Scoping and Environmental Impact Assessment for the Proposed Construction and Operation of the up to 240 MWac Ingwe Wind Energy Facility 2 and associated infrastructure, near Molteno in the Eastern Cape

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

EXECUTIVE SUMMARY

Prepared for:
Ingwe Wind Energy Facility 2 (Pty) Ltd

Prepared by:
CSIR Environmental Management Services,
PO Box 320, Stellenbosch
7599, South Africa

July 2023

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Touching lives through innovation

SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT

for the

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Formatting and Desktop Publishing:
Magdel van der Merwe (DTP Solutions)

REPORT DETAILS

Title:	Scoping and Environmental Impact Assessment (EIA) for the proposed construction and operation of the up to 240 MWac Ingwe Wind Energy Facility 2 with associated infrastructure, near Molteno in the Eastern Cape: FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
Purpose of this report:	The purpose of this Final Environmental Impact Assessment Report is to: • Present the details of and the need for the proposed project; • Describe the affected environment, including the planning context, at a sufficient level of detail to facilitate informed decision-making; • Provide an overview of the EIA Process being followed, including public consultation; • Assess the predicted positive and negative impacts of the project on the environment; • Provide recommendations to avoid or mitigate negative impacts and to enhance the positive benefits of the project; and • Provide an Environmental Management Programme (EMPr) for the design, construction and operational phases of the project. The Draft Environmental Impact Assessment (EIA) Report was made available to all registered Interested and/or Affected Parties (I&APs), Organs of State and key stakeholders for a 30-day review period which extended from **19 June 2023 to 19 July 2023** (excluding public holidays). All comments submitted during the 30-day review have been incorporated in the detailed Comments and Responses Report, and addressed, as applicable and where relevant, and included in the Final EIA Report. The Final EIA Report has been submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) for decision-making.
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CONTENTS

PART A: MAIN REPORT

PART B: APPENDICES

SUMMARY

PROJECT OVERVIEW

Ingwe Wind Energy Facility 2 (Pty) Ltd (hereinafter referred to as "the Project Applicant") is proposing the construction and operation of a commercial Wind Energy Facility (WEF) and associated infrastructure approximately 8 km north of the town of Molteno in the Eastern Cape Province. It is proposed that the Ingwe Wind Energy Facility 2 (hereafter, "Ingwe WEF 2") (DFFE Reference: 14/12/16/3/3/2/2276) will comprise of up to 24 turbines with a contracted generation capacity of up to 240 MWac.

One additional WEF and a further five solar photovoltaic (PV) energy facilities are concurrently being considered on the surrounding properties and are assessed by way of separate Scoping and Environmental Impact Assessment (S&EIA) Processes. The proposed WEF is referred to as the up to 240 MWac Ingwe Wind Energy Facility 1 (DFFE Reference: 14/12/16/3/3/2/2275) and the solar PV projects are called ABO Ingwe Solar Energy Facility 1-5 (DFFE Reference numbers pending).

During the Scoping phase, it was proposed that the Ingwe WEF 1 would comprise of up to 41 turbines with a contracted generation capacity of up to 307.5 MWac and Ingwe WEF 2 would comprise of up to 64 turbines with a contracted generation capacity of up to 510 MWac. Detailed specialist assessments were conducted comprising a 8 821 Ha study area for the proposed Ingwe WEF 2, including further desktop analysis and field surveys, where relevant. The assessment of the study area led to the identification of environmental features, which were assigned relevant sensitivities by the specialist team. The sensitivities identified were taken into consideration and the Revised Scoping Buildable Areas were formulated, which avoid all no-go areas where practically possible. While most of the environmental themes have indicated and confirmed areas of Medium to Low sensitivity for the areas specifically related to the proposed placement of turbines and associated infrastructure, the avifaunal theme indicated a high sensitivity. The initial, high-level impact assessment during the Scoping phase also indicated Medium to Very Low impacts following mitigation across most environmental themes other than avifauna, which was anticipated to be high (specifically for turbine collisions).

At the start of the EIA phase, in response to the findings of the avifaunal specialist around the risk of turbine collision, the Project Applicant reduced the number of turbines across both WEFs to up to 34 turbines for Ingwe WEF 1, and up to 55 turbines for Ingwe WEF 2. These site layouts were further assessed by the avifaunal specialist and were presented to Birdlife South Africa (BLSA), VulPro and the Endangered Wildlife Trust (EWT) in an online Focus Group Meeting held on 16 May 2023. Following the review of these updated assessments and taking into consideration the comments and inputs provided by the BLSA, EWT and VulPro during this Focus Group Meeting, the Project Applicant then further reduced the proposed maximum number of turbines per WEF, as well as the specifications for the rotor diameter and extent of the proposed facilities in order to further reduce anticipated impacts regarding potential collision with turbines. The further reduced site layout plans for both WEFs that were developed based on the acceptable buildable areas are those presented in this EIA Report and are proposing a maximum number of 24 turbines with a rotor diameter of up to 190 m per WEF (i.e., maximum of 24 turbines for WEF 1 and maximum of 24 turbines for WEF 2) (refer to Table A below). All specialist assessments in the Draft and Final EIA Reports are based on this reduced layout. Also, the total assessed study area that was subjected to further detailed specialist assessment during the EIA Phase, based on the current proposed site layout plan, is approximately 7 346 Ha in extent (noting that during the Scoping phase, a larger area of 8 821 Ha was assessed). The total physical development footprint of the proposed Ingwe WEF 2 (i.e., maximum 24 turbines and supporting infrastructure) is now estimated to comprise up to approximately 96 Ha (previously 153 Ha), which is only about 1.3% of the total assessed study area and a temporary development footprint of

approximately 100 Ha is anticipated (i.e., approximately 4 Ha to be rehabilitated). The farm portions forming part of the reduced study area as assessed during the EIA phase are listed below in Table B (noting that they were all assessed in the Scoping phase).

In the specialist assessments for the EIA phase, only the Avifaunal Impact Assessment considers the initially reduced layout (of up to 34 turbines for Ingwe WEF 1 and up to 55 turbines for Ingwe WEF 2), as well as the current proposed site layout taken into the EIA phase that has up to 24 turbines per WEF (refer to Chapter 8 of this EIA Report). This reduction in turbines was aimed at reducing impacts on avifauna. When the reduced layout of 24 turbines per WEF was reached following the avifaunal focus group meeting, then all specialists updated their assessments based on this 24-turbine layout. For all specialist assessments, the layout with up to 24 turbines per WEF does not present any impacts of high or very high significance post mitigation, and has thus been deemed acceptable to take this through the EIA phase in the Draft and Final EIA Reports.

However, although this reduced layout of 24 turbines per WEF has been designed to avoid all very high sensitivities (i.e., no-go areas) and avoid negative impacts of high/very high significance, following public review of the Draft EIA Reports, comments about the potential adverse impact of these proposed WEFs on specifically the avifauna have been raised by some registered I&APs. These comments have been incorporated into the detailed Comments and Responses Report, and addressed, as applicable and where relevant, and included separately with the Final EIA Report that has been submitted to the DFFE for decision-making.

Table A: A summary of the reduction in turbine numbers throughout the S&EIA Processes

Facility	Proposed Turbine Numbers				Notes on reduction of turbines
	Screening: Initial layout proposed to EAP following fatal flaw assessment	Scoping phase Site Layouts	Interim layout (only assessed by avifauna specialist)	EIA Phase Site Layouts (assessed by all specialists)	
Ingwe WEF 1	57	41	34	24	EIA phase layout is now 42% of the maximum proposed number of turbines for this project.
Ingwe WEF 2	62	64	55	24	EIA phase layout is now 37.5% of the maximum proposed number of turbines for this project.

The proposed Ingwe WEF 2, which can be accessed via existing public roads off the R56 provincial asphalt trunk road connecting Molteno with Steynsburg and Sterkstroom, the R397 provincial gravel main road as well as two district gravel roads herein referred to as “DR1” and “DR2”, will be located within the Enoch Mgijima Local Municipality (previously the Tsolwana Local Municipality), which falls within the Chris Hani District Municipality.

The proposed project is being developed to generate electricity via wind energy, which will feed into and supplement the national electricity grid. This report comprises the **Final Environmental Impact Assessment (EIA) Report** for the proposed construction and operation of the up to 240 MWac Ingwe WEF 2. The project details are provided in Table D below. **It must be noted that this report only covers the proposed Ingwe WEF 2, as detailed below.** A separate report is provided for the proposed Ingwe WEF 1.

Table B: Project Name, Applicant, and the main Affected Farm Portions

WEF Project Name	Project Applicant	Affected Farm Portions
Ingwe WEF 2	Ingwe Wind Energy Facility 2 (Pty) Ltd	• The Farm Klip Fountain No. 40 / RE, 8, 14 (RE), 15, 18, 21, 22, 24[1], 25, 26[1] • The Farm Bamboo No. 43 / RE, 1 • The Farm Oud Klip No. 44 / 6 (RE), 14, 29 (RE) • The Farm Modderfontein No. 58 / 8

The proposed project does not fall within any of the Renewable Energy Development Zones (REDZs), which were promulgated in Government Gazette 41445, Government Notice (GN) R114 on 16 February 2018. The proposed Ingwe WEF 2 project site is located approximately 8.5 km away (at its closest point) from the Stormberg REDZ. In addition, the proposed Ingwe WEF 2 project site is located approximately 20 km away (at its closest point) from the Eastern Strategic Transmission Corridor (as gazetted on 16 February 2018, GN R113). Therefore, the project's proximity to the Stormberg REDZ and the Eastern Strategic Transmission Corridor supports the development of a large-scale renewable energy project at the proposed location. The proposed project is therefore linked to the national planning vision for large-scale wind and solar development in South Africa.

As a result, a full Scoping and EIA Process in terms of Appendix 2 and 3 of the 2014 NEMA EIA Regulations (as amended) is being undertaken for the proposed WEF with a 107-day decision-making timeframe, as opposed to a Basic Assessment Process and 57-day decision-making timeframe allowed for in the REDZs and strategic transmission corridors. The Competent Authority for this proposed project is the National Department of Forestry, Fisheries and the Environment (DFFE).

The Public Participation Process (PPP) for this Scoping and EIA (S&EIA) process for the proposed Ingwe WEF 2 is being undertaken in compliance with Chapter 6 of the 2014 NEMA EIA Regulations (as amended). During this S&EIA process, an integrated PPP has been undertaken for the two proposed WEFs and its associated infrastructure, which entailed that all public participation documents (such as newspaper advertisements, site notices, notification letters, emails, SMS text messages, etc.) served to notify potential and registered I&APs as well as Organs of State and other key relevant stakeholders of the joint availability of the Draft Scoping Reports as well as the Draft EIA Reports for the abovementioned projects and have provided registered I&APs with an opportunity to comment on the respective reports. This approach was undertaken due to the close proximity of the sites (i.e., the proposed WEF projects will take place within the same geographical area and will be located on adjoining farm properties) and because the proposed projects entail the same activity (i.e., generation of energy using a renewable source (i.e., Wind)).

The Draft Scoping Report was released to all potential and registered Interested and/or Affected Parties (I&APs), Organs of State and relevant stakeholders for a 30-day comment period, which extended from 14 January 2023 to 15 February 2023, excluding public holidays. All comments received from registered I&APs during the 30-day review have been incorporated into a detailed Comments and Responses Report, and addressed, as applicable and where relevant, and were included with the Final Scoping Report. The Final Scoping Report has been submitted to the DFFE, in accordance with Regulation 21 (1) of the 2014 NEMA EIA Regulations (as amended), for consideration on 28 February 2023. The National DFFE has confirmed their acceptance of the Final Scoping Report for the proposed Ingwe WEF 2 in a letter dated 14 April 2023.

The Draft EIA Report was made available to all potential and registered I&APs, Organs of State and key relevant stakeholders for a 30-day comment period, which extended from 19 June 2023 to 19 July 2023, excluding public holidays. All comments received during the 30-day review have been incorporated into the detailed Comments

[1] *These farm properties will be dealt with by means of wayleave applications.*

and Responses Report, and addressed, as applicable and where relevant, and included separately with the Final EIA Report. The Final EIA Report (i.e., **this report**) has been submitted to the National DFFE for decision-making in accordance with Regulation 23(1)(a) and Regulation 24 of the 2014 NEMA EIA Regulations (as amended).

PROJECT LOCATION

The locality of the proposed Ingwe Renewable Energy Project Cluster is shown in Figure A. The indicative site layout plan of the proposed Ingwe WEF 2 project as assessed by the specialist team during the Scoping Phase is shown in Figure B. The current proposed site layout plan of the proposed Ingwe WEF 2 project as assessed by the specialist team during the EIA Phase is shown in Figure C. The corner co-ordinates of the proposed project site and associated infrastructure are detailed in Chapter 2 of this EIA Report.

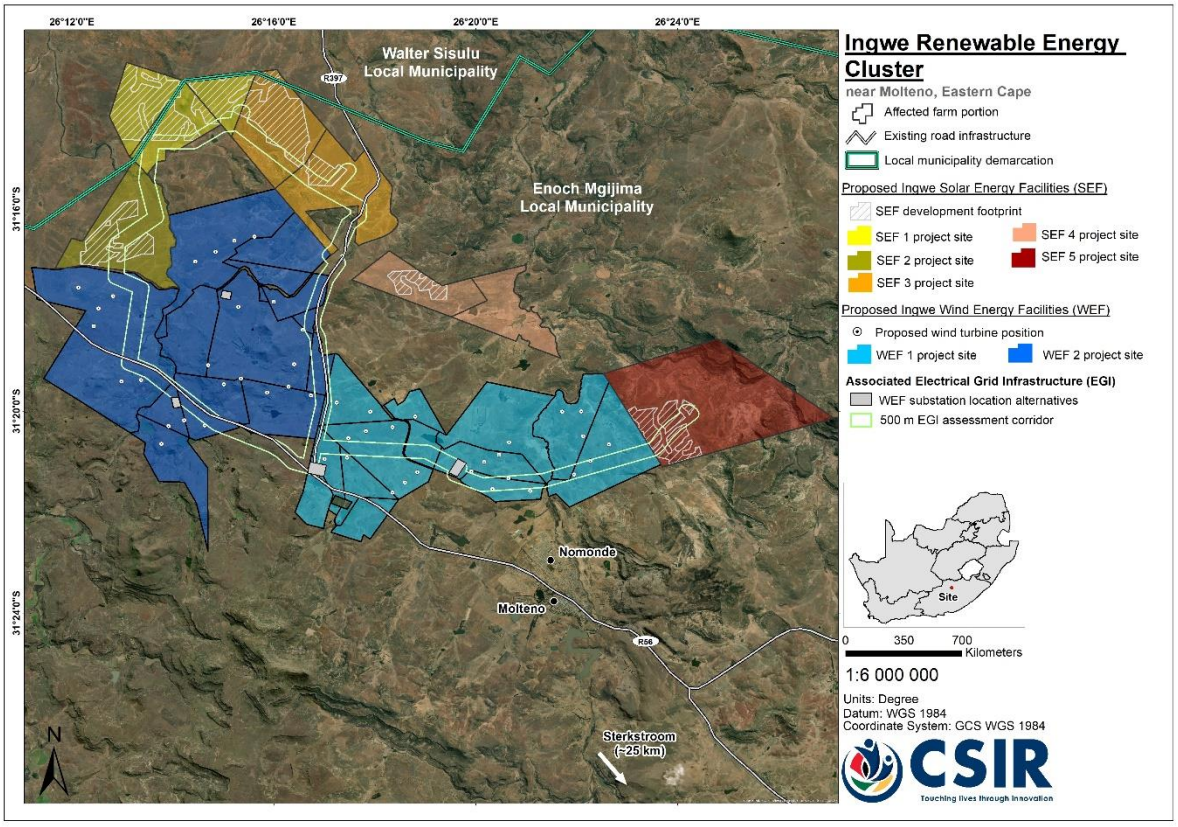

Figure A: Locality of the proposed Ingwe Wind and Solar PV Project Cluster, near Molteno in the Eastern Cape.

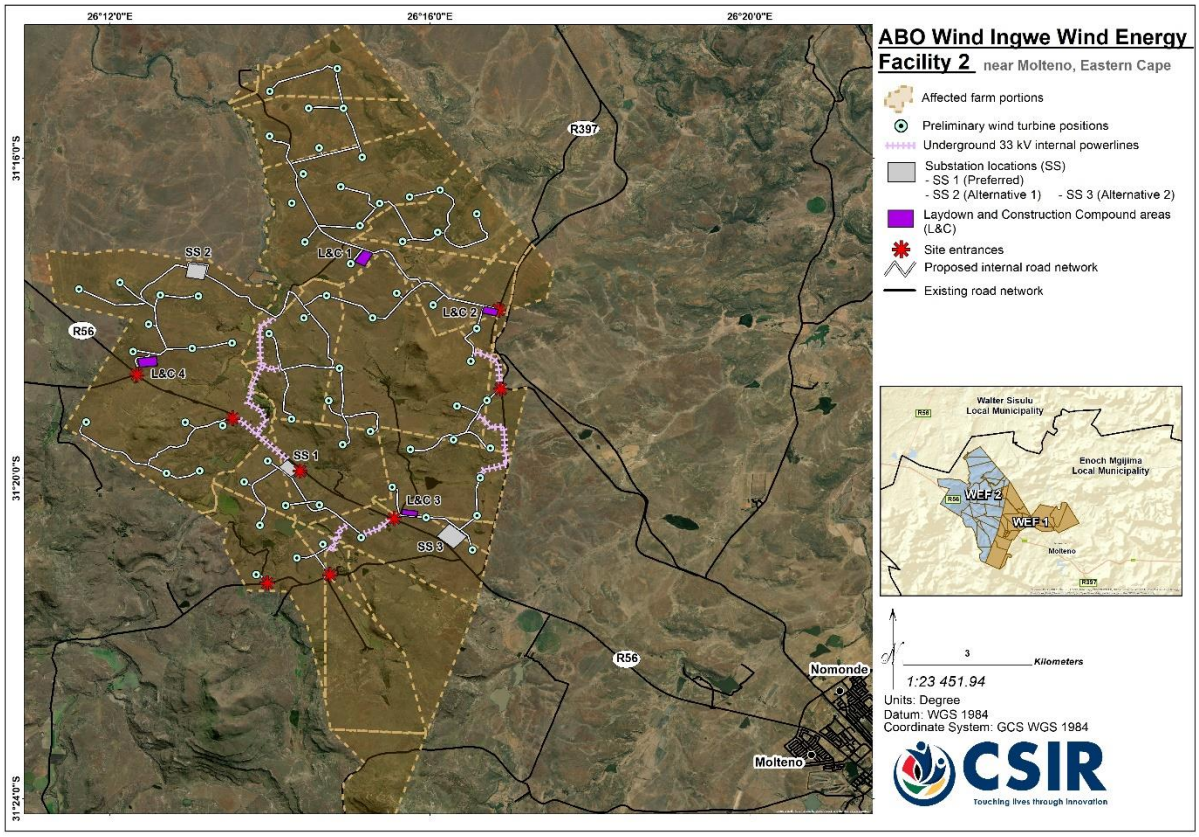

Figure B: Indicative site layout plan of the proposed Ingwe WEF 2 as assessed during the Scoping Phase.

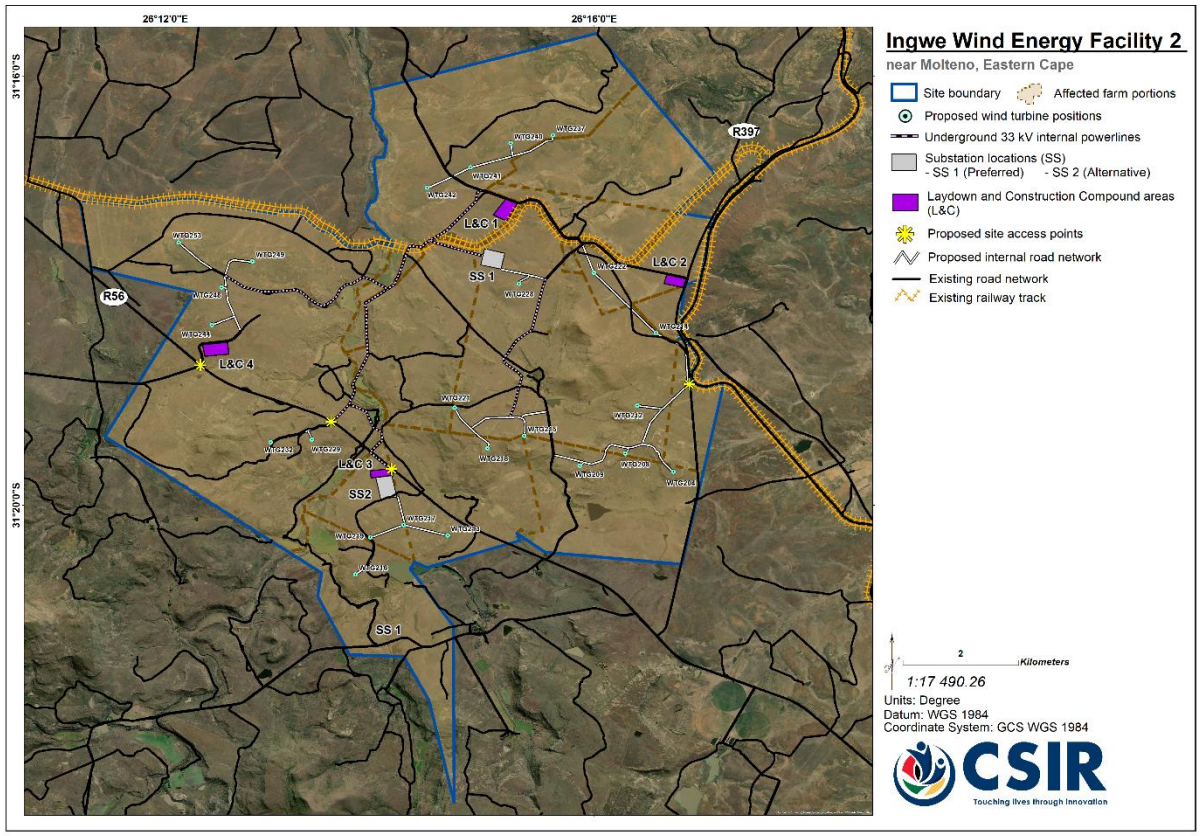

Figure C: Current proposed site layout plan of the proposed Ingwe WEF 2 as assessed during the EIA Phase.

PROJECT ENVIRONMENTAL IMPACT ASSESSMENT TEAM

In accordance with Regulation 12 (1) of the 2014 NEMA EIA Regulations (as amended), the Project Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the required S&EIA process in order to determine the potential biophysical, social and economic impacts associated with undertaking the proposed development. The project team, including the relevant specialists, is indicated in Table C below.

Table C: EIA Project Team for the Ingwe WEF 2

NAME	AFFILIATION	ROLE/STUDY TO BE UNDERTAKEN
Environmental Management Services (CSIR)		
Paul Lochner (Registered EAP (2019/745))	CSIR	Technical Advisor and Quality Assurance
Lizande Kellerman (Pr.Sci.Nat.)	CSIR	Project Manager and Author
Suvasha Ramcharan	CSIR	Project Officer and Author
Dhiveshni Moodley (Cand.Sci.Nat.)	CSIR	GIS Specialist
Specialists		
Johann Lanz (Pr.Sci.Nat.)	Private	Agriculture and Soils Compliance Statement
Dr Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Dr John Almond	Natura Viva cc	Palaeontological Assessment
Jon Smallie	Wildskies Ecological Services (Pty) Ltd	Avifauna Impact Assessment
Michael Brits and Craig Campbell	Arcus Consultancy Services South Africa (Pty) Ltd	Bats Impact Assessment
Dr Brian Colloty (Pr.Sci.Nat.)	EnviroSci (Pty) Ltd	Aquatic Biodiversity Impact Assessment
Dr Brian Colloty (Pr.Sci.Nat.)	EnviroSci (Pty) Ltd	Terrestrial Biodiversity Impact Assessment (including Terrestrial Animal Species and Terrestrial Plant Species)
Dr Brett Williams and Jason Hutton	Safetrain cc T/A Safetech	Noise Impact Assessment
Lourens du Plessis and Bryony van Niekerk	LOGIS / NuLeaf Planning and Environmental (Pty) Ltd	Visual Impact Assessment
Ntuthuko Hlanguza	SiVEST SA (Pty) Ltd	Traffic Impact Assessment
Sue Reuther	SRK Consulting South Africa (Pty) Ltd	Socio-Economic Impact Assessment
Debra Mitchell	ISHECON cc	High-level Safety, Health, and Environmental Risk Assessment for the Development of a Battery Energy Storage System
Carel de Beer	Bare Rock Consulting (Pty) Ltd	Geotechnical Desktop Assessment
Dale Barrow, Hardy Luttig and Louis Jonk	GEOSS South Africa (Pty) Ltd	Geohydrology Impact Assessment
Lizande Kellerman (Pr.Sci.Nat.)	CSIR	Civil Aviation Site Sensitivity Verification
Lizande Kellerman (Pr.Sci.Nat.)	CSIR	Defence Site Sensitivity Verification

PROJECT DESCRIPTION

It is important to point out at the outset that the exact specifications of certain proposed project infrastructure components, such as the type and model of the wind turbine generator to be selected and installed for the project, will only be determined during the detailed design and engineering phase prior to construction (subsequent to the issuing of EA, should EA be granted for the proposed project). A summary of the key components of the proposed project is provided in Table D below. A detailed description of the different project components is provided in Chapter 2 of this EIA Report.

Table D: Summary of key components and associated infrastructure for the proposed project

Infrastructure	Description
Number of turbines:	Up to 24 turbines
Turbine Capacity:	Up to 10 MW
Hub Height:	Up to 180 m
Rotor (Blade) Diameter:	Up to 190 m
Blade length:	Up to 95 m
WEF Project Size / Generation Capacity:	Up to 240 MWac
Reinforced foundation and crane platform:	Up to 1 Ha per turbine
On-site substation hub:	The proposed project will include an on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, BESS, and associated O&M buildings. The substation hub will comprise an area of up to 22 Ha. The substation-built infrastructure will have a maximum height of 10 m. Two possible locations or placement alternatives for the on-site substation hub have been identified and assessed during the EIA Phase. Substation location 1 has been selected as the Preferred, and Substation location 2 has been selected as the Alternative.
Capacity of on-site substation:	33/132 kV
Construction compound and laydown areas:	Up to 23 Ha Four placement locations for the construction compound and laydown areas have been identified and assessed during the EIA Phase.
Internal service roads:	The proposed project will have a total internal service road network of up to approximately 27 km. Permanent service roads will be up to 10 m wide and may require side drains on one or both sides. All service roads will be gravel and may have underground cables running alongside them. During construction, an up to 12 m road corridor may be temporarily impacted upon which will be rehabilitated to a width of up to 10 m after construction has been completed. Temporary clearing of up to 50 m may be required in areas where cut and fill may be required as well for the construction of the bell mouth road junction, turning circles and temporary passing lanes on site. The network layout is designed to provide efficient access to all elements of the facility and effective accommodation of the anticipated internal traffic. The specialists have assessed in detail all proposed internal service roads during the EIA Phase.
Concrete batching plant:	Up to 0.25 Ha
Operational and Maintenance (O&M) Building Complex:	To be located within the development footprint of the on-site substation hub
Battery Energy Storage System (BESS):	The BESS will cover an area of approximately five (5) ha. The BESS technology types that have been assessed during the EIA Phase include:

	- Lithium ion, NiCd, NiMH-based Batteries - Redox Flow Batteries (VRFB, Zn-Fe, Zn-Br) It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate and Lithium Nickel Manganese Cobalt oxides will be considered as the preferred battery technology.
Site Access:	The proposed project and associated infrastructure will be located approximately 8 km northwest of the town of Molteno in the Eastern Cape Province. Access to the proposed project site will be facilitated via existing public roads off the R56 provincial asphalt trunk road connecting Molteno with Steynsburg and Sterkstroom, the R397 provincial gravel main road, as well as two district gravel roads herein referred to as "DR1" and "DR2". Four possible access points to the proposed project site have been identified and further assessed during the EIA Phase.
Proximity to grid connection:	It is proposed that the electrical grid connection component will likely comprise of a new loop-in loop-out (LILO) connection into the existing Beta-Delphi 400 kV overhead power line, and a new LILO connection into the existing Dorper-Stormberg 132 kV overhead power line, at the point where these existing power lines cross the project site, to facilitate the connection of the proposed project to the national grid. Both options will include associated and supporting infrastructure for the respective projects among other associated and supporting infrastructure. In order to identify sensitivities and environmental features that need to be avoided, the specialists will assess an approximately 500 m wide corridor (250 m on either side of the overhead powerline routes) for the existing Beta-Delphi 400 kV overhead power line and the proposed 132 kV overhead power line. ***Note from the CSIR:*** *A separate Environmental Assessment Process will be undertaken once the grid connection and the 132 kV power line routing for the proposed project has been confirmed, and hence does not form part of this S&EIA Process.*
Fencing:	For various reasons such as security, public protection and lawful requirements, the proposed infrastructure on site will be secured via the installation of appropriate fencing. Existing livestock fencing on the affected farms portions may be upgraded in places where deemed insufficiently secure, whereas permanent fencing will be required around the O&M areas and on-site substation hubs. Access points will be managed and monitored by an appointed security service provider. The type and height of fencing to be installed will be confirmed during the detailed design phase prior to construction.

NEED FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

As noted above, in terms of the 2014 NEMA EIA Regulations (as amended) published in GN R326, R327, R325 and R324, a full Scoping and EIA Process is required for the proposed project. The need for the Scoping and EIA is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

- *"The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs (a) within an urban area; or (b) on existing infrastructure".*

Chapter 4 of the Scoping Report contains the detailed list of activities contained in GN R327, R325 and R324 which are triggered by the various project components and thus form part of this Scoping and EIA Process.

The purpose of the S&EIA process is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The Scoping and EIA therefore needs to show the Competent Authority, the National DFFE; and the Project Applicant, Ingwe Wind Energy Facility 2 (Pty) Ltd, what the consequences of their choices will be in terms of impacts on the biophysical and socio-economic environment and how such impacts can be, as far as possible, enhanced or mitigated and managed as the case may be.

APPROACH TO THE EIA PROCESS

The original Application for EA for the proposed Ingwe WEF 2 was submitted to the DFFE via the Novell S-Filer system, as recommended by the DFFE since June 2020, in January 2023 together with the Draft Scoping Report for comment. The Draft Scoping Report was made available to potential and registered I&APs, Organs of State and key relevant stakeholders for a 30-day review period, which extended from 14 January 2023 to 15 February 2023. Appendix D of this EIA Report includes the proof of submission (i.e., emails and letters) of the original Application for EA and the Draft Scoping Report to the DFFE for comment. For this Scoping and EIA Process, a DFFE EIA Reference Number was assigned to the proposed Ingwe WEF 2 project i.e., DFFE Reference 14/12/16/3/3/2/2276.

The comments received from I&APs and stakeholders during the 30-day review of the Draft Scoping Report were incorporated into the detailed Comments and Responses Report, and the finalised Scoping Report was submitted to the DFFE on 28 February 2023, in accordance with Regulation 21 (1) of the 2014 NEMA EIA Regulations, for consideration in terms of Regulation 22 of the 2014 NEMA EIA Regulations. The DFFE accepted the Final Scoping Report and Plan of Study for EIA on 14 April 2023, which enabled the commencement of the impact assessment phase.

It is important to note that based on the design progression, certain listed activities as included in the original Application for EA are no longer triggered, and some additional listed activities have become applicable (thus triggered) since the submission of the original Application for EA. An amended Application for EA has therefore been submitted to the DFFE for consideration together with the Final Scoping Report in February 2023. The DFFE's Acceptance letter dated 14 April 2023 is included in Appendix E.6 of this EIA Report. An amended Application for EA, as was accepted by the DFFE on 16 January 2023, inclusive of further minor updates based on comments received from the DFFE upon their acceptance of the Scoping Report, is included as Appendix L of this EIA Report.

The Draft EIA Report for the proposed Ingwe WEF 2 has been released to potential and registered I&APs, Organs of State and key relevant stakeholders for a 30-day comment period, which extended from 19 June 2023 to 19 July 2023. The Draft EIA Report along with its supporting appendices were made available on the project website (i.e., https://www.csir.co.za/environmental-impact-assessment) for I&APs to access it. Written notification of the availability of the Draft EIA Report for comment has been sent to all registered I&APs, Organs of State and key relevant stakeholders included on the project database via email, where email addresses are available. This notification was sent at the commencement of the 30-day comment period on the Draft EIA Report (i.e., 19 June 2023) and included information on the proposed project and notification of the release and availability of the report. Copies of all written comments received from registered I&APs during the review of the Draft EIA Report have been incorporated into the Comments and Responses Report, and addressed, as applicable and where relevant, and included in the Final EIA Report. The Final EIA Report (i.e., **this report**) has been submitted to the DFFE for decision-making.

The findings and impact assessment significance ratings of the detailed specialist assessments (included as Chapters 6 to 17), as well as other relevant project information are included and integrated into the Final EIA

Report. The Environmental Management Programme (EMPr) for the Wind Energy Facility is included in Appendix I, and the gazetted Generic EMPr for the on-site IPP Substation is included in Appendix J of the Final EIA Report. The EMPr is informed by the recommended mitigation measures and management actions provided by the specialist team for the planning and design (pre-construction), construction, operational and decommissioning phases of the proposed project.

SUMMARY OF PUBLIC PARTICIPATION UNDERTAKEN DURING THIS EIA PROCESS

The following measures are being implemented in order to foster the public participation process:

- **I&AP Database Development and Maintenance:**
    - In line with Regulation 41(2) (b) of GN R326, an initial database of potential I&APs was developed for the S&EIA Processes and is being updated throughout the process (included as Appendix C of this EIA Report). The updated database is being used to provide written notification to registered I&APs, Organs of State and other key relevant stakeholders of inter alia the availability of the Draft EIA Report for review, the submission of the Final EIA Report to the DFFE for decision-making, and the outcome of the DFFE's decision on this Application for Environmental Authorisation.
- **Site Notices:**
    - Notice boards (in English, Afrikaans and isiXhosa) were placed at various locations, as documented in Chapter 4 of this EIA Report. These site notice boards were placed during a site visit undertaken on 5 and 6 December 2022. A copy of the notice boards and proof of placement thereof are included in Appendix D.1 of this EIA Report.
- **Newspaper Advertisements:**
    - A newspaper advertisement (in the English, Afrikaans and isiXhosa languages) was placed in one regional newspaper (i.e., The Representative) notifying all potential and registered I&APs of the commencement of the Scoping Phase and the availability of the Draft Scoping Report for a 30-day comment period. A copy of the content and proof of placement of the advertisement has been included in Appendix D.2 of this EIA Report. An advertisement (in the English, Afrikaans and isiXhosa languages) has also been placed in one regional newspaper (i.e., The Representative) during the EIA phase, notifying all potential and registered I&APs of the availability of the Draft EIA Report for a 30-day comment period. A copy of the content and proof of placement of the advertisement has been included in Appendix F.2 of this EIA Report.
- **Written Notices:**
    - Notification letters will be sent to registered I&APs (including the owners of the properties on which the proposed WEF projects and infrastructure will be constructed, occupiers of these sites, neighbouring property owners (i.e., adjacent to the sites), as well as commenting authorities and key stakeholders.
    - The following written notices has been sent via email during the Scoping Phase of this project:
        - **Letter 1 and Email 1 (Inception and release of Draft Scoping Report for public comment)** was sent to notify and inform the pre-identified potential and registered I&APs, where email addresses are available, about the proposed project, to invite I&APs to register on the project database, and to inform them of the release of the Draft Scoping Report for comment, and the associated comment period. A copy of this notice has been included in Appendix D.3 of the EIA Report.
        - **Emails 2, 3 and 4 (Reminder to Comment on the Draft Scoping Report)** was sent to remind potential and registered I&APs, where email addresses are available, to send comments on the Draft Scoping Report. Copies of these notices have been included in Appendix D.3 of the EIA Report.
        - **Emails 5 and 6 (Notification of the Closure of the Comment Period on Draft Scoping Report)** was sent to notify registered I&APs, where email addresses are available, of the

closure of the review period on the Draft Scoping Report. A copy of this notice has been included in Appendix D.3 of the EIA Report.

- **Letter 2 and Email 7 (Submission of Final Scoping Report)** was sent to all registered I&APs, where email addresses are available, as notification of the submission of the Final Scoping Report to the DFFE for consideration. Proof of email, as well as copies of the Letter 2 and emails sent have been included in Appendix D.5 of the EIA Report.
- **Letter 3 and Email 8 (DFFE's Acceptance of the Final Scoping Report and Commencement of EIA Phase)** was sent to all registered I&APs, where email addresses are available, to notify them of the DFFE's acceptance of the Final Scoping Report. Email 6 included information on the proposed project and served to also notify all registered I&APs of the commencement of the EIA Phase. Copies of the Letter 3 and Email 6 and the email content as well as proof of correspondence sent have been included in Appendix D.6 of the EIA Report.

  - The following written notices have been sent via email during the EIA phase of this project:
    - **Letter 4 and Email 9 (Availability of the Draft EIA Report for public comment)** have been sent to all registered I&APs, where email addresses are available, at the commencement of the 30-day public comment period on the Draft EIA Report and has included information on the proposed project and notification of the release and availability of the report and its appendices. Proof of email, as well as copies of the Letter 4 and emails sent have been included in Appendix F.3 of the EIA Report.
  - The following written notices will be sent via email during the EIA Phase of this project:
    - In line with best practise, I&APs registered on the project database will be notified via **Letter 5 (Submission of the Final EIA Report)** via email, where email addresses are available, of the submission of the Final EIA Report to the DFFE for decision-making.
    - **Letter 6 (Issuing of EA and Notification of Opportunity to Appeal)** - The distribution of the EA (should such authorisation be granted by the DFFE), as well as the notification of the appeal period will be sent via email to all registered I&APs, Stakeholders and Organs of State on the project database, where email addresses are available. The letter will include information on the appeal period, as well as details regarding where to obtain a copy of the EA. A copy of the EA will also be emailed with Letter 6.
    - At the end of the Appeal period, in line with best practice, I&APs on the project database will be notified of the outcome of the Appeal period, via **Letter 7 (Outcome of the Appeal period)** via email, where email addresses are available.
  - **SMS text messages** were also sent and will be sent, where cell phone numbers are available, at the respective project milestones outlined above.

- **30-day Comment Period:**
  - As noted above, potential and registered I&APs, including key relevant stakeholders and Organs of State have been notified via Letter 4 of the 30-day public comment and registration period, which extended from 19 June 2023 to 19 July 2023 (excluding public holidays), within which to submit comments on the Draft EIA Report and/or to register on the I&AP database.
- **Availability of Project Information:**
  - The Draft EIA Report along with its associated appendices have been placed on the project website (https://www.csir.co.za/environmental-impact-assessment) for all I&APs to access the documentation. If a registered I&AP cannot access the report via the project website, and if additional information is required (other than what is provided in the Executive Summary), then the I&AP could have contacted the EAP, who would then have made an electronic copy available (where feasibly possible). The Final EIA Report along with its associated appendices will also be

placed on the project website (https://www.csir.co.za/environmental-impact-assessment) for all registered I&APs to access the documentation.

- **Comments Received:**
  - A key component of the S&EIA Process is documenting and responding to the comments received from registered I&APs and the authorities. Copies of all comments received during the review of the Draft Scoping Report have been included in Appendix D.4 of the EIA Report, as well as in the detailed Comments and Responses Report. Copies of all comments received during the review of the Draft EIA Report have been included in Appendix F.4 of the EIA Report, as well as in the detailed Comments and Responses Report, which have been submitted to the DFFE for decision-making.
- **Focus Group Meetings:**
  - Three focus group meetings (FGM) have been held with key stakeholders during the EIA phase of this S&EIA Process, namely:
    - Avi-fauna FGM with Birdlife South Africa (BLSA), the Endangered Wildlife Trust (EWT) and VulPro via MS Teams on 16 May 2023;
    - FGM with affected landowners, adjacent landowners and occupiers of land at the Molteno Country Club in Molteno, Eastern Cape on 22 June 2023; and
    - Bats FGM with the South African Bat Assessment Association (SABAA) and the EWT via MS Teams on 11 July 2023.
  - Copies of documentation relating to these focus group meetings such as meeting agendas, attendance registers, notes, presentations, and emailed correspondence with the invitees/attendees have been included in Appendix M of the EIA Report.

SUMMARY OF IMPACT ASSESSMENT FINDINGS AND RECOMMENDED MANAGEMENT ACTIONS

This section provides a summary of the key impacts that were identified and assessed in detail by the specialists during the EIA Phase. The detailed impact assessments for each relevant environmental theme are included as Chapters 6 to 18 in this EIA Report. Recommended mitigation measures and management actions for each relevant environmental theme are included with each specialist assessment in Chapter 6 to 18 as well as within the EMPrs that are included in Appendix I and Appendix J of this EIA Report.

Table E below summarises the key impacts identified and assessed for the proposed Ingwe WEF 2, as well as the key mitigation measures and management actions recommended by the specialist team.

Table E. Summary of Key Impacts that were identified and assessed during the EIA Phase as part of the Specialist Assessments, including key recommended mitigation measures and management actions.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
Chapter 6 – Agriculture Compliance Statement	**Construction and Operational Phases:** • ***Potential negative impacts:*** ▪ Loss of agricultural potential due to occupation of land. ▪ Loss of agricultural potential due to soil degradation including erosion, topsoil loss and contamination. • ***Potential positive impacts:*** ▪ Increased financial security for farming operations. ▪ Improved security against stock theft and other crime.	• Design an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion. • Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface. Topsoil should only be stripped in areas that are excavated. Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire surface. • Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion. • Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion. • If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface. • Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring. • Facilitate re-vegetation of denuded areas throughout the site.
Chapter 7 – Heritage Impact	**Construction and Decommissioning Phases:**	**Pre-Construction and Construction Phases:** • An archaeologist must be appointed to conduct a pre-construction survey of the entire layout well before construction (preferably 6 months). • No-go signage to be placed in the vicinity of heritage waypoint 1971.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
Assessment (including Archaeology and Cultural Landscape)	• ***Potential negative impacts:*** ▪ Damage and/or destruction of heritage resources including archaeology and palaeontology (fossil) resources; and ▪ Visual intrusion of visually sensitive heritage resources and/or cultural landscape features.	• If the cable through the kraal at heritage waypoint 925 cannot avoid the walling, then it will need to be rerouted around the kraal. • In future, if the opportunity to reduce the number of turbines arises (e.g., in the event that technology improvements allow for fewer turbines while still achieving the same generation capacity) and all other factors are equal, then from a heritage point of view turbines 228, 214 and 222 (in that order) should be prioritised for removal. • Effective rehabilitation must be carried out in all areas not needed during operation, as well as after decommissioning. • If any archaeological material or human burials are uncovered during the course of development, then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution. **Operational Phase:** • Paint buildings in earthy colours (where technically feasible) to reduce contrast. • Make use of motion detectors and downlighting to reduce night-time light pollution. • Make use of early warning system (if available) to allow red aircraft navigation lights to remain off at night.
Chapter 7 – Palaeontology Impact Assessment	**<u>Construction Phase:</u>** • ***Potential negative impacts:*** ▪ Disturbance, damage, or destruction of fossils preserved at or beneath ground surface within WEF development footprint due to excavations and surface clearance.	**Construction and Decommissioning Phases:** • Survey by a qualified palaeontologist of the authorised WEF development footprint during pre-construction phase (following initial site clearance and excavations) to identify any newly exposed, sensitive fossil sites or horizons (e.g., carbonaceous shales, coals) at or beneath the ground surface. • Recording and judicious sampling of new, scientifically valuable fossil remains within or close to (≤ 20 m) project footprint by a qualified palaeontologist. • Monitoring for the presence of fossil remains on an on-going basis by ECO/ESO during the construction phase. • Application of Chance Fossil Finds Procedure throughout the construction phase.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
Chapter 8 – Avifauna Impact Assessment	**Construction Phase:** • ***Potential negative impacts:*** ▪ Habitat destruction during construction. ▪ Disturbance of birds during construction. **Operational Phase:** • ***Potential negative impacts:*** ▪ Disturbance of birds during operations. ▪ Displacement of birds during operations. ▪ Turbine collision fatalities. ▪ Collision with overhead power lines. ▪ Electrocution on overhead power lines and/or substation/switching station infrastructure. **Decommissioning Phase:** • ***Potential negative impacts:*** ▪ Disturbance of birds during decommissioning activities.	**Pre-Construction Phase:** • The No-Go sensitive areas identified by the avifaunal specialist should be strictly adhered to. • A pre-construction avifaunal walk down should be conducted to confirm final layout and identify any sensitivities that may arise during the detailed engineering design phase, prior to construction. • A bird fatality threshold and adaptive management policy must be designed by an ornithologist for the site prior to the Commercial Operation Date (COD). This policy should form an annexure of the operational EMPr for the facility. This policy should identify most importantly the number of bird fatalities of priority species which will trigger a management response, appropriate responses, and timelines for such responses. Fatalities of priority bird species are usually rare events (but with very high consequence) and it is difficult to analyse trends or statistics related to these fatalities as they occur. It is therefore important to have a threshold policy in place proactively to assist adaptive management. • A full detailed method statement outlining the Observer-Led Turbine Shutdown on Demand (OLSDOD) programme must be designed by an ornithologist prior to COD. • No internal medium voltage power lines should be overhead. All such cables should be buried along road verges. Only the 132 kV collector lines and grid connection power line should be above ground. • The pole design of any overhead power line should be approved by an ornithologist in terms of the electrocution risk it may pose to large birds such as eagles and vultures. **Construction and Operational Phases:** • The No-Go sensitive areas identified by the avifaunal specialist should be strictly adhered to. • A post-construction site inspection must be conducted by an avifaunal specialist to confirm that all aspects have been appropriately handled and in particular that road and hard stand verges do not provide additional substrate for raptor prey species. It is essential that the new WEF does not create favourable conditions for such mammals in high-risk areas. It is recommended that within the first year of operations, a full assessment of this aspect be made by the

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
		ornithologist contracted for post-construction monitoring. If such conditions have been created, case-specific solutions will need to be developed and implemented by the WEF. • All human activities associated with construction, operation and decommissioning should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment. • Use should be made of existing roads as far as possible. • All staff, vehicle and machinery activities should be strictly controlled at all times so as to ensure that the absolute minimum of surface area is impacted. • Care should be taken not to introduce or propagate alien plant species/weeds during construction. • It is strongly recommended that rodenticides not be used at the newly established Operation and Maintenance (O&M) buildings or around auxiliary infrastructure on the project site. While pest control of this nature may be effective, even so-called "environmentally friendly" rodenticides are toxic and pose significant secondary poisoning risk to predatory avifauna, especially owls. • Any overhead conductors or earth wires should be fitted with an Eskom approved anti-bird collision line-marking device to make cables more visible to birds in flight and reduce the likelihood of collisions. If more effective devices become available in future (and collision fatalities have been recorded) the new devices should be fitted as soon as possible in order to maximise the effectiveness of mitigation. • Should more than one power line be constructed in parallel with another either new or pre-existing power line, the pylon structures should be staggered as per Pallett et al. (2022) to increase visibility to large, slow-moving species, especially bustards and cranes. • Any underground cabling should follow roads (either existing or proposed) at all times to reduce the impact on the habitat by grouping these linear infrastructures. • The combination of turbine hub height and rotor diameter must be optimised to maximise the lower blade tip height above ground. The lower turbine blade tip height above ground should be raised as high as possible, preferably up to 50 m. This will reduce collision risk for Blue Crane, Grey Crowned Crane, Ludwig's Bustard, and most other bird species, which typically fly low over the ground. If this cannot be achieved by the turbine technology at the time of turbine selection, this could place additional pressure on the other mitigation measures recommended by this study. For example, the shutdown on demand programme will likely require more

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
		frequent turbine shutdowns for the above-listed species than would have been the case with higher blade tip height. • A 'Cape Vulture Food Management Programme' must be implemented on site to ensure all dead livestock/wildlife on site are removed as soon as possible and made unavailable to vultures for feeding. This programme will reduce the amount of available vulture food on site and reduce vulture-turbine collision risk. This programme will require the deployment of a dedicated (i.e., no other tasks) and adequately resourced (transport, binoculars, GPS, cameras, training) team of staff to patrol the full site and immediate surrounds during all daylight hours. The co-operation of landowners will also be essential to ensure that reported carcasses are disposed of effectively. This programme must be operational by the time the first turbine blades are turning on site and should not wait for COD. A full detailed method statement for this programme must be designed by an ornithologist prior to COD. This protocol must be included in the EMPr. • Cape Vultures must be deterred from roosting on the existing (and any new) power lines on site by: (i) installing perch deterrents (Bird Guards) on all pylons/towers on site. This must be done prior to the erection of turbine rotors; and (ii) through implementing a programme of active perch/roost deterrence using a team of monitors patrolling the power line servitude to disturb vultures from perching (using vehicle horn or other audible deterrents). This must be done at sufficient frequency to ensure that vultures are not comfortable roosting on site (likely weekly or more frequent). • All turbines must have one of their blades painted according to a protocol currently under development by the South African Wind Energy Association (SAWEA) from the outset. Provision must be made by the developer for the resolution of any technical, warranty or supplier challenges that this may present. • Any residual impacts recorded by operational phase monitoring after all possible mitigation measures have been effectively implemented will need to be mitigated off site. The facility will need to address other sources of mortality of priority species in a measurable way so as to compensate for residual effects on the facility itself. This will need to be detailed in a Biodiversity Action Plan to be developed during the operational phase in response to such residual impacts as per the findings of operational phase bird monitoring reports. • The "during construction" and "post-construction" monitoring programme as outlined in Appendix 10 of the Avifaunal Impact Assessment (Chapter 8 of this EIA Report) should be

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
		implemented according to the latest available version of the Best Practice Guidelines at the time. The findings from the Operational Phase monitoring should inform an adaptive management programme to mitigate any impacts on avifauna to acceptable levels. • An Observer-Led Turbine Shutdown on Demand (OLSDOD) programme must be implemented on site from COD. This is required in order to mitigate the risk of turbine collision for Cape Vulture (Endangered) and other priority species. This programme must consist of a suitably qualified, trained, dedicated and resourced team of observers present on site for all daylight hours 365 days of the year. This team must be stationed at vantage points with full visible coverage of all turbine locations. The observers must detect incoming priority bird species, track their flights, judge when they enter a turbine proximity threshold, and alert the control room to shut down the relevant turbine/s until the risk has reduced. A full detailed method statement must be designed by an ornithologist prior to COD. It is estimated how frequently turbines may need to be shut down, in order to confirm that it is achievable for the operator. The Project Developer has confirmed that this is achievable and acceptable financially and technically.
Chapter 9 – Bats Impact Assessment	**Construction Phase:** • ***Potential negative impacts:*** ▪ Roost disturbance; ▪ Roost destruction; and ▪ Displacement of bats due to habitat loss / habitat transformation. **Operational Phase:** • ***Potential negative impacts:*** ▪ Mortality of bats due to turbine collisions while commuting/foraging and/or due to barotrauma; ▪ Mortality of bats due to turbine collisions during migrations; and	**Pre-Construction and Construction Phases:** • Turbines and blade overhang must be located outside of the high sensitivity buffer zones which were identified based on the results of the pre-construction monitoring, with a specific view to limiting the risk of bat collisions. • It may be possible to limit roost abandonment by avoiding construction activities near roosts. No roosts were found on site but there may be more potential roosts that bats may be using including trees and buildings. • It is recommended that potential roosts, specifically trees and buildings, are buffered by 200 m inside which no turbine infrastructure including blade tip may be placed. • It is recommended that a site walkthrough be carried out by a qualified bat specialist to survey the confirmed turbine locations and all other proposed site infrastructure for the presence of roosts within 200 m before any construction activities commence. • If occupied roosts are confirmed, these should be buffered based on best practice guidance, which includes a minimum buffer of 200 m. • Laydown areas and temporary access roads should be kept to a minimum to limit direct vegetation loss and habitat fragmentation. Construction should, where possible, be situated in

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
	▪ Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines. **<u>Operational Phase:</u>** • ***Potential negative impacts:*** ▪ Displacement of bats due to disturbance associated with the decommissioning activities.	areas that are already disturbed. This impact must be reduced by limiting the removal of vegetation, particularly trees, as far as possible. Habitat modification should also not occur in the no-go areas as mapped. • Following construction, rehabilitation of all disturbed areas (e.g., temporary access tracks and laydown areas) must be undertaken and a Habitat Restoration plan must be developed by a qualified botanical specialist and included within the EMPr prior to construction. • Where lights need to be used such as at the substation and elsewhere, these should have low attractiveness for insects such as low-pressure sodium and warm white LED lights (Rydell 1992; Stone 2012). High pressure sodium and white mercury lighting is attractive to insects (Blake et al. 1994; Rydell 1992; Svensson & Rydell 1998) and should not be used as far as possible. • Lighting should be fitted with movement sensors to limit illumination and light spill, and the overall lit time. In addition, the spread of light should be directed downward (below the horizontal plane) to minimise light trespass and sky glow. • Increasing the spacing between lights, and the height of light units can reduce the intensity and volume of the light to minimise the area illuminated and give bats an opportunity to fly in relatively dark areas between and over lights. **Operational Phase:** • Where lights need to be used such as at the substation and elsewhere, these should have low attractiveness for insects such as low-pressure sodium and warm white LED lights (Rydell 1992; Stone 2012). High pressure sodium and white mercury lighting is attractive to insects (Blake et al. 1994; Rydell 1992; Svensson & Rydell 1998) and should not be used as far as possible. • Lighting should be fitted with movement sensors to limit illumination and light spill, and the overall lit time. In addition, the spread of light should be directed downward (below the horizontal plane) to minimise light trespass and sky glow. • Increasing the spacing between lights, and the height of light units can reduce the intensity and volume of the light to minimise the area illuminated and give bats an opportunity to fly in relatively dark areas between and over lights. • It must become mandatory to only use lights with low sensitivity motion sensors that switch off automatically when no persons are nearby, to prevent the creation of regular insect gathering

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
		pools. This applies to the turbine bases (if applicable) and other infrastructure/buildings. Aviation lights should remain as required by aviation regulations. Floodlights should be down-hooded and where possible, lights with a colour (lighting temperature) that attract less insects should be used. The storm water drainage plan must avoid creations of artificial ponds/open water sources or wetlands in turbine zones (less than 300 m from any turbine base). • Bi-annual visits to the facility at night must be conducted for the operational lifetime of the facility, to assess the lighting setup and whether the passive motion sensors are functioning correctly. The bat specialist conducting the operational bat mortality monitoring must conduct visits to site during night-time to assess the placement and setup of outside lights on the facility. When lights are replaced and maintenance on lights is conducted, these mitigation measures must be consulted. • Bats should be prevented from entering any possible artificial roost structures (e.g., roofs of buildings, road culverts and wind turbines) by ensuring that they are sealed in such a way as to prevent bats from entering. • If bats colonise WEF infrastructure, a suitably qualified bat specialist should be consulted before any work is undertaken on that infrastructure or attempts to remove bats. Ongoing maintenance and inspections of buildings and road culverts associated with the proposed facility must be carried out to ensure access by bats is prevented and for the safe handling of actively roosting bats. • The height of the lower blade swept height must be maximised, turbines with a lower ground clearance run the risk of reaching the fatality thresholds sooner. • Apply blade feathering to prevent unnecessary free-wheeling of blades below generation cut-in speed from sunset to sunrise as soon as the turbine blades start spinning. • Operational acoustic monitoring and carcass searches for bats must be performed, based on best practice, to monitor mortality and bat activity levels. Operational monitoring must be done for the first two years initially according to the guidelines. Depending on these findings, additional monitoring may be needed but must be determined by an appropriate bat specialist using the operational data. Thereafter, a year of impact monitoring is required in the fifth year of operation and every five years after that. Acoustic monitoring should include monitoring at height (from more than one location i.e., such as on turbines) and at ground level. • Apply curtailment based on a curtailment plan formulated by an appropriate bat specialist using weather and bat activity data from the site if mortality occurs beyond threshold levels as

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
		determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e., not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.
Chapter 10 – Aquatic Biodiversity Impact Assessment	**Construction Phase:** • ***Potential negative impacts:*** ▪ Loss of species of special concern (SCC); ▪ Damage or loss of riparian and wetlands systems and disturbance of the waterbodies in the construction phase. This will include detailed delineation of these areas, now that the scale of the project has been defined; and ▪ Spills and leaks from construction vehicles / machinery when working in or near the delineated systems, impacting localised surface water quality. **Operational Phase:** • ***Potential negative impacts:*** ▪ Creation of hard surfaces, resulting in runoff, erosion, and sedimentation. **Decommissioning Phase:** • ***Potential negative impacts:*** ▪ Damage or loss of riparian and wetlands systems and disturbance of the waterbodies in the construction phase. This will include detailed delineation of	**Pre-Construction and Construction Phases:** • A pre-construction walkdown by a qualified freshwater specialist is recommended to: o identify areas that contain any aquatic plant SSC so that these can be demarcated and avoided in the final design process. o assist with the development of a Stormwater Management plan and Aquatic Construction Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. • Any remaining species that could not be avoided must then be relocated in a Search and Rescue programme that should be initiated prior to construction. • It is recommended that a Construction EMP, Monitoring and Rehabilitation Plan be developed by a qualified ecologist during detailed engineering design prior to construction. • The recommended buffer areas between the delineated freshwater resource features and proposed project activities should be maintained and no development is allowed to take place within the buffers. • Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). • The following applies to watercourse crossing upgrades associated with the proposed development: o Where existing crossings must be upgraded, then all pipe culverts, associated with the proposed WEF, must be removed and replaced with suitable sized box culverts, where road levels are raised. o River levels, regardless of the current state of the river / water course will be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
	these areas, now that the scale of the project has been defined; and ▪ Spills and leaks from construction vehicles / machinery when working in or near the delineated systems, impacting localised surface water quality.	○ Where large cut and fill areas are required, these must be stabilized and rehabilitated during the construction process, to minimise erosion and sedimentation. ○ All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. ○ Any of the activities, should also be monitored by the appointed EO/ECO on a daily basis, especially during periods of river flow during construction. • All liquid chemicals including fuels and oil, including for the BESS, must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • Washing and cleaning of equipment/vehicles must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment), and mechanical plant and bowsers must not be refuelled or serviced within 100 m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. • Littering and contamination associated with construction activity must be avoided through effective construction camp management. • No stockpiling should take place within or near a water course, and all stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable. **Operational Phase:** • A Stormwater Management Plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil. • Monitoring should occur on a monthly basis for 6 months post construction and where any unstable soils occur, these must be protected with temporary stabilisation dependent on the scale of the impact i.e., sandbags - hay bales) until areas become revegetated. If any areas

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
		require permanent erosion protection (e.g., gabions or stone pitching) then this must be included into the GA application. All culverts associated with the proposed WEF, stormwater run-off infrastructure erosion prevention features/infrastructure must be monitored and maintained. • Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.
Chapter 11 – Terrestrial Biodiversity, including Terrestrial Animal Species and Terrestrial Plant Species	**Construction Phase:** • ***Potential negative impacts:*** ▪ Loss of species of special concern (SCC); ▪ Damage and disturbance of the habitats rated as Very High Sensitivity; ▪ Loss of ecosystem services, and or habitats that would result in habitat fragmentation, especially those included in any Biodiversity Conservation plans as Critical Biodiversity areas or Ecological Support Areas. This in turn could also lead to habitat fragmentation; and ▪ Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic. **Operational Phase:** • ***Potential negative impacts:*** ▪ Infestation of alien invasive plant species.	**Pre-Construction and Construction Phase:** • No development should take place within the High sensitivity areas or buffer zones as identified for both aquatic and terrestrial habitats. • A pre-construction walkdown by a qualified terrestrial specialist is recommended to: o identify any areas that contain any terrestrial plant SSC so that these can be demarcated and avoided in the final design process. o assist with the development of the Construction Rehabilitation and Monitoring plan, coupled to micro-siting of the final site layout. Where large cut and fill areas are required, these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. Only indigenous species must be used for rehabilitation. • Search and Rescue should be initiated prior to construction for any protected or listed animal and plant species. • All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the development footprint. • The ECO should appoint a member of staff to walk ahead of construction machinery directly prior to vegetation clearance. Should any faunal species be identified during the walk through, these should be allowed to move out of harm's way prior to vegetation clearance. • All construction and construction related activities (including parking of vehicles and machinery) must remain within the approved development footprint, and where possible, temporary construction lay-down or assembly areas should be sited on transformed areas. • Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion. Only indigenous species must be used for rehabilitation. • Monitor the entire site for signs of erosion.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
	▪ Displacement of any animals which mostly includes animal mortalities related to vehicle traffic. **<u>Decommissioning Phase:</u>** • ***Potential negative impacts:*** ▪ Damage and disturbance of the habitats rated as Very High Sensitivity; and ▪ Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic.	• General good housekeeping in terms of spills, refuelling and waste management. These have been included in the Environmental Management Programme. **Operational Phase:** • No night driving should be permitted, if unavoidable, and all vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr. • A clause relating to fines, possible dismissal and legal prosecution must be included in all contracts for all construction personnel (i.e., including contractors) working on site should any speeding or persecution of animals occur. • Appropriate lighting should be installed to minimise negative effects on nocturnal animals.
Chapter 12 – Noise Impact Assessment	**<u>Construction Phase:</u>** • ***Potential negative impacts:*** ▪ Noise pollution due to construction activities (equipment works and vehicle noise). **<u>Operational Phase:</u>** • ***Potential negative impacts:*** ▪ Mechanical and aerodynamic noise from the operation of the wind turbine components.	**Construction and Decommissioning Phases:** • Staff to receive training on noise sensitivity. • Monitoring of noise during the construction phase to confirm noise levels are within limits. • Limit construction to Day-Time in order to take advantage of unstable weather conditions. • Regularly service equipment to ensure no unnecessary noise is emitted. • A community complaints register should be set up to record any complaints and investigated as required. **Operational Phase:** • Conduct noise monitoring at the closest affected NSA during the operational phase to determine actual noise impact and whether further mitigation measures need to be implemented. This may include operating a specific turbine in a low noise mode (i.e., reducing power output under certain operational conditions). • Ensure the implementation of a 500 m “no-go” buffer around all noise sensitive areas to ensure no wind turbines impact these noise sensitive areas.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
Chapter 13 – Visual Impact Assessment (including Shadow Flicker)	**<u>Construction, Operational and Decommissioning Phases:</u>** • ***Potential negative impacts:*** ▪ Visual impact from construction activities of the facility and associated infrastructure in the landscape as well as the visual impact of lighting at night. ▪ The visibility of the operational facility and ancillary infrastructure to, and potential visual impact on observers (homesteads and farmsteads) in close proximity (i.e., within 5 km). ▪ The visibility of the facility and ancillary infrastructure to, and potential visual impact on observers travelling along the main roads, as well as secondary roads within the study area (within a 5 – 10 km). ▪ Visual impact of shadow flicker on sensitive visual receptors in close proximity to the proposed facility (i.e., within 1.2 km). ▪ The potential visual impact of operational, safety and security lighting of the facility and ancillary infrastructure at night on sensitive visual receptors residing in the region. ▪ The potential visual impact of the facility and ancillary infrastructure on the visual character of the landscape and sense of place of the region.	**Pre-Construction, Construction and Decommissioning Phases:** • Consolidate infrastructure and make use of already disturbed sites rather than undisturbed areas by placing the on-site substation and auxiliary buildings, as well as temporary construction camps, batching plants and laydown areas in unobtrusive (generally low-lying) positions in the landscape away from public roads, where possible. • Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. • Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent). • Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. • Rehabilitate all disturbed areas, construction areas, servitudes etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications. • Consult a lighting engineer in the design and planning of lighting to ensure the correct specification and placement of lighting and light fixtures for the WEF and the ancillary infrastructure. • Install aircraft warning lights that only activate when an aircraft is detected (SACAA regulations/conditions permitting, where deemed feasible). • Remove infrastructure not required for the post-decommissioning use of the site. This may include the turbines, substations, ancillary buildings, masts etc. • Rehabilitate access roads and servitudes not required for the post-decommissioning use of the site. If necessary, an ecologist should be consulted to give input into rehabilitation specifications, monitor rehabilitated areas quarterly for at least a year following decommissioning, and implement remedial action as and when required. **Operational Phase:** • Maintain the general appearance of the facility as a whole, including the turbines, servitudes and the ancillary buildings.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
		• Maintain roads and servitudes to forego erosion and to suppress dust. • Monitor rehabilitated areas, and implement remedial action as and when required.
Chapter 14 – Traffic Impact Assessment	**Construction and Decommissioning Phases:** • ***Potential negative impacts:*** ▪ Transportation of abnormal loads. ▪ Increase in vehicle traffic due to the transportation and delivery of construction plant, equipment, materials and WEF components. ▪ Increase in vehicle and pedestrian traffic due to the transportation of construction labour. ▪ Increased dust generation. ▪ Increased need for road maintenance due to degradation of roads (on the entire road network) that will be affected by the proposed development. **Operational Phase:** • ***Potential negative impacts:*** ▪ Increase in vehicle traffic due to the transportation of operation of staff. ▪ Increase in vehicle traffic due to the occasional delivery of replacement components. ▪ Increased incidents with pedestrians and livestock. ▪ Increased dust generation. ▪ Increased need for road maintenance.	**Construction and Decommissioning Phase:** • For abnormal loads that need to be transported by road to the site, a permit will need to be applied for in terms of Section 81 of the National Road Traffic Act and authorisation needs to be obtained from the relevant road authorities to modify the road reserve to accommodate turning movements at intersections (if necessary). • Stagger delivery trips and schedule trips, including staff trips outside of peak hours where possible. • Implement speed control by means of a stop and go system and speed limit road signage within the construction and decommissioning site. • Ensure all vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator. • Regular maintenance of internal farm access roads by the contractor. • Ensure private access roads that are impacted on by the proposed development are restored to original pre-construction road condition. • Implement dust control on gravel roads within the construction and decommissioning site.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
	▪ Additional abnormal roads[2].	
Chapter 15 – Socio-Economic Impact Assessment	**<u>Construction Phase</u>** • ***Potential positive impacts:*** ▪ Capital investment (CapEx) and the contribution to the national, regional and local economy. ▪ Generation of employment, income, and skills. • ***Potential negative impacts:*** ▪ Social disruption and change in social dynamics; and ▪ Reduced quality of life and increased risks due to construction near residences. **<u>Operational Phase</u>** • ***Potential positive impacts:*** ▪ Capital investment (CapEx) and the contribution to the national, regional and local economy. ▪ Generation of employment, income, and skills. ▪ Increased community prosperity through contributions and income from the WEF.	**Construction and Operational Phases:** • Liaise with nearby residents before and during construction to inform them of construction status and discuss safety management measures to reduce security risks. • Maintain a visible security presence on site and control site access. • Implement a grievance mechanism during the construction phase. • Communicate and implement a compensation procedure in the event of damages directly linked to the construction. • Declare areas outside of the construction site as no-go areas for construction staff, and erect and regularly inspect a boundary fence, and regularly inspect the larger project site and surrounding area for signs of illegal activity. • Source as many goods and services as possible from the local and regional economy (e.g. use local contractors and accommodation and equipment suppliers as far as possible and purchase perishable goods locally). • Provide suitable training to service providers, where possible and practicable. • Develop and implement a fair and transparent procurement policy. • Maximise use of local skills and resources through preferential employment of locals where practicable. • Develop and implement a fair and transparent labour and recruitment policy. • Consult with existing IPP projects that successfully procure from local SMMEs to share learnings, where possible. • Ensure diversity and gender equality in recruitment, as far as possible. • Provide ancillary training to workers on maximising the use of income and training to further future economic prospects, potentially through projects initiated as part of the social upliftment programme. • Clearly publicise and implement a recruitment policy.

[2] Note that the traffic generated because of the development during the operational phase will be minimal and will not have a significant impact on the surrounding road network in light of the remote and rural setting of the area.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
	▪ Increased power generation reducing the probability of loadshedding. • ***Potential negative impacts:*** ▪ Visual impacts and associated impacts on sense of place. **<u>Decommissioning Phase</u>** • ***Potential negative impacts:*** ▪ Reduced employment and funding.	• Work together with impartial local representatives to identify local people during the recruitment process. • Provide transport to site and other incentives to reduce the number of workers accommodated in EPC accommodation to an absolute minimum. • Consult with the municipality regarding the capacity of existing services and infrastructure (e.g. provision of water, electricity, waste removal, sanitation and housing) to cope with additional workers brought into the area during the construction period. • Consider supporting projects that improve local services and infrastructure and/or deal with social problems or conflicts through the social upliftment programme, if the need arises. • Regularly engage with community stakeholders to develop meaningful strategies for community development. • Define vision for economic development in consultation with communities. • Develop a Governance Plan with clear governance rules for the Community Trust, including administration and trustee and beneficiary selection. • Ensure that funding requirements for each project are considered into the future so that projects are viable and sustainable. • Set clear goals for each project and phase out funding once these goals are achieved. • Ensure regular external auditing of the Community Trust as well as supported projects. • Consider auditing projects for several years after funding has ceased to ensure their benefits are sustained.
Chapter 16 – Geohydrology Impact Assessment	**<u>Pre-Construction and Construction Phases:</u>** • ***Potential negative impacts:*** ▪ Lowering of groundwater levels as a result of over-abstraction from construction activities. **<u>Operational Phase:</u>**	**Construction and Decommissioning Phases:** • The following mitigation only applies if groundwater is abstracted: Adhere to the borehole's safe yield and to monitor water levels and flow. • The following mitigation only applies if groundwater is abstracted: Boreholes must be correctly yield tested according to the National Standard (SANS 10299-4:2003, Part 4 – Test pumping of water boreholes). This includes a Step Test, Constant Discharge Test and recovery monitoring. • Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. • Diesel fuel storage tanks, if required, should be above ground on an impermeable surface in a bunded area. • Vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the construction site camp for this purpose, if off-site refuelling is not

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
	• ***Potential negative impacts:*** ▪ Lowering of groundwater levels as a result of over-abstraction from construction activities. ▪ Potential impact on groundwater quality as a result of electrolyte used for the BESS. ▪ Potential impact on groundwater quality as a result of operational and maintenance buildings. **Decommissioning Phase:** • ***Potential negative impacts:*** ▪ Accidental oil spillage or fuel leakage.	possible. If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, and reported. **Operational Phase:** • The following mitigation only applies if groundwater is abstracted: Borehole's safe yield, monitoring and yield testing as per the construction phase. • Use environmentally safe cleaning agents that breakdown naturally and do not cause adverse effects. • Ensure that all electrolyte or chemicals stored or used on site have secondary containment systems in place with reliable leak detection, annunciation in place. Ensure that all chemicals are handled on concrete bunded surfaces and not on bare soil. • Wastewater produced by fire hydrants should not be allowed to runoff into the environment. • It is recommended that all BESS's are placed a minimum of 50m from any borehole.
Chapter 17 – Geotechnical Assessment	**Construction Phase:** • ***Potential negative impacts:*** ▪ Ground disturbance during earthworks for turbine bases, access roads, platforms and laydown areas. ▪ Erosion due to clearing of vegetation and alteration of natural drainage. **Operational Phase:** • ***Potential negative impacts:*** ▪ Erosion due to clearing of vegetation and alteration of natural drainage.	• During construction, no specific monitoring is required except for the normal regular check inspections by the Resident Engineer and ECO/ESO as per the EMPr. • Temporary berms and drainage channels to divert water, where required, that rehabilitation of disturbed areas is undertaken timeously, that the designs of the road and site drainage are undertaken correctly, and only designated access routes are used for trafficking around the site. • During operations, maintain drainage channels and other drainage structures such as culverts which may be developed for the proposed facility. Monitor for erosion and remediate and rehabilitate timeously. • During decommissioning, the natural site topography must be restored as fully as possible, and landscaping and rehabilitation of disturbed areas must be undertaken timeously. Also, maintain drainage channels and other drainage structures such as culverts which may be developed for the proposed facility. Monitor for erosion and remediate and rehabilitate timeously.

Specialist Assessment undertaken	Key Impacts Identified	Key Recommended Mitigation Measures and Management Actions
	Decommissioning Phase: • ***Potential negative impacts:*** ▪ Ground disturbance during earthworks to remove platforms, turbine bases, road rehabilitation and removal of surface and sub surface structures. ▪ Erosion due to clearing of vegetation and alteration of natural drainage.	
Chapter 18: Battery Energy Storage System High Level Safety, Health and Environment Risk Assessment	**Construction, Operational and Decommissioning Phases:** • ***Potential negative impacts:*** ▪ Safety, health and environmental impacts as a result of the Solid-State Lithium-Ion Battery Energy Storage System (BESS) and Vanadium Redox Flow BESS. ▪ Risk of fire, explosion or release of toxic gas, and spillage of electrolyte as a result of the BESS.	• Consider the findings and recommendations of the High-Level Safety, Health and Environment Risk Assessment compiled for the BESS. Refer to Chapter 18 of this EIA Report and Appendix D of the EMPr for a detailed list of preventative and mitigation measures for the BESS.

SUMMARY OF KEY IMPACT ASSESSMENT FINDINGS

Based on the findings of the detailed specialist assessments, which are included in Chapter 6 to 18 of this EIA Report, the proposed project based on its current site layout comprising 24 wind turbines is considered to have an **overall Low to Very Low negative environmental impact** across most specialist/ environmental themes**,** with an overall **Moderate negative impact** for Heritage and Visual during construction and operations, and a **Moderate negative impact** for turbine collision fatality of avifauna during operations (with the effective implementation of recommended mitigation measures and management actions as included in the EMPr).

The proposed project is also considered to have an **overall Moderate to Low positive socio-economic impact** (recommended mitigation measures and management actions as included in the EMPr).

Table 22.2 below provides a summary of the impact assessment for the proposed project post mitigation for all identified and assessed direct impacts. Table 22.3 provides the same information for the cumulative impact assessments.

Based on Table 22.3, the majority of the cumulative negative impacts were rated with a **Low to Very Low** post mitigation impact significance for the construction phase, except for Visual that is rated as Moderate negative impact. A similar trend is applicable to the operational phase, with Heritage to have a Moderate negative impact, and Visual and Avifauna (specifically turbine collision fatality considered for Cape Vulture) rated as High negative impacts post mitigation.

During the decommissioning phase, the project is considered to have an overall Low to Very Low negative impact for both direct and cumulative impacts post mitigation (with the implementation of recommended mitigation measures and management actions as included in the EMPr). Only the Visual theme has been rated a Moderate negative impact significance post mitigation (with the implementation of recommended mitigation measures and management actions as included in the EMPr).

Table F: Overall Impact Significance with Implementation of Recommended Mitigation Measures for Direct Negative and Positive Impacts for the proposed Ingwe WEF 2

Specialist Assessment	Construction Phase	Operational Phase			Decommissioning Phase
DIRECT NEGATIVE IMPACTS					
Agriculture and Soils	Very Low	Very Low			Very Low
Visual	Moderate	High (visibility 0-5 km)	Moderate (visibility 5-10 km) (night-time lighting)	Low (visibility >10 km)	Moderate
Shadow Flicker	Not identified	Low			Not identified
Heritage (Archaeology and Cultural Landscape)	Moderate	Moderate			Low
Palaeontology	Very Low	Insignificant			Insignificant
Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species	Very Low	Very Low			Very Low
Aquatic Biodiversity and Species	Very Low	Very Low			Very Low
Avifauna	Low	Moderate (turbine collisions)	Low (disturbance, displacement, electrocution)		Low
Bats	Low	Low			Low
Noise	Very Low	Low			Very Low
Traffic	Very Low	Very Low			Very Low
Socio-Economic	Not identified	Not identified			Low
Geohydrology	Low to Very Low	Low to Very Low			Very Low
Geotechnical	Low	Low			Low
DIRECT POSITIVE IMPACTS					
Socio-Economic	Moderate	Low			Not identified

Table G: Overall Impact Significance with Implementation of Recommended Mitigation Measures for Cumulative Negative and Positive Impacts for the proposed Ingwe WEF 2

Specialist Assessment	Construction Phase	Operational Phase	Decommissioning Phase
CUMULATIVE NEGATIVE IMPACTS			
Agriculture and Soils	Very Low	Very Low	Very Low
Visual	Moderate	High	Moderate
Shadow Flicker	Not identified	Low	Not identified
Heritage (Archaeology and Cultural Landscape)	Low	Moderate	Low
Palaeontology	Very Low	Insignificant	Insignificant
Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species	Very Low	Very Low	Very Low
Aquatic Biodiversity and Species	Very Low	Very Low	Very Low
Avifauna	Low	High (Cape Vulture turbine collision)	Low
Bats	Low	Low	Low
Socio-Economic	Depends on timing of implementation	Depends on timing of implementation	Depends on timing of implementation
Noise	Very Low	Low	Very Low
Traffic	Low	Low	Low
Geohydrology	Low to Very Low	Low to Very Low	Very Low
Geotechnical	Low	Low	Low
CUMULATIVE POSITIVE IMPACTS			
Socio-Economic	Depends on timing of implementation	Depends on timing of implementation	Depends on timing of implementation

OVERALL ENVIRONMENTAL IMPACT STATEMENT AND REASONED OPINION FROM THE EAP

The information presented above, contributes to this overall environmental impact statement and reasoned opinion from the EAP as to whether the proposed project should or should not be authorised, including any conditions that should be made in respect of the authorisation (should it be granted).

Based on the findings of the detailed specialist assessments, which are included in Chapter 6 to 18 of this EIA Report, the proposed project based on its current site layout comprising 24 wind turbines is considered to have an **overall Low to Very Low negative environmental impact** across most specialist/ environmental themes**,** with an overall **Moderate negative impact for Heritage and Visual** during construction and operations, and a **Moderate negative impact for turbine collision fatality of Avifauna** during operations (with the implementation of recommended mitigation measures and management actions as included in the EMPr). There were no "fatal flaws" identified by the specialists, provided that the mitigation measures are implemented affectively.

The proposed project is also considered to have an **overall Moderate to Low positive socio-economic impact** (recommended mitigation measures and management actions as included in the EMPr).

Alternatives have also been assessed and the proposed substation hub location that is preferable from a visual and heritage perspective (note that all other specialist disciplines indicated no preference) is put forward as the preferred location, and the preferred BESS technology is lithium-ion (based on current market) as specialists indicated no preference (with the exception of geohydrology which indicated lithium-ion, but noting that both are acceptable). When compared to the no-go alternative, most impacts anticipated for the proposed development would have similar levels of significance, post-mitigation and many specialists indicated that the no-go alternative is either not preferred or that the proposed development would be acceptable.

The proposed project will take place within the development footprint on the preferred and approved project site, as contemplated in the accepted Final Scoping Report. The development footprint and buildable areas will avoid the no-go sensitive features identified and mapped by the respective specialists, where relevant and applicable, as discussed in Section 22.1 of this chapter. This also adheres to many of the recommendations for inclusion in the EMPr that specialists have made in terms of avoidance of key areas.

This EIA has considered the nature, scale and location of the development as well as the wise use of land. When considering the timing of this project, the IRP 2019 proposes to secure 17 800 MW of renewable energy capacity by 2030. As discussed in the preceding chapters of this EIA Report, it is the Project Applicant's intention to bid this project in the future bidding rounds of the REIPPPP.

On a municipal planning level, the proposed project aligns with the objectives set forth within the Enoch Mgijima Local Municipality's IDP (2017-2022) in terms of creating more job opportunities. The proposed Ingwe WEF 2 will assist in local job creation during the construction and operational phases of the project (if approved by the DFFE). It should be noted that employment during the construction phase will be temporary and provided for a period of 24 to 30 months.

Section 24 of the Constitutional Act states that "*everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that prevents pollution and ecological degradation; promotes conservation; and secures ecologically sustainable development and use*

of natural resources while promoting justifiable economic and social development". Based on this, this EIA was undertaken to ensure that these principles are met through the inclusion of appropriate management and mitigation measures, and monitoring requirements. These measures will be undertaken to promote conservation by avoiding the sensitive environmental features present on site and through appropriate monitoring and management plans (refer to the EMPr in Appendix I and Appendix J of this EIA Report).

The proposed development has also considered and adopted the mitigation hierarchy across various aspects of the proposed facility and S&EIA process, as well as the associated environmental themes.

The outcomes of this project therefore succeed in meeting the environmental management objectives of protecting the ecologically sensitive areas and supporting sustainable development and the use of natural resources, whilst promoting justifiable socio-economic development in the towns nearest to the project site. The findings of this EIA show that all natural resources will be used in a sustainable manner (i.e., this project is a renewable energy project, and the majority of the negative site specific and cumulative environmental impacts are considered to be of generally low to very low significance with recommended mitigation measures implemented), while the benefits from the project will promote justifiable economic and social development. Furthermore, additional specialist studies (not recommended by the Screening Tool) have been undertaken as part of the EIA Process to ensure that all potential environmental impacts are addressed and assessed (refer to Table 22.2 above).

Taking into consideration the findings of the Scoping and EIA Process and given the national and provincial strategic requirements for infrastructure development, as well as the fact that the proposed Ingwe WEF 2 project will be closely located to the Stormberg REDZ, it is the opinion of the EAP, that the project benefits outweigh the costs and that the project will make a positive contribution to sustainable infrastructure development in the Chris Hani District, and the Enoch Mgijima regions of the Upper Eastern Cape Province, especially in the town of Molteno.

Note however that during the 30-days public review of the Draft EIA Report for the Ingwe WEF 2, which extended from 19 June 2023 to 19 July 2023 excluding public holidays, comments about the potential adverse impact of this proposed WEF on the avifauna specifically have been raised by commenting authorities including Birdlife South Africa, VulPro, the Endangered Wildlife Trust, and the DFFE's Biodiversity and Conservation directorate. These comments have been incorporated into Section 3 of the detailed Comments and Responses Report, and addressed, as applicable and where relevant, and included separately with the Final EIA Report that has been submitted to the DFFE for decision-making. Also, copies and proof of correspondence received from these I&APs are included in Appendix F.4 of this EIA Report.

Avifaunal specific mitigation such as **Shutdown on Demand (SDOD)** and the **painting of turbine blades** have been strongly recommended by the Avifaunal Specialist and must be effectively implemented at the proposed Ingwe WEF 2 should this project be constructed. Observer-led Shut down on Demand (OLSDOD) is being tested at windfarms in South Africa where avifauna species such as vultures, raptors, cranes and storks occur, with results presented at the Windaba Conference held on 13 October 2022 in Cape Town. These initial results show that this mitigation has a high success rate for avoiding vulture collisions, with a very low loss in yield from the windfarm. This mitigation has potential to enable generation of renewable energy in order to meet severe energy shortages in South Africa, while supporting the energy transformation away from fossil fuels and avoiding the very significant impacts on ecosystem health caused by fossil fuels.

Subject to approval from the South African Civil Aviation Authority outside of the EIA process (i.e. this is not required in terms of NEMA, but rather the Civil Aviation Act 13 of 2009), the painting of at least one blade per turbine in a darker shade has proven effective in making the rotor swept area more visible during operations and this mitigation action has also recently been successfully implemented at another operational South African windfarm for monitoring bird fatalities due to potential turbine collisions.

Notwithstanding the avifaunal issues raised by these commenting authorities, it is understood that the technical and scientific information related to site and project-specific site sensitivity identification, verification and detailed specialist impact assessment, together with the level of mitigation measures and management actions which have been recommended by the specialist team, as well as the comments and responses provided during the public participation process that is contained in this EIA Report and its appendices, is considered sufficient to make a decision in respect of the activity that is applied for.

Provided that the specified and recommended mitigation measures and management actions are applied effectively throughout, it is recommended that the proposed project receive EA in terms of the 2014 NEMA EIA Regulations (as amended), promulgated under the NEMA.

It is recommended that the EA (should it be granted) be valid for a period of **15 years**.

In addition, it is recommended that the EMPr compiled as part of this EIA Process, included in Appendix I and Appendix J of this EIA Report be approved conditionally in the EA (should it be granted). A detailed layout of the proposed Wind Energy Facility has been identified at the EIA Phase and proposed for approval in the application for Environmental Authorisation. However, as confirmed by the specialists, changes to the detailed layouts are deemed acceptable if the changes remain within the approved buildable areas / development footprints and area assessed during the Scoping and EIA Process with no-go sensitive areas avoided (i.e., micro-siting). Any changes can be subjected to an EA amendment process, where warranted.

KEY CHANGES/UPDATES MADE FROM THE DRAFT EIA REPORT THAT WAS ISSUED FOR I&AP, STAKEHOLDER AND ORGAN OF STATE REVIEW FROM 19 JUNE 2023 TO 19 JULY 2023

Section of Report	Key Change / Update
EIA Report, Summary & Appendices	• The term "Draft EIA Report" has been updated to "Final EIA Report", where applicable. • The report date has been updated from "June 2023" to "July 2023".
Executive Summary	• Updated the Executive Summary to include a summary of the public participation process undertaken to date.
EIA Report – Chapter 4	• Improved certainty on the applicability of Listed Activities based on project description details, where relevant, and the subsequent removal of certain Listed Activities as requested by the DFFE. • Update details regarding the public participation process undertaken to date.
EIA Report – Chapter 5 & 22	• Included updated environmental features and sensitivity maps showing the final site layout plan avoiding sensitive buffers and no-go areas, as well as additional existing roads in and around the project study area.
EIA Report – Chapter 19 & 22	• Updated to include a condition for the Project Applicant to engage with the existing Dorper WEF and Rainmaker Energy (and/or any co-developer which at the time of writing is Mulilo Renewable Project Developments) for a Wake Agreement prior to commencement of construction (should EA be granted).
EIA Report – Chapter 22	• Updated to include an improved overall environmental impact statement following receipt of comments from the DFFE and key commenting authorities on the Draft EIA Report.
EIA Report – Chapter 4, & Appendices C, D, E, F, K & M	• Updated with additional information, where relevant, regarding the status and progress made on the EIA Process to date, the submission of the updated Amended Application for EA to the DFFE, as well as details regarding the 30-day review period and comments received on the Draft EIA Report. • Updated with proof of correspondence made with potential registered I&APs, Organs of State and key commenting authorities and stakeholders. • Updated with details of the Public Participation Process undertaken thus far.
Comments & Responses Report	• The comments and/or issues raised by registered I&APs, Organs of State and key relevant commenting authorities during the 30-day public review period on the Draft EIA Report, which extended from 19 June 2023 to 19 July 2023 excluding public holidays, together with the responses from the EIA Project Team were collated and incorporated into the detailed Comments and Responses Report that was compiled in terms of Annexure 1 of the DFFE comments letter (DFFE Reference No: 14-12-16-3-3-2-2276), and which was submitted separately with the Final EIA Report as per the requirements from the DFFE.
Appendix C	• Updated the project stakeholder database of registered I&APs, commenting authorities and Organs of State to reflect stages of consultation, commenting, as well as additions/removals to the project stakeholder database.
Appendix F	• Added proof of placement of the newspaper advertisement in Appendix F.2. • Added content and proof of correspondence sent to potential registered I&APs, key relevant stakeholders and Organs of State at the time of releasing the Draft EIA Report for 30-day review in Appendix F.3. • Added proof of submission of the Draft EIA Report and Amended Application Form to the DFFE for comment in Appendix F.3. • Added content and proof of comments received from stakeholders during the 30-day review of the Draft EIA Report in Appendix F.4.
Appendix G	• Included updated maps showing the final site layout plan avoiding sensitive buffers and no-go areas, as well as additional existing roads in and around the project study area.
Appendix L	• Included the Amended Application for EA as Appendix J to the Final EIA Report.
Appendix M	• Included documentation regarding three (3) Focus Group Meetings held with registered I&APs during the EIA phase as Appendix M to the Final EIA Report.

Note from the CSIR: If sections are not mentioned in the above table, this means that either there have been no changes or no major changes to these sections**.**