

BRANDVALLEY WIND FARM (PTY) LTD

Proposed Construction of the Brandvalley Wind Energy Facility near Matjiesfontein, Western Cape Province

Visual Specialist Comment – Part 2 Amendment

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PROPOSED CONSTRUCTION OF THE BRANDVALLEY WIND **ENERGY FACILITY NEAR MATJIESFONTEIN, WESTERN CAPE PROVINCE**

VISUAL SPECIALIST COMMENT -PART 2 AMENDMENT

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GLOSSARY OF TERMS

ABBREVIATIONS

BA Basic Assessment

DBAR Draft Basic Assessment Report

DEM Digital Elevation Model

DFFE` Department of Forestry, Fisheries and the Environment

EA Environmental Authorisation

EAP Environmental Assessment Practitioner

EMP Environmental Management Plan
FBAR Final Basic Assessment Report
GIS Geographic Information System

MW Megawatt

NEMA National Environmental Management Act

OHP Overhead power line

REIPPPP Renewable Energy Independent Power Producer Procurement Programme

VIA Visual Impact Assessment

VR Visual Receptor
WEF Wind Energy Facility

DEFINITIONS

Sense of place: The unique quality or character of a place, whether natural, rural or urban. It relates

to uniqueness, distinctiveness or strong identity.

Scenic route: A linear movement route, usually in the form of a scenic drive, but which could also be

a railway, hiking trail, horse-riding trail or 4x4 trail.

Sensitive visual receptors: An individual, group or community that is subject to the visual influence of

the proposed development and is adversely impacted by it. They will typically include locations of

human habitation and tourism activities.

Viewpoint: A point in the landscape from where a particular project or feature can be viewed.

Viewshed / Visual Envelope: The geographical area which is visible from a particular location.

Visual character: The pattern of physical elements, landforms and land use characteristics that occur

consistently in the landscape to form a distinctive visual quality or character.

Visual contrast: The degree to which the development would be congruent with the surrounding

environment. It is based on whether or not the development would conform with the land use, settlement

density, forms and patterns of elements that define the structure of the surrounding landscape.

Visual exposure: The relative visibility of a project or feature in the landscape.

Visual impact: The effect of an aspect of the proposed development on a specified component of the

visual, aesthetic or scenic environment within a defined time and space.

Visual receptors: An individual, group or community that is subject to the visual influence of the

proposed development but is not necessarily adversely impacted by it. They will typically include

commercial activities, residents and motorists travelling along routes that are not regarded as scenic.

Visual sensitivity: The inherent sensitivity of an area to potential visual impacts associated with a

proposed development. It is based on the physical characteristics of the area (visual character), spatial

distribution of potential receptors, and the likely value judgements of these receptors towards the new

development, which are usually based on the perceived aesthetic appeal of the area.

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PROPOSED CONSTRUCTION OF THE BRANDVALLEY WIND ENERGY FACILITY NEAR MATJIESFONTEIN, WESTERN CAPE PROVINCE

VISUAL SPECIALIST COMMENT – PART 2 AMENDMENT

1 INTRODUCTION

Brandvalley Wind Farm (Pty) Ltd, (hereafter referred to as "Brandvalley") was issued with an Environmental Authorisation (EA) for the proposed 140MW Brandvalley Wind Energy Facility (WEF) and its associated infrastructure, near Matjiesfontein in the Western Cape Province on 23 November 2016 (DFFE Reference 14/12/16/3/3/2/900). This authorisation made provision for the construction of a total number of 58 wind turbines, each with a hub height of 120m and a rotor diameter of 140m, and maximum generating capacity of 140MW.

Subsequent to this, the EA was amended (under DFFE Reference 14/12/16/3/3/2/900/AM1 dated 14 February 2019) to allow for:

- Changes to turbine specifications, increasing the hub height to 125m and the rotor diameter to 160m:
- An increase to the height of the wind measuring mast from 120m to 125m;
- Increasing the individual energy generation capacity of the turbines from a range of between
 1.5MW and 4MW to a range of between 2 and 5.5MW; and
- A change to the name of the holder of the holder of the EA.

Electrical infrastructure to serve the Brandvalley WEF was authorised on 23 November 2016, under DFFE Ref No. 14/12/16/3/3/1/1591.

Brandvalley is now proposing to submit a Part 2 Amendment application in respect of changes to the approved turbine specifications, the project layout and the Environmental Management Plans (EMPrs) for the proposed WEF and associated grid connection infrastructure. SiVEST has been requested to provide visual specialist comment in respect of the proposed amendments and also to provide visual specialist inputs for the updated EMPrs.

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Proposed Brandvalley WEF – Visual Specialist Comm

2 METHODOLOGY

2.1 Part 2 Amendment and Update of Associated EMPrs

An assessment of the proposed amendment for the proposed Brandvalley WEF from a visual perspective will involve the tasks as outlined below.

- A review of the original VIAs undertaken for project as well as Visual Specialist inputs in respect of any subsequent amendments;
- An assessment of the proposed new turbine specifications and layout changes in relation to the findings of the original VIAs, including:
 - A re-assessment of potential turbine visibility (viewshed) from previously identified receptor locations;
 - An assessment of potential visual sensitivity in relation to the outputs from the National Web Based Environmental Screening Tool, specifically outputs from the Landscape and Flicker Themes.
- Compilation of a Visual Specialist Assessment Report outlining the findings of the assessment and:
 - o identifying whether the proposed amendments will result in any additional visual impacts or exacerbate the impacts previously identified in the VIA for this development; and
 - o providing additional recommendations or mitigation measures (if necessary) for inclusion in the respective EMPrs for these projects.
- Compilation of a Site Sensitivity Verification Report in accordance with the Assessment Protocols for specialist studies1.
- Provision of updated inputs where necessary for the respective EMPrs based on the findings of the assessment.

2.2 Update of EMPr for 132kV Power Lines

Updates to the EMPr for the associated 132kV power line will involve the tasks as outlined below.

- A review of the original VIA (where available) undertaken for the project as well as Visual Specialist inputs in respect of any subsequent amendments to identify visual specialist recommendations and mitigation measures relevant to the proposed power line development.
- Provision of updated inputs where necessary for the respective EMPrs.

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¹ Formally gazetted on 20 March 2020 (GN No. 320)

3 ASSUMPTIONS AND LIMITATIONS

Given the fact that the proposed WEF and associated power line is within the project area originally assessed for the Brandvalley WEF VIA, it has been assumed that the baseline conditions and receptor locations in the area remain largely unchanged. This assumption was confirmed by way of a desktop assessment and as such, additional fieldwork was not considered necessary.

4 SUMMARY OF PREVIOUS VIA FINDINGS

EOH Coastal and Environmental Services (EOH CES) undertook a VIA for the proposed 140 megawatt (MW) Brandvalley Wind Energy Facility (WEF) in March 2016. Visual special comment in respect of the amended layout was provided by way of a single page addendum letter dated 02 August 2016, and further comment was provided in respect of the proposed EA amendment (14/12/16/3/3/2/900/AM1) in a letter dated 28 June 2018.

In summary, the original VIA described the landscape in the vicinity of the Brandvalley WEF project area as typically "Karoo", largely undeveloped with sheep farming being the dominant activity. The prevailing sense of place is largely associated with remoteness, low levels of development and peace and tranquility. High voltage power lines are the only features which detract from the high scenic quality of the area.

The proposed WEF covers a large area of land and the development will contrast strongly with the existing Karoo landscape. Given the height of the proposed turbines and the absence of screening vegetation, turbines are expected to be at least partially visible from a number of local farmhouses, a few guest houses and sections of the R354 main road. Generally, however, the level visibility from the identified receptors would vary depending on the presence or absence of topographic screening and the distance from the turbines.

The need for a separate full VIA for the proposed grid connection infrastructure to serve the Brandvalley WEF was not identified as part of the BA process undertaken for this development. However, potential visual impacts were discussed in the Basic Assessment Report (BAR) for the proposed power line development dated 8 August 2016. It was stated in this report that although the proposed power line will affect the sense of place, the proposed power line route alignment is in close proximity to existing Eskom power lines, and as such the resultant visual impacts would be very low.

4.1 Sensitive Receptors

The previous visual assessment identified thirty (30) farmsteads within a 20 km radius of the Brandvalley WEF turbine layout. The visual impact of the WEF on these homesteads is dependent on the number of turbines visible and their proximity to the turbines (i.e. their visual exposure to the development). It was pointed out that not all of these homesteads are necessarily sensitive to the proposed WEF, as this depends on the occupants' perception of wind turbines. As such, for the purposes of the VIA, only tourist facilities and the homesteads of interested and affected parties (I&APs) that have objected to the WEF development were considered to be particularly sensitive. In terms of

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tourist facilities, the Gatsrivier guest farm and Saaiplaas guest farm were identified as sensitive. In addition, homesteads on the farms Zeekoegat and Keurkloof were identified as sensitive receptors due to objections raised by their respective owners.

Although the R354 main road which passes within 5km of the proposed turbines is recognised as a scenic route, it was not identified in the VIA as a potential receptor. However, an examination of the viewsheds generated for the proposed WEF showed that only a few turbines would be partially visible from very limited sections of this road. From a visual perspective however, the project needs to be seen within the context of the area being a designated Renewable Energy Development Zone (REDZ).

4.2 Identified Impacts

In the previous VIA, the assessment and mitigation of impacts involved the following:

- An assessment of the proposed project against the visual impact criteria (visibility, visual exposure, sensitivity of site and receptor, visual absorption capacity and visual intrusion) for the site;
- An assessment of the impacts based on a synthesis of criteria for each site (criteria = nature of impact, extent, duration, intensity, probability and significance); and
- The formulation of mitigation measures/recommendations with regards to minimising visual impacts.

4.3 Impact Rating

4.3.1 Construction Phase

Two potential causes of visual impact during construction were identified as outlined below.

- Various activities during the construction phase will have impacts on sensitive visual receptors, and the overall significance of these impacts was rated as **Moderate Negative**.
- Construction camps associated with the proposed facility will have a visual impact, affecting the landscape and rural sense of the place of the area, although the degree of impact varies depending on the visibility of the different site alternatives. The overall significance of these impacts was however rated as Low Negative.

4.3.2 Operations Phase

Four potential causes of visual impact during operation were identified as outlined below.

- During operation, the WEF is expected to impact visually on sensitive receptors in the area. The overall significance of these impacts was rated as High Negative, with few mitigation measures available to reduce the impacts.
- The access roads associated with the proposed facility will result in visual impacts affecting the landscape and rural sense of the place of the area. The overall significance of these impacts was however rated as Moderate Negative.

- On-site substations associated with the proposed facility will also result in visual impacts affecting the landscape and rural sense of the place of the area. The overall significance of these impacts was however rated as Moderate Negative.
- Shadow flicker, resulting from the shade cast by a wind turbine and its rotating blades, may impact on any residences in close proximity to the wind turbines. As there are no buildings within 800m of a wind turbine, there no impacts are anticipated as a result of shadow flicker.

4.3.3 Decommissioning Phase

Impacts during the decommissioning phase will be very similar to those identified in the construction phase and the overall significance of these impacts was rated as Moderate Negative.

4.3.4 Cumulative Impacts

The VIA recognised that there are a number of other existing and proposed renewable energy and electrical infrastructure developments in close proximity to the Brandvalley WEF. During construction and operation, these facilities would inevitably change the visual character of the area and alter the inherent sense of place, thus giving rise to significant cumulative impacts. The overall significance of these impacts was rated as High Negative, with few mitigation measures available to reduce the impacts.

It was further noted however that the study area is located within the Komsberg REDZ (REDZ 2), and thus the relevant authorities support the concentration of renewable energy developments in this area.

5 SPECIALIST COMMENT

5.1 **Proposed WEF**

The layout of the proposed WEF, as depicted in Figure 1 was fully assessed in the VIA undertaken in March 2016, with further visual comment being provided in respect of proposed amendments in August 2016, and in June 2018. It has been established, via desktop assessment using Google Earth imagery, that although the landscape to the north of Brandvalley WEF is undergoing significant change as a result of the development of the Roggeveld WEF, there has been little change since 2018 in the baseline characteristics and the number of sensitive receptors across the remainder of the study area.

5.1.1 Amendments to Turbine Specifications

The proposed new turbine specifications would allow for a hub height of 125m and a rotor diameter of 180m, resulting in a maximum height at the blade tip of 215m, some 10m higher than the height currently authorised. While an increase in the height of the turbines would increase the visibility of the WEF, a GIS-based visibility analysis has shown that, in this instance the increase in visibility would be marginal. Visual impacts resulting from the larger turbines would be greatest within a 1km to 2km radius, from where the increased height of the structure would be most noticeable. However, no potentially sensitive receptors were identified within 2km of a wind turbine placement, and the larger turbines as proposed are not expected to increase the impacts experienced by any of the identified receptors.

In addition, the change in the turbine specifications being proposed for the Brandvalley WEF has allowed for a reduction in the number of turbines required for the facility. Hence, a total of twenty-four (24) turbines have now been removed from the layout depicted in **Figure 1**. This has in turn resulted in a slight reduction in the area from which the turbines will be visible (viewshed). In addition, with fewer turbines in evidence, there will be less visual clutter in the landscape and the cumulative impacts would be slightly reduced.

In light of this, and the limited human habitation and relatively remote location of the proposed Brandvalley WEF, the proposed changes in the turbine specifications are not expected to result in any increased visual impacts on the identified receptors, or affect any additional receptors in the surrounding area.

5.1.2 Updates to WEF Layout

As part of this amendment application, Specialists are being asked to assess an updated layout for the proposed Brandvalley WEF as depicted in the Google Earth Layout (WIN-0253-MD-DWG-001-A_Brandvalley Wind Farm EMPr Layout.kmz) received on 29th October 2021. Updated aspects of the layout include:

- A reduction in the number of turbines, resulting in the removal of 24 turbines from the layout. The remaining 34 turbines remain in place (subject to micro-siting);
- An indicative hardstand footprint has been included in the updated layout. The exact orientation, position and dimensions of the hardstands will be subject to minor change pending the final selection of the TSA;
- Roads with a width of between 9m and 12m widths as stipulated in the respective EIAs (excluding additional width for cut / fill earthworks);
- Substation & O&M facility as per the size and position stipulated in the original EIA;
- MV Collectors will be in the form of cables buried along the roads;
- Site Camp, Laydown Area and Batch Plant have been shifted in line with recommendations made by the contractors.

Considering the fact that the proposed updates in the WEF layout as outlined above do not deviate significantly from the layout assessed in the original EIA and subsequent amendments, it is not anticipated that the final layout will result in any changes in the significance of the impacts identified in the VIA, nor will it result in any additional visual impacts.

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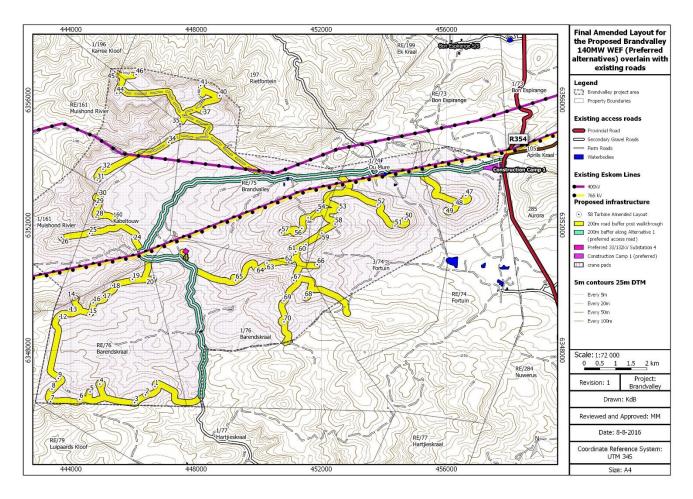


Figure 1: Amended Brandvalley WEF layout

5.2 Sensitivities identified by the National Web-Based Environmental Screening Tool

5.2.1 Proposed WEF

In support of this visual specialist comment report, consideration was given to the Landscape and Flicker Themes of the National Environmental Screening Tool. Under the Landscape Theme, as shown in Error! Reference source not found. below, the tool identifies areas of Very High and High sensitivity in respect of WEF development within the Brandvalley WEF project area. According to the Screening Tool, the high sensitivity rating applied to the project area is associated with the presence of natural features such as mountain tops, high ridges and steep slopes. Based on these criteria, a significant portion of the site would be ruled out for WEF development.

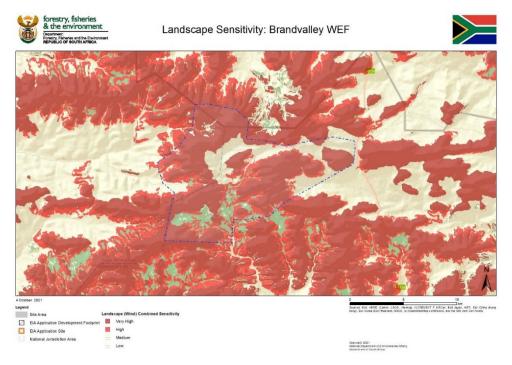


Figure 2. Relative Landscape Sensitivity (October 2021)

The Screening Tool is however a very high level, desktop study and as such the results of the study must be viewed against factors affecting visual impact, such as:

- the presence of visual receptors;
- the distance of those receptors from the proposed development; and
- the likely visibility of the development from the receptor locations.

As most of the turbines are located on these ridges, they will theoretically be visible from a number of visual receptors. In general, however, the development is positioned in such a way that, in many cases the turbine structures will be partially screened from view by topographic features. In addition, viewing distance must be considered when assessing visual impacts, as beyond a certain distance, even large developments tend to be much less visible, and are

difficult to differentiate from the surrounding landscape. The visibility and degree of likely exposure of the proposed development from the identified receptors was examined in detail in the original VIA for the Brandvalley WEF. Aside from the fact that most of the receptors are more than 5km from the nearest wind turbine, many of the receptors identified as being "highly exposed" to the proposed development are in fact homesteads located on farms that are within the project areas for other proposed WEF projects. In light of this, visual impacts of turbine development on the ridges will be reduced to some degree.

In addition, the proposed development is located within a designated REDZ, and thus the relevant authorities support the concentration of renewable energy developments and associated transformation in this area.

The flicker theme demarcates areas (1 km buffers) of sensitivity around identified receptors in the area (**Figure 3**). Under this theme, several "receptors" have been identified within the Brandvalley WEF project area, and the buffers demarcated around these receptors have been assigned a "very high" sensitivity rating. Based on the findings of the original VIA as well recent field investigations conducted for another VIA in this area, it has been determined that many of the receptors identified by the Screening Tool are not in fact receptors. In addition, potential impacts resulting from shadow flicker were assessed in the previous VIA for the Brandvalley WEF and it was concluded that there are no buildings within 800m of a wind turbine and as such the proposed turbine layout is not expected to result in any flicker impacts affecting the identified receptors.

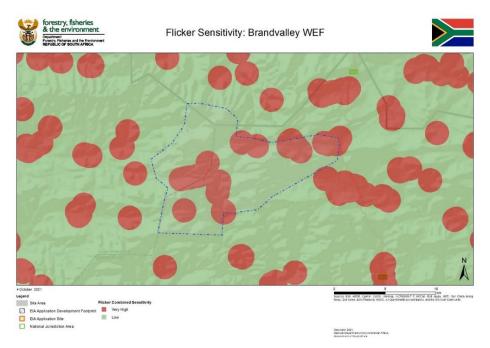


Figure 3: Flicker Sensitivity (October 2021)

5.2.2 Proposed Grid Connection Infrastructure

The National Environmental Screening Tool does not identify any landscape sensitivities in respect of the proposed grid connection.

6 132KV POWER LINE EMPR

A Draft EMPr for the proposed 132kV power line to serve Brandvalley WEF was compiled by EOH CES in June 2016 and was included in the BAR submitted for the proposed development. This EMPr does not however include any specific mitigation measures in respect of visual impacts resulting from the proposed power line. In light of this, the potential visual impacts that may result from the power line development have been re-assessed with a view to formulating mitigation measures for inclusion in the EMPr. Consideration has been given in this assessment to the proposed power line route alignment and substation layout as presented in the Google Earth file (WIN-0253-IN-DWG-007-A_Brandvalley EMPr Layout - 132kV BV to Bon Espirange.kmz) received on 29th October 2021.

6.1 Identification of Potential Impacts associated with power lines

Potential visual issues / impacts resulting from the proposed development of the power line and associated electrical infrastructure to serve the proposed Brandvalley WEF are outlined below.

6.1.1 Construction Phase

- Potential visual intrusion resulting from large construction vehicles and equipment;
- Potential visual impacts of increased dust emissions from construction activities and related traffic:
- Potential visual scarring of the landscape as a result of site clearance and earthworks; and
- Potential visual pollution resulting from littering on the construction site.

6.1.2 Operational Phase

- Potential alteration of the visual character of the area;
- Potential visual intrusion resulting from infrastructure dominating the skyline in a largely natural / rural area;
- Potential visual effect on surrounding farmsteads; and
- Potential alteration of the night time visual environment as a result of operational and security lighting at the associated substations.

6.1.3 Decommissioning Phase

- Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process;
- Potential visual impacts of increased dust emissions from decommissioning activities and related traffic; and
- Potential visual intrusion of any remaining electrical infrastructure on the site.

6.2 INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAMME

Impact	Mitigation / Management Objectives	Mitigation / Management Actions	Monitoring				
			Methodology	Frequency	Responsibility		
A. CONSTRUCTION P	A. CONSTRUCTION PHASE						
A.1. VISUAL IMPACTS							
Potential impact on visual resources as a result of the proposed power line and electrical infrastructure.	Avoid or minimize construction impacts on existing visual resources and potentially sensitive receptor locations in the surrounding area.	 Carefully plan to minimise the construction period and avoid construction delays. Inform any receptors within 500m of construction works of the construction programme and schedules. Position storage/stockpile areas in unobtrusive positions in the landscape, where possible. Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. Vegetation clearing should take place in a phased manner. Make use of existing gravel access roads where possible. Limit the number of vehicles and trucks travelling to and from the construction, where possible. Ensure that dust suppression techniques are implemented: on all access roads; in all areas where vegetation clearing has taken place; on all soil stockpiles. Maintain a neat construction site by removing litter, rubble and waste materials regularly. 	Ensure that visual management measures are monitored by an ECO. This will include monitoring activities associated with visual impacts such as the siting and management of soil stockpiles, screening and dust suppression. Regular reporting to an environmental management team must also take place during the construction phase.	Ongoing during construction	Main Contractor (MC), Environ-mental Officer (EO) and ECO		

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Impact	Mitigation / Management Objectives	Mitigation / Management Actions	Monitoring			
			Methodology	Frequency	Responsibility	
B. OPERATION PHASE						
B.1. VISUAL IMPACTS	B.1. VISUAL IMPACTS					
Potential impact on visual resources as a result of the proposed grid connection infrastructure.	Avoid or minimize operational impacts on existing visual resources and potentially sensitive receptor locations in the surrounding area.	 Where possible, limit the amount of security and operational lighting present at substations. Where possible, avoid placing lights on pylon structures. Light fittings for security at night should reflect the light toward the ground and prevent light spill. Lighting fixtures should make use of minimum lumen or wattage. Mounting heights of lighting fixtures should be limited, or alternatively, foot-light or bollard level lights should be used. Where possible, limit the number of maintenance vehicles using access roads. Buildings on the substation sites should be painted with natural tones that fit with the surrounding environment. Non-reflective surfaces should be utilised where possible. 	Ensure that visual mitigation measures are monitored by the management team on an on-going basis. This will include monitoring activities associated with visual impacts such as the control of signage, lighting and maintenance vehicles on access roads.	Ongoing during operation	■ ESKOM	

Impact	Mitigation / Management Objectives	Mitigation / Management Actions	Monitoring				
			Methodology	Frequency	Responsibility		
C. DECOMISSIONING PHASE							
C.1. VISUAL IMPACTS	C.1. VISUAL IMPACTS						
Potential impact on visual resources as a result of the proposed grid connection infrastructure.	Avoid or minimize impacts of decommissioning activities on existing visual resources and potentially sensitive receptor locations in the surrounding area.	 Carefully plan to reduce the decommissioning period. Inform receptors within 500m of decommissioning works of the decommissioning programme and schedules. All infrastructure that is not required for post-decommissioning use should be removed. Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. Make use of existing gravel access roads where possible. Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible. Ensure that dust suppression techniques are implemented: on all access roads; in all areas where vegetation clearing has taken place; and on all soil stockpiles. 	Ensure that procedures for the removal of structures and stockpiles during decommissioning are implemented, including recycling of materials. In addition, it must be ensured that rehabilitation of the site to a visually acceptable standard is undertaken.	During decommissioning	MC, EO and ECO		

7 CONCLUSION

7.1 Brandvalley WEF

SiVEST has assessed the previous VIAs undertaken in respect of the proposed Brandvalley WEF in conjunction with the proposed changes to the turbine specifications and the updated layout (WIN-0253-MD-DWG-001-A_Brandvalley Wind Farm EMPr Layout.kmz received on 29th October 2021). Based on this assessment, it is SiVEST's opinion that the proposed amendments do not give rise to any additional impacts or exacerbate the impacts previously identified in the VIA for this development. No additional mitigation measures or specialist input into the EMPr are deemed necessary. Given the low level of human habitation and the relative absence of sensitive receptors in the area, the amended turbine specifications and updated site layout are deemed acceptable from a visual perspective and the Environmental Authorisation (EA) should be amended. SiVEST is of the opinion that the impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

7.2 132kV Power Line

From a visual perspective, potential impacts of the proposed power line have been identified and suitable mitigation measures have been recommended for input into the updated EMPr for the proposed power line.

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