapes where no transformation of natural landscapes should be permitted, and CBA 3 as functional landscapes, allowing sustainable development where natural wetlands and riparian areas are buffered and conserved.

A small portion in the north-east corner of the site, of approximately 3.5 ha, is a CBA 2 area (Figure 4). No further loss of indigenous vegetation should be allowed. However, it must be noted that this area is a small fragment dissected by a gravel road, and is unsustainable as a conservation area in itself.

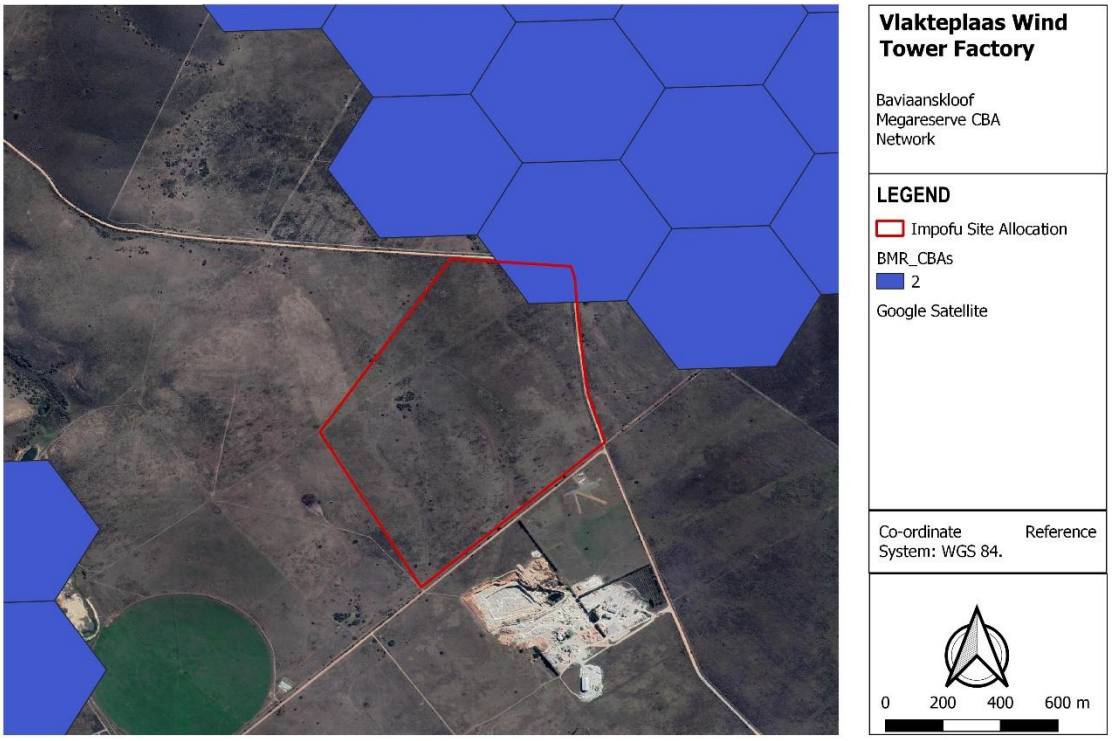


Figure 4 Map of the development site indicating a CBA2 within the boundaries of the site as identified by the Baviaanskloof Megareserve Conservation Assessment (Skowno 2008).

3.2 National List of Threatened Ecosystems (2011)

The NEMBA (Act 10 of 2004) provides for listing of threatened or protected ecosystems, in one of four categories: Critically Endangered, Endangered, Vulnerable or Protected. Threatened ecosystems are listed in order to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve

sites of exceptionally high conservation value (SANBI, Biodiversity Geographic information Systems (BGIS)). Importantly, any land-use change application occurring within an ecosystem listed as Critically Endangered or Endangered in terms of the Biodiversity Act will automatically require environmental authorisation. Humansdorp Shale Renosterveld is an Endangered vegetation type, and no further loss if intact vegetation should occur.. As a Threatened Ecosystem, clearing of more than 300 m^2 of vegetation will trigger the need for an Environmental Authorisation (EA).

3.3 Protected Areas

Protected areas are areas of land or sea that are protected by law and managed mainly for biodiversity conservation (DEA 2016). Protected areas are declared under the National Environmental Management: Protected Areas Act (Act 57 of 2003). The Protected Areas Act provides for several categories of protected areas, including special nature reserves, national parks, nature reserves, marine protected areas and protected environments. Development is regulated within protected areas, as well as buffer areas around them.

The National Protected Area Expansion Strategy (NPAES) presents a 20-year strategy for the expansion of protected areas in South Africa, as they currently do not adequately conserve a representative portion of South Africa's biodiversity (DEA 2016). NPAES identifies priority areas where the expansion of protected areas should take place. The Eastern Cape Protected Areas Expansion Strategy (ECPAES) identifies priority areas for the expansion of protected areas on a provincial level, for implementation by Eastern Cape Parks and Tourism Agency (ECPTA).

The proposed development site does not occur within or near to any protected area, or near to an area identified by NPAES (Figure 5). However, a portion of the property does occur within the Greater Baviaanskloof priority area as identified by the ECPAES. The site is situated within the Garden Route Biosphere Reserve, and the implications of that needs to be further explored.

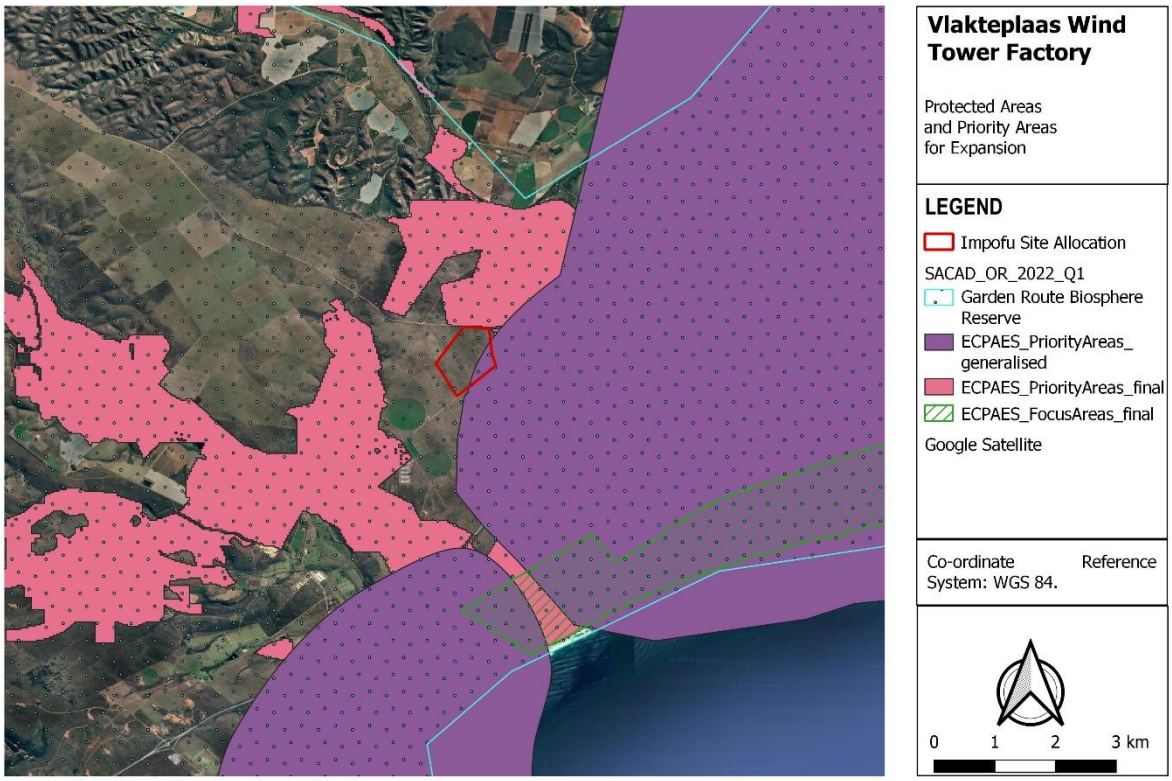


Figure 5 Protected Areas (SAPAD Q4 2022), including Conservation Areas such as the Garden Route Biosphere Reserve, and Eastern Cape Protected Area Expansion Strategy (ECPAES) priority areas (2010).

3.4 Strategic Water Source Areas

Strategic Water Source Areas (SWSAs) are defined as areas of land that either: (a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b) (Le Maitre *et al.* 2018). They include transboundary Water Source Areas that extend into Lesotho and Swaziland. A number of river systems in the Eastern Cape, such as the Gamtoos, Keiskamma, Mbashe and the Mzimvubu, are fed by upper catchments which experience a disproportionately high rainfall and are considered “water factories” of South Africa (ECBCP 2019). SWSAs are mapped at a national level and represent areas where 50% of South Africa’s rain falls over less than 8% of the land area. Initiatives aimed at managing these SWSAs for enhanced downstream water quality and quantity are underway. Groundwater Strategic Areas with high rates of recharge were identified as well, and cover 9% of SA. SWSAs will be included in the appointed aquatic specialist’s assessment.

3.5 National Freshwater Ecoystem Priority Areas

The National Freshwater Ecosystem Priority Areas (NFEPA) project is a collaborative effort aimed at identifying Freshwater Ecosystem Priority Areas (FEPAs) to meet national biodiversity goals for freshwater ecosystems, and to develop a basis for enabling effective implementation of measures to protect FEPAs, including freeflowing rivers (Nel *et al.* 2011).

NFEPA project identified River FEPAs and associated sub-quaternary catchments, wetland and estuary FEPAs, wetland clusters, as well as Phase 2 FEPA and associated sub-quaternary catchment areas. Fish Sanctuaries (FishSA), together with Fish Migration Areas and Upstream Management Areas, were defined to conserve populations of threatened freshwater fish species in South Africa.

NFEPAs will be included in the appointed aquatic specialist's assessment.

3.6 Forest Patches

Forest is protected under the National Forest Act, Act 84 of 1998. A permit is required to disturb forest. Patches of forest have been mapped at various scales in South Africa. There are no forest patches on the proposed development site. However, there are tree species that are protected in terms of the NFA for which a permit must be obtained prior to their removal (if required).

3.7 Species of Conservation Concern

3.7.1 Conservation Status

South Africa uses the internationally endorsed IUCN Red List Categories and Criteria in the Red List of South African plants (SANBI 2020). This scientific system is designed to measure species' risk of extinction. The purpose of this system is to highlight those species that are most urgently in need of conservation action.

Due to its strong focus on determining risk of extinction, the IUCN system does not highlight species that are at low risk of extinction, but may nonetheless be of high conservation importance. Because the Red List of South African plants is used widely in South African conservation practices such as systematic conservation planning or protected area expansion, we use an amended system of categories designed to highlight those species that are at low risk of extinction but of conservation concern (Figure 6).

- Extinct (EX) A species is Extinct when there is no reasonable doubt that the last individual has died. Species should be classified as Extinct only once exhaustive surveys throughout the species' known range have failed to record an individual.
- Extinct in the Wild (EW) A species is Extinct in the Wild when it is known to survive only in cultivation or as a naturalized population (or populations) well outside the past range.
- Regionally Extinct (RE) A species is Regionally Extinct when it is extinct within the region assessed (in this case South Africa), but wild populations can still be found in areas outside the region.
- Critically Endangered, Possibly Extinct (CR PE) Possibly Extinct is a special tag associated with the category Critically Endangered, indicating species that are highly likely to be extinct, but the exhaustive surveys required for classifying the species as Extinct has not yet been completed. A small chance remains that such species may still be rediscovered.
- Critically Endangered (CR) A species is Critically Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Critically Endangered, indicating that the species is facing an extremely high risk of extinction
- Endangered (EN) A species is Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Endangered, indicating that the species is facing a very high risk of extinction.
- Vulnerable (VU) A species is Vulnerable when the best available evidence indicates that it meets at least one of the five IUCN criteria for Vulnerable, indicating that the species is facing a high risk of extinction.
- Near Threatened (NT) A species is Near Threatened when available evidence indicates that it nearly meets any of the IUCN criteria for Vulnerable, and is therefore likely to become at risk of extinction in the near future.
- Critically Rare A species is Critically Rare when it is known to occur at a single site, but is not exposed to any direct or plausible potential threat and does not otherwise qualify for a category of threat according to one of the five IUCN criteria.

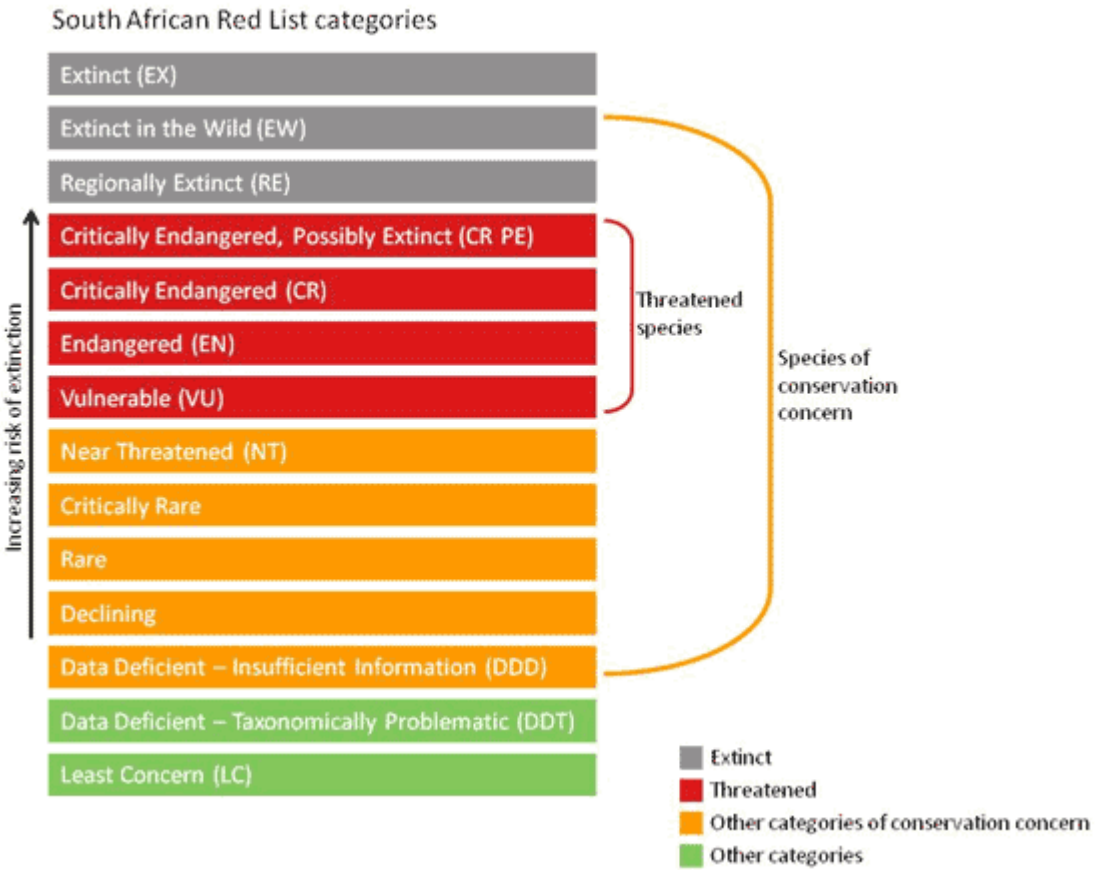


Figure 6 Threatened Species categories (SANBI 2020).

- Rare A species is Rare when it meets at least one of four South African criteria for rarity, but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to one of the five IUCN criteria. The four criteria are as follows:
    - Restricted range: Extent of Occurrence (EOO) <500 km2, OR
    - Habitat specialist: Species is restricted to a specialized microhabitat so that it has a very small Area of Occupancy (AOO), typically smaller than 20 km2, OR
    - Low densities of individuals: Species always occurs as single individuals or very small subpopulations (typically fewer than 50 mature individuals) scattered over a wide area, OR
    - Small global population: Less than 10 000 mature individuals.
- Least Concern A species is Least Concern when it has been evaluated against the IUCN criteria and does not qualify for any of the above categories. Species classified as Least Concern are considered at low risk of extinction. Widespread and abundant species are typically classified in this category.

- Data Deficient - Insufficient Information (DDD) A species is DDD when there is inadequate information to make an assessment of its risk of extinction, but the species is well defined. Listing of species in this category indicates that more information is required and that future research could show that a threatened classification is appropriate.
- Data Deficient - Taxonomically Problematic (DDT) A species is DDT when taxonomic problems hinder the distribution range and habitat from being well defined, so that an assessment of risk of extinction is not possible.
- Not Evaluated (NE) A species is Not Evaluated when it has not been evaluated against the criteria. The national Red List of South African plants is a comprehensive assessment of all South African indigenous plants, and therefore all species are assessed and given a national Red List status. However, some species included in Plants of southern Africa: an online checklist are species that do not qualify for national listing because they are naturalized exotics, hybrids (natural or cultivated), or synonyms. These species are given the status Not Evaluated and the reasons why they have not been assessed are included in the assessment justification.

Threatened species are species that are facing a high risk of extinction. Any species classified in the IUCN categories Critically Endangered, Endangered or Vulnerable is a threatened species. Species of conservation concern (SCC) are species that have a high conservation importance in terms of preserving South Africa's high floristic diversity and include not only threatened species, but also those classified in the categories Extinct in the Wild (EW), Regionally Extinct (RE), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient - Insufficient Information (DDD).All South African plant species have been rated, according to their extinction threat, using that have been adapted by SANBI.

A number of data sources exist to identify the location of SCCs. The Threatened Species Programme (TSP), has a database of locations of SCCs. This is based on herbarium records, as well as recent searches by experts, and volunteer programmes such as the Custodians of Rare and Endangered Wildflowers (CREW). iNaturalist, a citizen science electronic platform for posting pictures of species in order for them to be identified by experts, is a source as well.

The Probability of Occurrence (POO) is rated according to the availability of suitable habitat, and whether the species has been previously recorded in the general vicinity of the assessed area. Data for habitat requirements was based on the species descriptions of the Red List (SANBI 2020.1), as well as Bredenkamp 2019). The Probability of Occurrence was rates as:

- Low: no described preferred habitat occurs within the PAOI, and no identification records within the vicinity of the PAOI; or charismatic (easy to identify) species whose preferred habitat has been comprehensively searched but species not located
- Medium: habitat requirements are unknown or not clear but species recorded within 20 kms of PAOI; or degraded habitat occurs within PAOI; or habitat occurs within PAOI but no idenfication records within the vicinity of the PAOI
- High: habitat occurs within the PAOI, and identification records occur within the vicinity of the PAOI
- Confirmed: species was identified within the PAOI.

No Plant SCCs were identified as potentially occurring within the project site by the online screening tool report. The surrounding intact Humansdorp Shale Renosterveld has a high number of SCCs, but the probability of these species occurring on site is low, based on the condition of the site.

4 Ecological Assessment

4.1 Terrestrial Ecology

The ecological functioning of the site has been severely disturbed in the past by the cultivation, resulting in the loss of natural communities and ecosystem functioning. The site has recovered to the point where it is a functional landscape, with functions such as soil production, pollination and drainage being re-established, although it remains disrupted by cattle grazing. However, the connectivity of the sight is severely compromised as it has lightly used gravel roads on three sides and is surrounded by agricultural land. A railway and hard rock rock quarry occurs to the south, and this is particularly disruptive for the ephemeral drainage lines.

All drainage lines on site are currently designated as CBA or ESA. However, they cannot be considered a CBA as they do not consist of intact vegetation. Neither can they be considered functional ESAs as their downstream flow is disrupted either by the neighbouring quarry or road where no culvert exists. It is unlikely that the quarry will be rehabilitated to a state where the functionality of the ephemeral drainage lines is restored.

The effectiveness of conserving the CBAs and ESA on site is low due to the disruption of the ecological functioning of the drainage lines. Therefore the site is considered to have a low ecological sensitivity, or as per the terrestrial biodiversity assessment protocol.

4.2 Vegetation Community Composition

Vegetation on site

The majority of the Remainder of Portion 3 of the farm 854 has been cultivated in the past, and there is no intact Humansdorp Shale Renosterveld (HSR) left. The majority of the plant species on site are indigenous and the site can be considered to meet the definition of indigenous vegetation as per the EIA Regulations of 2014 (as amended). However, the Species Environmental Assessment Guidelines (SANBI 2020) describes natural habitat as excluding transformed habitat within a defined ecosystem that may be only partially restored. In this case, the plant community is not representative of intact HSR, and the site cannot be considered such.

The vegetation on site is a secondary pioneer shrubland (Figure 7), dominated by renosterbos *Elytropappus rhinocerotis,* similar to intact renosterveld. However renosterbos is a widespread species that often occurs in other vegetation types as well, and often indicates high levels or current or past disturbance. It is considered a pioneer and dominates previously disturbed areas, including old fields. For HSR to be considered intact, a high diversity of understorey succulents and geophytes should be present, as these represent an important aspect of the vegetation type's species composition, and are often endemic or threatened.

Apart from renosterbos, the site is dominated by indigenous shrubs such as *Oedera genistifolia* and *Senecio chrysocoma* and the succulent *Crassula tetragona* subsp. *acutifolia*. Other shrubs include *Aspalathus* spp., *Barleria pungens, Berkheya heterophylla, Chrysocoma ciliata, Exomis microphylla, Felicia filifolia, Helichrysum* spp., *Jamesbrittenia foliolosa, Metalasia* spp., *Rhynchosia ciliata, Selago glomerata* and *Wahlenbergia* spp.. There are few other succulents (*Aizoon glinoides, Drosanthemum hispidum, Delosperma gratiae, Galenia pubescens, Mesembryanthemum aitonis* and *Ruschia congesta*), and geophytes (*Ornithogalum* sp., *Babiana* sp.). The dominant grass on site is *Cynodon dactylon,* with *Ehrharta calycina, Eragrostis curvula, Fingerhuthia africana, Sporobolus africanus* and *Tenaxia disticha* also present. Many of these are pioneer species, and become dominant in previously disturbed vegetation or under heavy grazing.

One relatively degraded and overutilized Thicket patch occurs on site, along with a few smaller bushclumps, with little conservation value. These bushclumps are dominated by trees and tall shrubs (*Azima tetracantha, Canthium spinosum, Lycium spp., Euclea undulata, Searsia incisa* var. *effusa, S. pterota, Sideroxylon inerme* subsp. *inerme*), as well as the succulent *Aloe africana*. A number of climbers occur in the buschlump, including *Cynanchum viminale* and

Senecio angulatus. Little undergrowth, including herbs and grasses occur, indicating severe localized grazing disturbance.

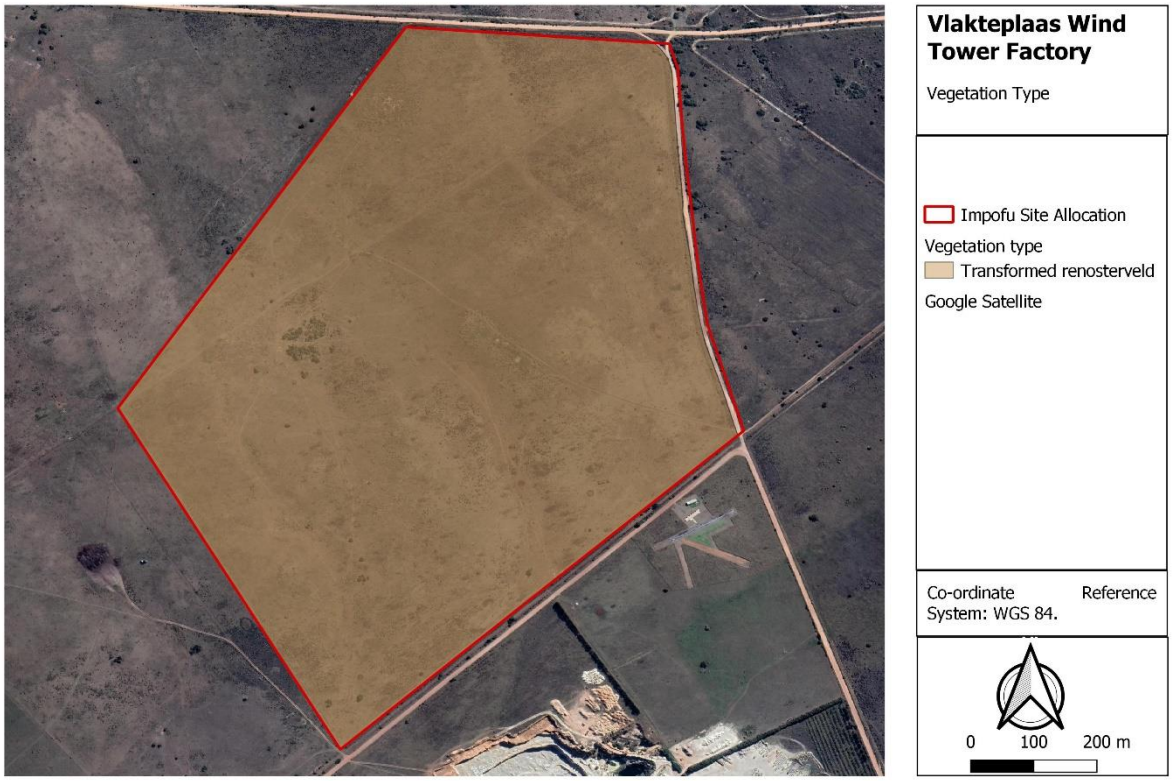


Figure 7 The Vegetation type on the assessed site is Transformed Renosterveld.

Plate 1 Photos of the proposed concrete tower factory near Jeffrey's Bay. Top: The degraded drainage line on site mapped as a CBA. Middle: Transformed renosterveld with a degraded thicket bushclump in the background. Bottom: A neighbouring railway, gravel road, quarry and landing strip in the background.

4.3 Species of Conservation Concern

4.3.1 Plant Species

One Species of Conservation Concern (SCC) was confirmed as occurring on site. *Gymnosporia elliptica,* a member of the Celastraceae family, is a short resprouting shrub that is able to tolerate disturbance well. It is distributed on the coastal planes between Humansdorp and Gqeberha (formerly Port Elizabeth) in fynbos, thicket and renosterveld vegetation, including mosaics (Raimondo & Turner 2007). It is relatively common and widespread in the region, but it has become threatened by loss of habitat as a result of agriculture, forestry and urban expansion. Pollution, invasive alien species and habitat degradation by incorrect land management are other direct impacts.

G. elliptica is classified as Vulnerable under category B, namely the loss of habitat (Raimondo & Turner 2007). It is known from less than 10 locations and has an EOO of 2 300 km^2. Two adult individuals were recorded along one of the drainage lines of site. It seems to tolerate current grazing activities well. The habitat on site is degraded, and it is uncertain whether these individuals survived previous ploughing activities, or have re-established since them.

The loss of two individuals and degraded habitat is unlikely to change the threat status of *G. elliptica*. However, the SANBI guidelines for threatened species recommend that no further loss of intact habitat occurs for Vulnerable species under Category B. A 50 m buffer is recommended to protect the individuals on site.

4.4 Threatened or Protected Species

The following legislation was consulted to determine the whether a species is protected by Legislation:

- National Environmental Management: Biodiversity Act 10 of 2004 – Publication of Lists of Species that are Threatened or Protected, Activities that are Prohibited and Exemption from Restriction (GNR 151 of 2007) as amended;
- Nature and Environmental Conservation Ordinance of 1974; and
- National Forests Act No. 84 of 1998 – List of Protected Trees (published 8 September 2017).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- (CITES)

There are a total of 10 Threatened or Protected Species recorded on site, protected under various legislation (see Table 3). No species were listed as Threatened or Protected under NEMBA.

One species, namely milkwood (*Sideroxylon inerme* subsp. *Inerme*) is protected by the National Forest Act of 1998. This species requires a permit from the Department of Forestry, Fisheries and Environment, Forestry Division for its removal.

Nine plant species are protected under NECO (Table 4). These species are common and are not threatened by extinction (i.e. Least Concern). All species listed as Protected under Schedule 4 require a permit from DEDEAT for their removal.

4.5 Alien Invasive Plants

It is the duty of a landowner to remove or manage all Alien Invasive Species (AIS) on their property. AIS are defined by the National Environmental Management: Biodiversity Act, Act 10 of 2004: Alien and Invasive Species Lists of 2020. However, no invasive plant species were recorded on site.

Table 3 List of Species of Conservation Concerns, as well as Threatened and Protected Species, that may occur on the proposed development site.

FAMILY	SPECIES	Threat status	NFA	NECO	ToPs
Aizoaceae	*Delosperma gratiae* L.Bolus	LC		Sch 4	
Aizoaceae	*Drosanthemum hispidum* (L.) Schwantes	LC		Sch 4	
Aizoaceae	*Mesembryanthemum aitonis* Jacq.	LC		Sch 4	
Aizoaceae	*Ruschia congesta* (Salm-Dyck) L.Bolus	LC		Sch 4	
Apocynaceae	*Cynanchum viminale* (L.) Bassi subsp. *viminale*	LC		Sch 4	
Apocynaceae	*Pachycarpus grandiflorus* (L.f.) E.Mey. subsp. *grandiflorus*	LC		Sch 4	
Asphodelaceae	*Aloe africana* Mill.	LC		Sch 4	
Asphodelaceae	*Aloe maculata* All. subsp. *maculata*	LC		Sch 4	
Iridaceae	*Babiana* sp.	LC		Sch 4	
Sapotaceae	*Sideroxylon inerme* L. subsp. *inerme*	LC	x		

4.6 Ecological Sensitivity & Site Ecological Importance

The sensitivity map was derived by identifying the conservation and biodiversity priorities of the site, and groundtruthing them with a site visit. The desktop assessment considered the following conservation tools and plans:

- Online Screening Tool Report
- ECBCP (CBAs, EPAs, PAs)
- BMR Biodiversity Assessment
- NEMBA Threatened Ecosystems

Sections of the site are considered CBA or ESA, although these are degraded and will not positively contribute to the conservation of the threatened vegetation type, or to the preservation of ecological function. However, it is recommended that all drainage lines are avoided if possible.

As an SCC was present on site, the SEI methodology was utilised to fulfil the requirements of the Species Environmental Impact Assessment Guidelines and Plant Species theme protocol. The majority of the site has a Low sensitivity, due to the transformed nature of the vegetation and reduced connectivity (Table 4). A 50 m buffer around the two individuals of *G. elliptica* on site have a High sensitivity and should be avoided (Figure 8).

Table 4 Site Ecological Importance of the proposed development site.

Habitat	Conservation Importance	Functional Integrity	Receptor Resilience	SEI
Transformed HSR	Medium High likelihood of Threatened species present, including *Dioscorea sylvatica,* as well as NT species present >50% Intact	Medium Semi intact area of an Endangered vegetation type Limited connectivity and the presence of local dirt roads Major historical (cultivation) and minor current (grazing) disturbances	High Presence of SCC indicates species that can tolerate disturbance, including grazing	Low BI= Medium RR= High

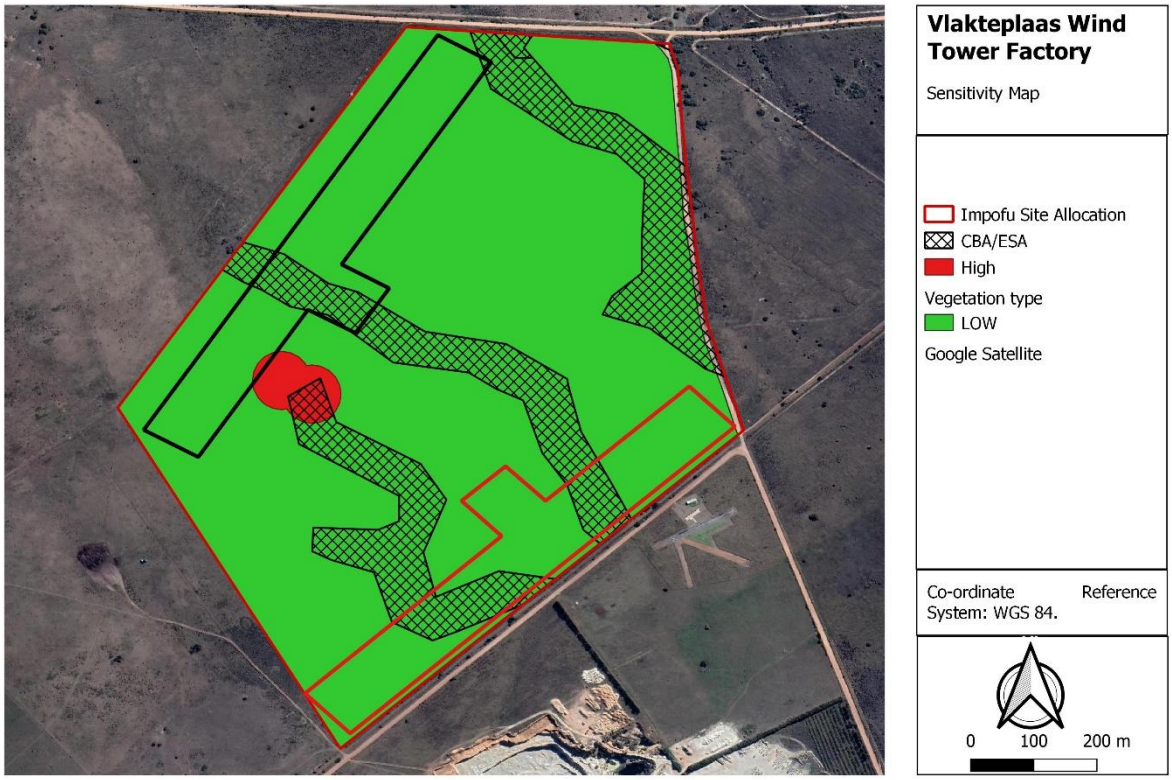


Figure 8 Sensitivity map of the Nordex Concrete Tower Factory near Jeffrey's Bay, Kouga Municipality.

5 Impact Assessment

The Online Screening Tool Report identified the site as having a VERY HIGH Terrestrial Biodiversity sensitivity and a MEDIUM plant species sensitivity. However, the site assessment identified the site to be completely transformed, with no natural vegetation or faunal habitat for SCCs remaining. Therefore, the sensitivity of the site, in terms of the terrestrial biodiversity protocols, is LOW, and no impact assessment will be done for the site. This report will meet the requirements of a compliance statement for this theme. However, the presence of one plant SCC results in the requirement for an impact assessment on plant species.

5.1 Potential Impacts

The largest potential impact of the proposed development is the loss of loss of habitat for SCCs. The possible impacts of this development on the proposed site were rated according to HLC's Impact Rating Methodology. The potential impact will mostly be limited to the footprint of the concrete wind tower factory. Access roads and other supporting infrastructure may result in cleared vegetation as well. The facility will be decommissioned in 2-5 years. Recommendations are given below, to avoid and/or reduce the significance of these impacts in sensitive areas mapped on site. The potential impacts will also be considerably more significant than impacts during operation and decommissioning phase.

Potential impacts include:

- Direct and Cumulative loss of a plant SCC during construction phase;
- Direct and Cumulative loss of SCC habitat during construction phase;
- Direct and Indirect anthropogenic ecological disturbance to an SCC population and its habitat during construction, operation phase and decommissioning phase;
- Indirect increase in Alien Invasive Species (AIS) due to the disturbance of the soil and vegetation due to construction and decommissioning activities.

5.2 Alternatives

Two site alternatives have been provided. Both sites are approximately 9.5 ha in size. One alternative is situated in the south of the site directly next to the neighbouring railway line and quarry (Figure 9). The second alternative is located in the north, along the north-eastern boundary.

5.3 Construction Phase Impacts

5.3.1 Direct loss of *Gymnosporia elliptica* (Vu)

There are two individuals of *Gymnosporia elliptica,* a Vulnerable species on site. The construction of the concrete wind tower factory will result in the clearance of the vegetation on site within the footpring of the facility. The northern alternative (2) has a direct impact on the 50 m buffer area of the individuals of *G. elliptica*, including 643 m^2 of it, and will have a larger impact on the species.

<table>
<tr><td colspan="9">Direct loss of the Vulnerable Gymnosporia elliptica sub-population due to construction activities</td></tr>
<tr><td colspan="2">NATURE: NEGATIVE</td><td colspan="4">PHASE: CONSTRUCTION</td><td colspan="3">TYPE: DIRECT, CUMULATVE</td></tr>
<tr><td rowspan="2"></td><td colspan="3">Alternative 1</td><td colspan="4">Alternative 2</td></tr>
<tr><td colspan="2">SIGNIFICANCE</td><td>WITH MITIGATION</td><td colspan="2">SIGNIFICANCE</td><td colspan="2">WITH MITIGATION</td></tr>
<tr><td>EXTENT</td><td>1</td><td rowspan="4">Negligible (8)</td><td>1</td><td rowspan="4">Negligible (8)</td><td>1</td><td rowspan="4">Low (44)</td><td>1</td><td rowspan="4">Negligible (16)</td></tr>
<tr><td>DURATION</td><td>1</td><td>1</td><td>4</td><td>1</td></tr>
<tr><td>SEVERITY</td><td>0</td><td>0</td><td>6</td><td>2</td></tr>
<tr><td>PROBABILITY</td><td>4</td><td>4</td><td>4</td><td>4</td></tr>
<tr><td colspan="2">Reversibility</td><td colspan="7">Completely reversible (0)</td></tr>
<tr><td colspan="2">Irreplaceable Loss</td><td colspan="7">Resource not lost (0)</td></tr>
<tr><td colspan="2">Mitigation Potential</td><td colspan="7">High</td></tr>
<tr><td>MITIGATION:</td><td colspan="8">1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible
2. All lay down areas should be limited to areas of Low sensitivity
3. Avoid High Sensitivity (50 m buffer around G. elliptica) and utilise disturbed areas as much as possible
4. Erect a fence around the High sensitive area
5. Herbicide use to be limited to trained professionals
6. Rehabilitation of sites should occur throughout construction phase
7. Relevant permits must be applied for to remove all protected species
8. An Environmental Awareness Programme should be implemented to ensure basic environmental principles are adhered to</td></tr>
</table>

5.3.2 Direct loss of SCC habitat

The construction of the factory will result in the clearance of indigenous vegetation. Currently the vegetation on site is transformed and cannot be considered intact, even though it is

dominated by local indigenous species. The site is degraded habitat for SCCs and there is a reduced likelihood of their occurrence on site, apart from *G. elliptica*. Alternative 2 includes 643 m^2 of the 50 m buffer ares under *G. elliptica.* If the site is restored, either actively or passively, SCCs may return to site. Both alternatives have a negligible impact on SCC habitat if all mitigation measures are implemented.

<table>
<tr><td colspan="9">Direct loss of the SCC habitat due to construction activities</td></tr>
<tr><td colspan="2">NATURE: NEGATIVE</td><td colspan="5">PHASE: CONSTRUCTION</td><td colspan="2">TYPE: DIRECT, CUMULATVE</td></tr>
<tr><td rowspan="2"></td><td colspan="3">Alternative 1</td><td colspan="4">Alternative 2</td></tr>
<tr><td colspan="2">SIGNIFICANCE</td><td>WITH MITIGATION</td><td colspan="2">SIGNIFICANCE</td><td colspan="2">WITH MITIGATION</td></tr>
<tr><td>EXTENT</td><td>1</td><td rowspan="4">Low (44)</td><td>1</td><td rowspan="4">Negligible (18)</td><td>1</td><td rowspan="4">Low (44)</td><td>1</td><td rowspan="4">Negligible (18)</td></tr>
<tr><td>DURATION</td><td>4</td><td>1</td><td>4</td><td>1</td></tr>
<tr><td>SEVERITY</td><td>6</td><td>2</td><td>6</td><td>2</td></tr>
<tr><td>PROBABILITY</td><td>4</td><td>4</td><td>4</td><td>4</td></tr>
<tr><td colspan="2">Reversibility</td><td colspan="7">Partly reversible (0.5)</td></tr>
<tr><td colspan="2">Irreplaceable Loss</td><td colspan="7">Resource not lost (0)</td></tr>
<tr><td colspan="2">Mitigation Potential</td><td colspan="7">Moderate</td></tr>
<tr><td>MITIGATION:</td><td colspan="8">1. Minimise natural vegetation clearance as far as possible
2. All lay down areas should be limited to areas of Low sensitivity
3. Avoid High Sensitivity (50 m buffer around G. elliptica) and utilise disturbed areas as much as possible
4. Herbicide use to be limited to trained professionals
5. Rehabilitation of sites should occur throughout construction phase
6. An Environmental Awareness Programme should be implemented to ensure basic environmental principles are adhered to</td></tr>
</table>

5.3.3 Increase in IAP

Major soil disturbance will occur during construction phase. This may result in an increase in Invasive Alien Plants (IAP) such as *Acacia cyclops, A, mearnsii* and *A. saligna*. It is imperative that an alien management plan is implemented to ensure the surrounding vegetation is not impacted by invasive species.

Indirect impact on SCCs by increase of Invasive Alien Plants

NATURE: NEGATIVE		PHASE: CONSTRUCTION					TYPE: INDIRECT	
	Alternative 1				Alternative 2			
	SIGNIFICANCE		WITH MITIGATION		SIGNIFICANCE		WITH MITIGATION	
EXTENT	2	Low (41.5)	1	Negligible (13.5)	2	Low (34.5)	1	Negligible (13.5)
DURATION	5		1		5		1	
SEVERITY	6		2		4		2	
PROBABILITY	3		3		3		3	
Reversibility		Completely reversible (0)						
Irreplaceable Loss		Partial Loss (0.5)						
Mitigation Potential		High						
MITIGATION:	1. Vegetate and rehabilitate disturbed areas immediately after construction activities have been completed 2. Implement an alien management plan 3. Identify all possible invasive alien plant species on site and determine their preffered control measures 4. Conduct regular inspections for invasive species 5. Include the management of invasive species in the environmental awareness plan							

5.4 Operation Phase Impacts

5.4.1 Disturbance to SCCs and their habitat

The operation of the factory will result in an increased anthropogenic presence on site. Increased dust, littering, fires, plant collection, pollution, stormwater and erosion and other related activities will have a direct and indirect impact on SCCs on site, as well as their habitat.

Direct and indirect anthropogenic disturbance to SCCs and their habitat								
NATURE: NEGATIVE		PHASE: CONSTRUCTION					TYPE: DIRECT, INDIRECT	
	Alternative 1				Alternative 2			
	SIGNIFICANCE		WITH MITIGATION		SIGNIFICANCE		WITH MITIGATION	
EXTENT	2	Low (44)	1		2	Low (44)	1	

DURATION	2		1	Negligible (15)	2		1	Negligible (15)
SEVERITY	6		2		6		2	
PROBABILITY	4		3		4		3	
Reversibility		Partly reversible (0.5)						
Irreplaceable Loss		Partial loss (0.5)						
Mitigation Potential		Moderate						
MITIGATION:	1. An Environmental Awareness Programme should be implemented to ensure basic environmental principles are adhered to 2. Prohibit open fires on site 3. Prohibit the collection or removal of plants and soil outside of the footprint of the development 4. Implement good stormwater management principles to ensure no erosion of soils or disturbance to vegetation 5. Provide adequate and animal proof waste disposal facilities and prohibit littering 6. Fence factory footprint to inhibit access to more natural areas							

5.5 Decommissioning Phase Impacts

5.5.1 Rehabilitation of site

Decommissioning activities will result in the removal of all infrastructure, materials and most anthropogenic disturbance from the site, and more than likely the continuation of current grazing activities. Rehabilitation of the site will include the re-establishment of vegetation cover, most likely indigenous shrubs and grass.

Direct impact on SCCs by rehabilitating habitat during decommissioning phase						
NATURE: POSITIVE		PHASE: DECOMMISSIONING				TYPE: DIRECT
	Alternative 1			Alternative 2		
	SIGNIFICANCE		WITH MITIGATION	SIGNIFICANCE		WITH MITIGATION
EXTENT	1	Moderate (48)	NO MITIGATION NECESSARY	1	Moderate (48)	NO MITIGATION NECESSARY
DURATION	5			5		
SEVERITY	6			6		
PROBABILITY	4			4		
Reversibility		Completely reversible (0)				
Irreplaceable Loss		No Loss (0)				

Mitigation Potential	High
MITIGATION:	1. Vegetate and rehabilitate disturbed areas immediately after decommissioning activities have been completed 2. Only use indigenous renosterveld shrubs and grasses for the rehabilitation of the site 3. Include erosion control measures in rehabilitation plan 4. Include an after care period of 2-5 years to monitor and clear IAPs 5. Implement an alien management plan 6. Identify all possible invasive alien plant species on site and determine their preffered control measures

5.5.2 Increase in IAP

The decommissioning of the site will result in the disturbance of the soil and potentially increase the chances of the establishment of IAPs. Rehabilitation activities must occur concurrently with decommissioning activities to ensure that bare soil and other disturbed areas are not colonised by IAPs. An after care period of 2-5 years must be included in the EA.

Indirect impact on SCCs by increase of Invasive Alien Plants								
NATURE: NEGATIVE		PHASE: DECOMMISSIONING					TYPE: INDIRECT	
	Alternative 1				Alternative 2			
	SIGNIFICANCE		WITH MITIGATION		SIGNIFICANCE		WITH MITIGATION	
EXTENT	2	Low (41.5)	1	Negligible (13.5)	2	Low (41.5)	1	Negligible (13.5)
DURATION	5		1		5		1	
SEVERITY	6		2		6		2	
PROBABILITY	3		3		3		3	
Reversibility		Completely reversible (0)						
Irreplaceable Loss		Partial Loss (0.5)						
Mitigation Potential		High						
MITIGATION:	7. Vegetate and rehabilitate disturbed areas immediately after decommissioning activities have been completed 8. Include an after care period of 2-5 years to monitor and clear IAPs 9. Implement an alien management plan 10. Identify all possible invasive alien plant species on site and determine their preffered control measures							

5.6 No Go Alternative

The No-Go Alternative will include the continuation of current impacts, namely grazing by cattle. The vegetation on the development footprint (10-12 ha) will not be completely transformed, but will continue to re-establish in a modified way. If overgrazing does not occur, the typical species composition of Humansdorp Shale Renosterveld may re-establish, including a number of SCCs. However, if cultivation of the site occurs, as has happened in the past, it will have greater impacts on the whole site compared to the proposed development.

Direct impact on SCCs by rehabilitating habitat during decommissioning phase						
NATURE: POSITIVE		PHASE: DECOMMISSIONING				TYPE: DIRECT
	Alternative 1					
	SIGNIFICANCE		WITH MITIGATION			
EXTENT	1	Moderate (48)	NO MITIGATION NECESSARY			
DURATION	5					
SEVERITY	6					
PROBABILITY	4					
Reversibility						
Irreplaceable Loss						
Mitigation Potential						
MITIGATION:						

6 Conclusions and Recommendations

The proposed site for the Nordex concrete tower manufacturing facility is situated in transformed Humansdorp Shale Renosterveld, a threatened ecosystem. As the vegetation is not intact, the activities of the factory will have a low to negligible impact on plant species of conservation concern (SCC) and their habitat, especially if all recommended mitigation measures are implemented, including the exclusion of the 50 m buffer area.

The potential environmental impacts of the two alternative layouts on plant SCCs is summarised in Table 5. Alternative 2 has a larger impact if no mitigation measures are implemented.

Table 5 Summary of Environmental Impacts of the two alternative layouts of the Nordex concrete tower facility on the plant species on site.

Activity	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Impact on SCCs	Negligible	Negligible	Low	Negligible
Impact on SCC habitat	Low	Negligible	Low	Negligible
Anthropogenic Disturbances	Low	Negligible	Low	Negligible
IAPs	Low	Negligible	Low	Negligible
Rehabilitation	Moderate Positive		Moderate Positive	
No-Go	Moderate Negative			

It is the recommendation of the author that the development proceeds from a terrestrial biodiversity and plant species theme perspective, with the condition that all recommendations in this report are implemented.

7 References

Department of Environmental Affairs (2016) National Protected Areas Expansion Strategy for South Africa 2016. Department of Environmental Affairs, Pretoria, South Africa.

ECBCP (2019) Eastern Cape Biodiversity Conservation Plan Handbook. Department of Economic Development and Environmental Affairs (King Williams Town). Compiled by G. Hawley, P. Desmet and D. Berliner.Grobler, A., Vlok, J., Cowling, R, van der Merwe, S., Skowno, A.L., Dayaram, A. 2018. Technical Report: Integration of the Subtropical Thicket Ecosystem Project (STEP) vegetation types into the VEGMAP national vegetation map 2018.

Le Maitre, D.C., Seyler, H., Holland, M., Smith-Adao, L., Nel, J.L., Maherry, A. and Witthüser, K. (2018) Identification, Delineation and Importance of the Strategic Water Source Areas of South Africa, Lesotho and Swaziland for Surface Water and Groundwater. Report No. TT 743/1/18, Water Research Commission, Pretoria.

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

Raimondo, D. & Turner, R.C. 2007. Gymnosporia elliptica (Thunb.) Schönland. National Assessment: Red List of South African Plants version 2020.1. Accessed on 2023/02/19Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A. & Manyama, P.A. (Eds) (2009) Red List of South African Plants 2009. Strelitzia 25. South African National Biodiversity Institute, Pretoria.

South African Conservation and Protected Area Datadabase (SAPAD). Q3 2020. Downloaded from egis.environment.gov.za on 2021/06/15.

South African National Biodiversity Institute (2006-2018). The Vegetation Map of South Africa, Lesotho and Swaziland, Mucina, L., Rutherford, M.C. and Powrie, L.W. (Editors), Online, http://bgis.sanbi.org/Projects/Detail/186, Version 2018.

South African National Biodiversity Institute (SANBI) (2020) Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa.South African National Biodiversity Institute, Pretoria. Version 1.2020.

SANBI (2020) Statistics: Red List of South African Plants version 2020.1. Downloaded from Redlist.sanbi.org on 2021/06/27.

Skown, A. (2007) Baviaanskloof Mega-Reserve: Biodiversity Assessment. Project Management Unit, Baviaanskloof Mega-Reserve Plan.

South African National Parks. NPAES Focus Areas 2010 [vector geospatial dataset] (2010) Available from the Biodiversity GIS website, downloaded on 15 June 2021

VlokJ.H. & D. Euston-Brown (2002) Subtropical Thicket Ecosystem Planning (STEP) Project: Biological Survey Report (Plants and Birds). Terrestrial Ecology Research Unit, University of Port Elizabeth, Port Eizabeth. 145 pp.

Appendix 1 CV of Specialists

Clayton Richard Weatherall-Thomas

113 Old Seaview
Chelsea
Port Elizabeth
6001

083 401 8091
environment@algoacme.co.za

Pr. Sc. Nat (Ecological Science) (Registration no. 128641)
Registered EAP (Registration no. 2019/681

Employment History

Environmental Assessment Practitioner

March 2017-ongoing Algoa Consulting Mining Engineers, Port Elizabeth

- Conducting of Environmental Impact Assessments (EIAs); Compiling Environmental Management Programme Reports (EMPr); Environmental Audits, Conduct Public Participation and correlating reports; Undertaking Botanical and Ecological Impact Assessment Specialist Reports

Conservation Officer

October 2011-December 2012 Wildlife and Environmental Society of South Africa (WESSA), Port Elizabeth

- Co-ordinate the Nelson Mandela Bay Metropolitan's Biodiversity Stewardship Programme (NMBMBSP), including site assessments, communication with landowners and other stakeholders, management plans; The capacitation of Custodians of Rare and Endangered Wildflowers (CREW) volunteers and NMBM staff

January 2012-June 2013 Nelson Mandela Metropolitan Municipality (NMBM), Port Elizabeth (Acting NMBMOSS Co-ordinator)

- Facilitate the gazetting of the NMBM Environmental Management Framework (EMF); Support the NMBM Land Use Co-ordinator in terms of conflict resolution regarding the NMB MOSS; Implement the rezoning process in terms of Land Use Planning Ordinance of 1985 to ensure that the correct legal zoning is enacted; Provide ecological comments on EIAs

Student Demonstrator (Part-time, ad hoc basis)

2004-2015 Nelson Mandela Metropolitan Municipality (NMBM), Port Elizabeth

- Demonstrating and Assisting various Botany modules; marking practicals

Herbarium Assistant

March 2008-December 2008 Nelson Mandela Metropolitan Municipality (NMBM), Port Elizabeth

- Identification of plant species

Botanical Specialist (ad hoc basis)

2006-onglong Self-employed, Port Elizabeth

- Botanical and Ecological Specialist reports for Environmental Impact Assessments; Species identification and assistance with the writing of Water Research Commission (WRC) reports

Education

2002-2004 Nelson Mandela Metropolitan University, Port Elizabeth

- BSc Biological Sciences
- Graduated cum laude

2005 Nelson Mandela Metropolitan University, Port Elizabeth

- BSc Hons Botany
- Graduated cum laude
- Terrestrial Ecology focus

2006-2008 Nelson Mandela Metropolitan University, Port Elizabeth

- MSc Botany
- "Seed germination and seedling survival in the mesic thickets of the Eastern Cape"
- Graduated cum laude

2009-Incomplete Nelson Mandela Metropolitan University, Port Elizabeth

- PhD Botany
- "Determination of the Utilization Threshold for the maintenance of Thicket floral diversity"

Other Courses:

- 2018 IWRM, the NWA and Water Use Authorisations, focusing on WULAs and IWWMPs

Experience relating to Environmental Impact Assessments

BASIC ASSESSMENT REPORTS

- 2022 Basic Assessment and EMPr for Draaibosch Quarry Mining Permit Application, Komga, Eastern Cape-ongoing
- 2021 Basic Assessment and EMPr for Indlovu Sand Prospecting Right Application, Oyster Bay, Eastern Cape-ongoing
- 2020 Prospecting Right, including BA and EMPr for Ikwezi Mining, Hankey

- 2019 Basic Assessment report for Sogea Satom pre cast concrete wind tower factory, Prieska: Withdrawn
- 2019 Basic Assessment Report for Ngqura Sand, NMBM:
- 2018 Basic Assessment and EMPr for Schoenmakers Mining, NMBM
- 2017 BA and EMPr for the proposed Loerie Lime limestone mine near Loerie in the Eastern Cape
- 2017 BA and EMPr for Sandman Quarries cc, NMBM

ENVIRONMENTAL IMPACT REPORTS

- 2022 EIA and EMPr for Blue Rock Quarry, Libode, Eastern Cape-ongoing
- 2021 EIA and EMP for Bonavista Farm, Kinkelbos – Ongoing
- 2020 EIA and EMPr for Million Steams Clay Mine and Brickyard-Ongoing
- 2020 EIA and EMPr for Coega Mining, Coega SEZ
- 2019 EIA and EMPr for King William's Town Quarry - Ongoing
- 2019 EIA Report and EMPr for Driftsands Mining, NMBM
- 2018: EIA Report and EMPr for Kleinfontein Mine, Loerie
- 2017 EIA Report and EMPr for the proposed Lloyds Clay Mine near Motherwell in the Eastern Cape
- 2017 EIA Report and EMPr for the proposed Prieska Gypsum Mine near Prieska in the Northern Cape

ENVIRONMENTAL AUDITS

- 2022 Environmental Audit for Ngqura Sand, NMBM
- 2021 CEMZA Cementitious Grinding Facility in Coega SEZ Closure Audit
- Environmental Audit for Glendore Rover Sandpit, NMBM
- Environmental Audit for Glendore Rover Limestone, NMBM
- 2017/2021 Environmental Management Programme Performance Assessment for Sandman Quarries cc

Botanical Specialist Report

BIODIVERSITY / ECOLOGICAL ASSESSMENT REPORT

2022: C.R. Weatherall-Thomas: Biodiversity Impact Assessment for expansion of pastures on Bonavista, Kinkelbos, Eastern Cape-ongoing

2022: C.R. Weatherall-Thomas: Biodiversity Impact Assessment for Million Streams Clay Mine and Brick Plant, Empangeni, KwaZulu-Natal-ongoing

2021: B.M. Colloty & C.R. Weatherall-Thomas. Botanical Impact Assessment for a residential development at Kuyga, Eastern Cape

2021 B. M. Colloty & C.R. Weatherall-Thomas. Terrestrial Biodiversity and Plant Species Impact Assessment for Chatty-Dedisa Grid Extension, NMBM, Eastern Cape

2021 B. M. Colloty & C.R. Weatherall-Thomas. Terrestrial Biodiversity and Plant and Animal Species Specialist Report for Malabar Shopping Centre, NMBM

2021 C.R. Weatherall-Thomas. Botanical Opinion letter for Erf 3010 Kirkwood, Sundays River Valley Municipality

2021: C.R. Weatherall-Thomas. Botanical Opinion Letter for the expansion of Mount Frere Police Station, Umzimvubu Municipality

2020: C.R. Weatherall-Thomas. Botanical Opinion Letter for the expansion of Kamesh Police Station, NMBM

2020: C.R. Weatherall-Thomas. Botanical Opinion for the proposed poultry broiler facility and abattoir on Portion 24 of the Farm Waggie 110, within the Sundays River Valley Local Municipality, Eastern Cape

2020 B. M. Colloty & C.R. Weatherall-Thomas. The proposed agricultural development on Portion 1 & 2 of the Farm Kwade Hoek 52 and the remaining extent of the Farm Schelm Drift 53, Makana Local Municipality, Eastern Cape

2020: C.R. Weatherall-Thomas. Botanical Screening Opinion Letter for Proposed development on Erf 10261, NMBM

2019: C.R. Weatherall-Thomas. Botanical Specialist Report for Mount Coke Quarry, Buffalo City Municipality, Eastern Cape

2019 C.R. Weatherall-Thomas. Botanical Specialist Report for Subdivision of Farm Hogsback Plateau No. 21, Raymond Mhlaba Municipality

2019: C.R. Weatherall-Thomas. Botanical Impact Assessment for Ibhino Sand, NMBM

2019: C.R. Weatherall-Thomas. Botanical Specialist Report for Florida Heights, NMBM, Eastern Cape.

2019: C.R. Weatherall-Thomas. Screening Report for Portion 3 of Farm Zwartebosch 347, Kouga Municipality.

2019: C.R. Weatherall-Thomas. Botanical Specialist Report for Kleinfontein Kalkmyn, Kouga Municipality.

2018: C.R. Weatherall-Thomas. Botanical Specialist Report for Sogea Satom Pre Cast Concrete Wind Tower Factory, Siyathemba municipality, Northern Cape.

2018: Botanical Specialist Report for Driftsands Mining, NMBM, EC.

2018: Botanical Screening Report for Addo Drift East, Sundays River Valley Municipality.

2017: M. Fernandes, J. Adams and C. R. Weatherall-Thomas. Macrophyte health and updated estuary habitat and plant species data for Western Cape estuaries.

2017: E. Milne & C.R. Weatherall-Thomas. Botanical Impact of KimCrusher, Northern Cape.

2017: E. Milne & C.R. Weatherall-Thomas. Ecological Impact Report for Luke Mason Alluvial Diamond Mine, Northern Cape.

2015: A. Grobler & C.R. Weatherall-Thomas. Botanical Assessment of the proposed FreshGro Citrus Development, Sundays River Valley Municipality.

2012: C.R. Weatherall-Thomas & M. Louw. Proposed Redhouse-Chelsea arterial and walker drive extension: Evaluation of the type and state of vegetation, species of conservation concern, and rocky outcrops between the various arterial alignment alternatives.

Papers

Robbert Duker, Richard M. Cowling, Derek R. du Preez, Marius L. van der Vyver, Clayton R. Weatherall-Thomas and Alastair J. Potts (2014) Community-level assessment of freezing tolerance: frost dictates the biome boundary between Albany subtropical thicket and Nama-Karoo in South Africa. Journal of Biogeography 42(1): 167-178

Conference presentations

C.R. Weatherall-Thomas, E.E. Campbell and R.M. Cowling (2014) The influence of megaherbivory on the patterns of succulent plant distribution at a bushclump scale. AZEF/Thicket Forum conference presentation

C.R. Weatherall-Thomas (2013) CREW with a cause. Thicket Forum conference presentation.

C.R. Weatherall-Thomas, E.E. Campbell and R.M. Cowling (2013) Determination of the utilization threshold for the maintenance of Thicket floral diversity. Centre for African Conservation Ecology Forum

C.R. Weatherall-Thomas & E.E. Campbell (2007) Seed germination and seedling survival in coastal Thicket: Initial results. Thicket Forum/Grasslands Society of South Africa conference poster presentation.

C.R. Weatherall-Thomas & E.E. Campbell (2006) Secondary succession of Thicket at a limestone quarry in the Gamtoos River Valley, South Africa. South African Association of Botanists conference presentation.

Other Experience

Chairperson of the Algoa branch of the Botanical Society of South Africa

Custodians of Rare and Endangered Wildflowers (CREW) Champion

Member of the organizing committee of the Thicket Forum

Competent in MS Word, Excel and Power Point, ArcGIS.

Professional Bodies

Pr. Sci. Nat (SACNASP)

References

Mr Rudi Gerber
Managing Director
Algoa Consulting and Mining Engineers
Tel: 041 379 1899
Cell: 082 653 2568
rudi@algoacme.co.za

Prof. Eileen Campbell
Botany Lecturer and Botanical Specialist
Nelson Mandela Metropolitan University
Tel: 041 504 2329
Cell: 072 658 9688
eileen.campbell@nmmu.ac.za

Environmental Assessment Practitioners Association of South Africa

Registration No. 2020/961

Herewith certifies that

Clayton Richard
Weatherall-Thomas

is registered as an

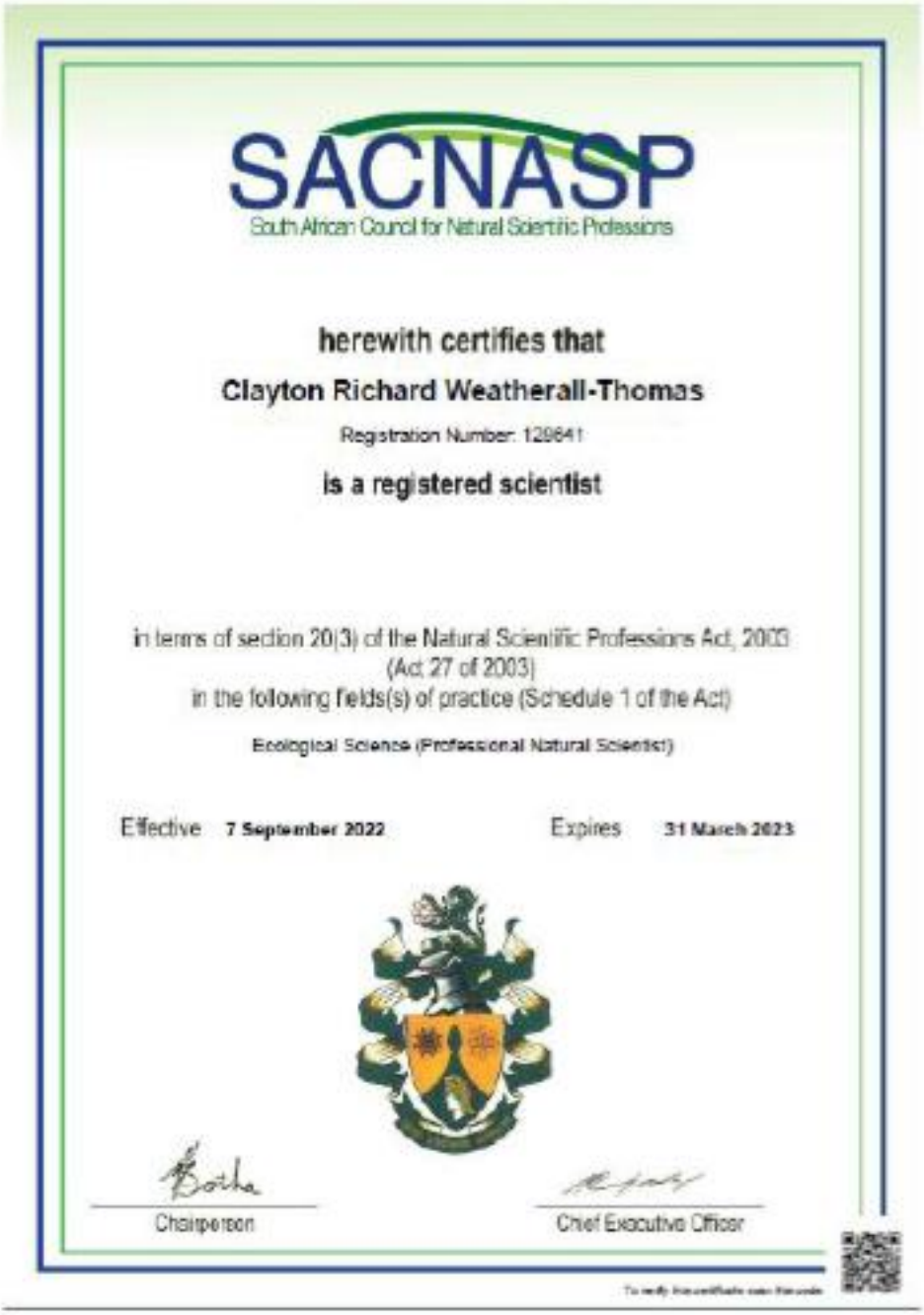
Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 843, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2022 Expiry: 28 February 2023

Chairperson Registrar

SAQA



SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Clayton Richard Weatherall-Thomas

Registration Number: 129841

is a registered scientist

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

Ecological Science (Professional Natural Scientist)

Effective **7 September 2022** Expires **31 March 2023**

Chairperson

Chief Executive Officer

Appendix 2 Declaration of Interest

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

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

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

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

PROJECT TITLE

THE PROPOSED DEVELOPMENT OF A 2.5 MEGAWATT SOLAR PHOTOVOLTAIC (PV) FACILITY ON ERF 77, GREENBUSHES, WITHIN THE NELSON MANDELA BA MUNICIPALITY, EASTERN CAPE

SPECIALIST : Contact person:	Terrestrial Biodiversity, Plant Species and Animal Species Clayton Weatherall-Thomas		
Postal address:	PO BOX 6237, Walmer		
Postal code:	6065	Cell:	083 401 8091
Telephone:		Fax:	
E-mail:	claytonwt@gmail.com		
Professional affiliation(s) (if any)	SACNASP (Reg. no. 128641)		

Version 2 January 15 2021

H.C O.R.

- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.

Signature of the Specialist

NA

Name of company:

17 October 2022

Date:

7200167
H CHETTY
CST

Signature of the Commissioner of Oaths:

2022 -10- 17

Date:

WALVIS

SOUTH AFRICAN POLICE SERVICE

CST
7200167-2
H. CHETTY

Designation: Cst

[1] Curriculum Vitae (CV) attached

Official stamp (below).

H.C

Project Consultant:	Habitat Link Consulting		
Contact person:	Roberto Almanza		
Postal address:	117 Cape Road, Mount Croix		
Postal code:	6001	Cell:	082 930 8711
Telephone:		Fax:	-
E-mail:	roberto@habitatlink.co.za		

4.2 The SPECIALIST

I, Clayton Weatherall-Thomas declare that –

General declaration:

- I act as the independent Specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;

H.C C.R.

Appendix 3 List of Plant Species recorded on the Nordex concrete wind tower manufacturing facility, Kouga Municipality.

Family	SPECIES	Threat status	NFA	NECO	AIPs
Acanthaceae	*Barleria pungens* L.f.	LC			
Acanthaceae	*Thunbergia capensis* Retz.	LC			
Aizoaceae	*Aizoon glinoides* L.f.	LC			
Aizoaceae	*Delosperma gratiae* L.Bolus	LC		Sch 4	
Aizoaceae	*Drosanthemum hispidum* (L.) Schwantes	LC		Sch 4	
Aizoaceae	*Galenia pubescens* (Eckl. & Zeyh.) Druce	LC			
Aizoaceae	*Mesembryanthemum aitonis* Jacq.	LC		Sch 4	
Aizoaceae	*Ruschia congesta* (Salm-Dyck) L.Bolus	LC		Sch 4	
Amaranthaceae	*Exomis microphylla* (Thunb.) Aellen var. *axyrioides* (Fenzl) Aellen	LC			
Anacardiaceae	*Searsia pallens (*Eckl. & Zeyh.) Moffett	LC			
Anacardiaceae	*Searsia pterota* (C.Presl) Moffett	LC			
Anacardiaceae	*Searsia incisa* (L.f.) F.A.Barkley var. *effusa* (C.Presl) Moffett	LC			
Apocynaceae	*Cynanchum viminale* (L.) Bassi subsp. *viminale*	LC		Sch 4	
Apocynaceae	*Pachycarpus grandiflorus* (L.f.) E.Mey. subsp. *grandiflorus*	LC		Sch 4	
Asparagaceae	*Asparagus aethiopicus* L.	LC			
Asparagaceae	*Asparagus racemosus* Willd.	LC			
Asparagaceae	*Asparagus striatus*(L.f.) Thunb.	LC			
Asphodelaceae	*Aloe africana* Mill.	LC		Sch 4	
Asphodelaceae	*Aloe maculata* All. subsp. *maculata*	LC		Sch 4	
Asteraceae	*Berkheya heterophylla* (Thunb.) O.Hoffm. var. *heterophylla*	LC			
Asteraceae	*Brachylaena ilicifolia* (Lam.) E.Philips & Schweik	LC			
Asteraceae	*Chrysocoma ciliata* L.	LC			
Asteraceae	*Elytropappus rhinocerotis* (L.f.) Less.	LC			
Asteraceae	*Felicia filifolia* (Vent.) Burtt Davy	LC			
Asteraceae	*Helichrysum anomalum* Less.	LC			
Asteraceae	*Helichrysum odoratissimum* (L.) Sweet var. *odoratissimum*	LC			
Asteraceae	*Helichrysum rosum* (P.J.Bergius) Less. var. *arcuatum* Hilliard	LC			

Family	SPECIES	Threat status	NFA	NECO	AIPs
Asteraceae	*Hypochaeris radicata* L.	NE			*
Asteraceae	*Metalasia aurea* D.Don	LC			
Asteraceae	*Metalasia muricata* (L.) D.Don	LC			
Asteraceae	*Oedera genistifolia* (L.) Anderb. & K.Bremer	LC			
Asteraceae	*Senecio deltoideus* Less.	LC			
Brassiceae	*Lepidium bonariense* L.	NE			*
Campanulaceae	*Wahlenbergia cinerea* (L.f.) Lammers	LC			
Campanulaceae	*Wahlenbergia undulata* (L.f.) A.DC.	LC			
Capparaceae	*Cadaba aphylla* (Thunb.) Wild	LC			
Capparaceae	*Capparis sepiaria IL.* var. *citrifolia*(Lam.) Tolken	LC			
Caryophyllaceae	*Dianthus thunbergii* S.S.Hooper	LC			
Caryophyllaceae	*Pollichia campestris* Aiton	LC			
Celastraceae	*Gymnosporia elliptica* (Thunb.) Schonland	VU			
Celastraceae	*Pterocelastrus tricuspidatus* (Lam.) Walp.	LC			
Convolvulaceae	*Falkia repens* Thunb.	LC			
Crassulaceae	*Crassula capitella* Thunb. subsp. *thyrsiflora* (Thunb.) Tolken	LC			
Crassulaceae	*Crassula tetragona* L. subsp. *acutifolia* (Lam.) Toelken	LC			
Cucurbitaceae	*Kedrostis capensis* (Sond.) A.Meeuse	LC			
Cyperaceae	*Ficinia* sp.				
Dipsacaceae	*Scabiosa columbaria* L.	LC			
Ebenaceae	*Diospyros dichrophylla* (Gand.) De Winter	LC			
Ebenaceae	*Euclea undulata* Thunb.	LC			
Euphorbiaceae	*Clutia daphnoides* Lam.	LC			
Euphorbiaceae	*Euphorbia mauritanica*L.	LC			
Fabacaeae	*Aspalathus nivea* Thunb.	LC			
Fabacaeae	*Aspalathus subtingens* Eckl. & Zeyh.	LC			
Fabacaeae	*Rhynchosia ciliata* (Thunb.) Schinz	LC			
Fabaceae	*Aspalathus rubens* Thunb.	LC			
Fabaceae	*Schotia afra* (L.) Thunb. var. *afra*	LC			
Fabaceae	*Tephrosia capensis* (Jacq.) Pers.	LC			
Hyacinthaceae	Hyacinthaceae sp.				
Iridaceae	*Babiana* sp.	LC		Sch 4	

Family	SPECIES	Threat status	NFA	NECO	AIPs
Lamiaceae	*Leonotis ocymifolia* (Burm.f.) Iwarsson var. *ocymifolia*	LC			
Lamiaceae	*Plectranthus madagascariensis* (Pers.) Benth. var. *madagascariensis*	LC			
Lobeliaceae	*Cyphia* sp.				
Malvaceae	*Hibiscus pusillus* Thunb.	LC			
Malvaceae	*Abutilon sonneratianum* (Cav.) Sweet	LC			
Malvaceae	*Grewia robusta* Burch.	LC			
Malvaceae	*Hermannia althaeifolia* L.	LC			
Malvaceae	*Hermannia saccifera* (Turcz.) K.Schum.	LC			
Molluginaceae	*Pharnaceum dichotomum* L.f.	LC			
Oleaceae	*Olea europaea* L. subsp. *cuspidata* (Wall. ex G.Don) Cif.	LC			
Plantaginaceae	*Plantago lanceolata* L.	LC			
Plumbaginaceae	*Plumbago auriculata* Lam.	LC			
Poaceae	*Cynodon dactylon* (L.) Pers.	LC			
Poaceae	*Ehrharta calycina* Sm.	LC			
Poaceae	*Eragrostis curvula* (Schrad.) Nees	LC			
Poaceae	*Eragrostis obtusa* Munro ex Ficalho & Hiern	LC			
Poaceae	*Fingerhuthia africana* Lehm.	LC			
Poaceae	*Sporobolus africanus* (Poir.) Robyns & Tournay	LC			
Poaceae	*Tenaxia disticha* (Nees) N.P.Barker & H.P.Linder	LC			
Rhamnaceae	*Scutia myrtina* (Burm.f.) Kurz	LC			
Rubiaceae	*Canthium spinosum* (Klotzsch ex Eckl. & Zeyh.) Kuntze	LC			
Salvadoraceae	*Azima tetracantha* Lam.	LC			
Sapotaceae	*Sideroxylon inerme* L. subsp. *inerme*	LC	x		
Scrophulariaceae	*Chaenostoma campanulatum* Benth.	LC			
Scrophulariaceae	*Jamesbrittenia foliolosa* (Benth.) Hilliard	LC			
Scrophulariaceae	*Selago glomerata* Thunb.	LC			
Solanaceae	*Lycium ferocissimum* Miers	LC			
Thymeleaceae	*Passerina corymbosa* Eckl. ex C.H.Wright	LC			
Verbenaceae	*Lantana rugosa* Thunb.	LC			