SOYUZ 6 WIND ENERGY FACILITY (WEF), UBUNTU LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE

DFFE Reference Number: TBA

DRAFT SCOPING REPORT

PREPARED FOR:

SOYUZ 6 (Pty) Ltd.

PREPARED BY:

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SEPTEMBER 2022

Report Title: Soyuz 6 Wind Energy Facility: Scoping Report

Report Version: Draft

Department of Forestry, Fisheries, and the Environment (DFFE) Reference Number: TBA

CES Project Code: P40700768

Environmental Assessment Practitioner (EAP) Details:

EAP:	**Dr Alan Carter**
Address:	**39 Harewood Drive, Nahoon, East London, 5214**
Telephone:	**+27 (0)43 726 7809**
E-mail:	**a.carter@cesnet.co.za**

EAP Declaration

- I act as the independent environmental practitioner in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- All of the particulars furnished by me in this form are true and correct; and
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations.

ENVIRONMENTAL CONSULTANT	RESPONSIBILITY	DATE
Alan Carter	*Project Leader & The EAP*	September 2022
Robyn Thomson	*Project Manager & Lead Author*	September 2022

THE CONTENTS OF A SCOPING REPORT

CONTENT OF THE SCOPING REPORT (APPENDIX 2, NEMA EIA REGULATIONS)		
2. (1) A scoping report must contain the information that is necessary for a proper understanding of the process, informing all alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include –		
	CONTENT	**SECTION OF THIS REPORT**
(a)	**Details of –**	
(i)	The EAP who prepared the Report.	***CHAPTER 1.4***
(ii)	The expertise of the EAP, including a *curriculum vitae.*	***APPENDIX B***
(b)	**The location of the activity, including –**	
(i)	The 21-digit Surveyor General code of each cadastral land parcel.	***CHAPTER 1***
(ii)	Where available, the physical address and farm name.	
(iii)	Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	
(c)	**A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is –**	
(i)	All listed and specified activities triggered.	***CHAPTER 4***
(ii)	A description of the activities to be undertaken, including associated structures and infrastructure.	***CHAPTER 1***
(e)	**A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.**	***CHAPTER 4***
(f)	**A motivation for the need and desirability for the proposed development including the need and desirability for the activity in the context of the preferred location.**	***CHAPTER 3***
(g)	**A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including –**	
(i)	Details of all alternatives considered.	***CHAPTER 7***
(ii)	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs.	***CHAPTER 11 & APPENDIX C***
(iii)	A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	***APPENDIX C***
(iv)	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	***CHAPTER 5 & CHAPTER 6***
(v)	The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts – (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed or mitigated.	***CHAPTER 9***
(vi)	The methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives.	
(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	
(viii)	The possible mitigation measures that could be applied and level of residual risk.	
(ix)	The outcome of the site selection matrix.	***CHAPTER 7***
(x)	If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.	

CONTENT OF THE SCOPING REPORT (APPENDIX 2, NEMA EIA REGULATIONS)		
2. (1) A scoping report must contain the information that is necessary for a proper understanding of the process, informing all alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include –		
	CONTENT	**SECTION OF THIS REPORT**
(xi)	A concluding statement indicating the preferred alternatives, including preferred location of the activity.	
(h)	**A plan of study for undertaking the environmental impact assessment process to be undertaken, including –**	***CHAPTER 10***
(i)	A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.	
(ii)	A description of the aspects to be assessed as part of the environmental impact assessment process.	
(iii)	Aspects to be assessed by specialists.	
(iv)	A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists.	
(v)	A description of the proposed method of assessing duration and significance.	
(vi)	An indication of the stages at which the competent authority will be consulted.	
(vii)	Particulars of the public participation process that will be conducted during the environmental impact assessment process.	
(viii)	A description of the tasks that will be undertaken as part of the environmental impact assessment process.	
(ix)	Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	
(i)	**An undertaking under oath or affirmation by the EAP in relation to –**	***APPENDIX A***
(i)	The correctness of the information provided in the report.	
(ii)	The inclusion of comments and inputs from stakeholders and interested and affected parties.	
(iii)	Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	
(j)	**An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.**	
(k)	**Where applicable, any specific information required by the competent authority.**	***None to date.***
(l)	**Any other matter required in terms of section 24(4)(a) and (b) of the Act.**	***None to date.***
(2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.		

ENVIRONMENTAL IMPACT ASSESSMENT TEAM

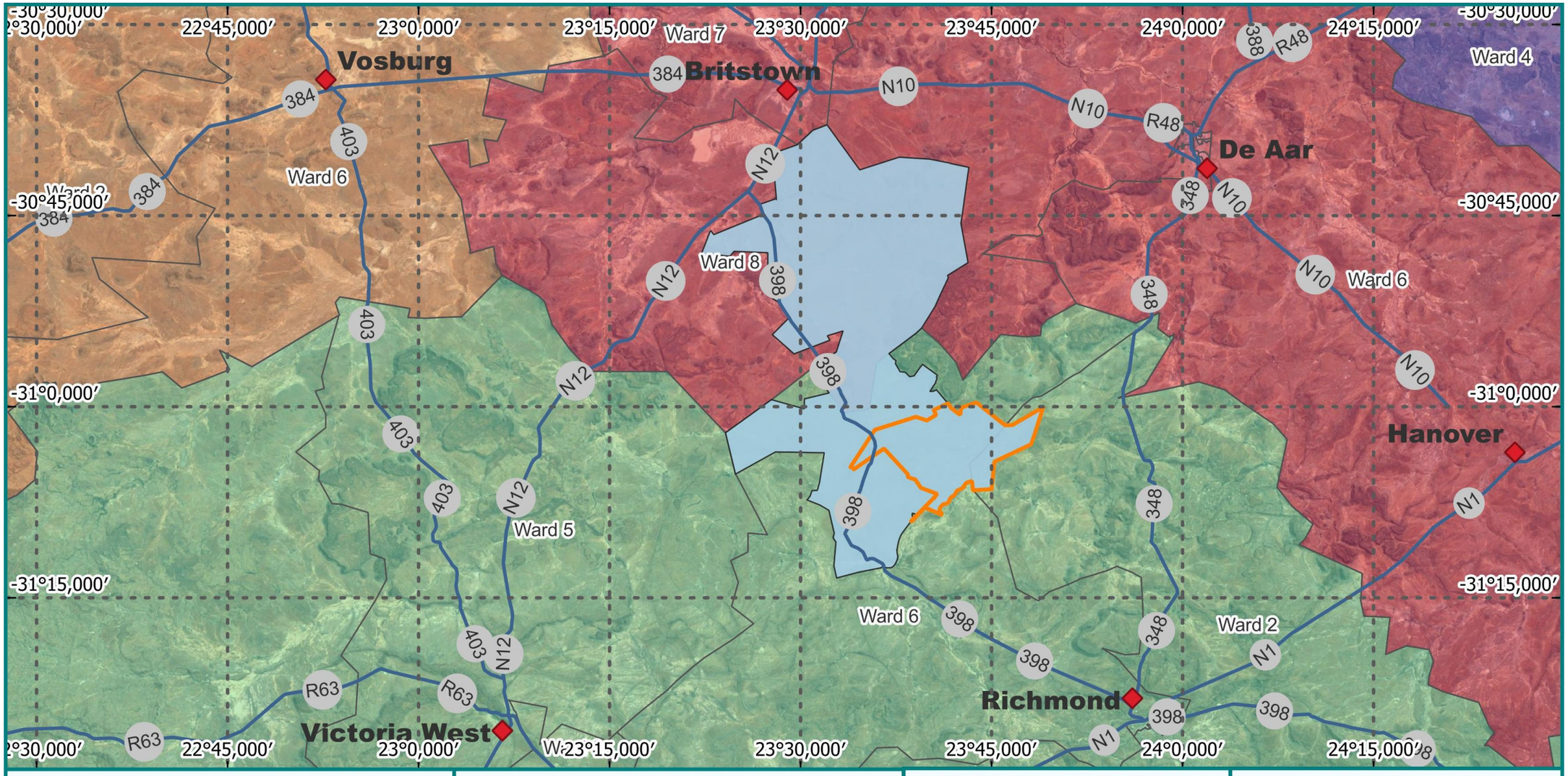
Environmental Consultants	**Alan Carter,** Project Leader & The EAP *CES* **Robyn Thomson,** Project Manager, Lead Author & GIS Mapping *CES*
Agricultural Specialist	**Mariné Pienaar,** Agricultural Specialist *TerraAfrica*
Avifaunal Specialist	**Owen Rhys Davies,** Avifaunal Specialist *Arcus Consultancy Services*
Bat Specialist	**Craig Campbell,** Bat Specialist *Arcus Consultancy Services*
Botanical Specialist	**Tarryn Martin,** Botanical Specialist *Biodiversity Africa*
Freshwater Specialist	**Aidan Gouws,** Freshwater Specialist *CES* **Ryan Edwards,** Freshwater Specialist (Review) *Verdant Environmental*
Faunal Specialist	**Amber Jackson,** Faunal Specialist *Biodiversity Africa*
Heritage Specialist	**Nelius Kruger,** Archaeological Specialist *CES*
Noise Specialist	**Morné de Jager,** Acoustic Specialist *Enviro Acoustic Research, MENCO*
Paleontological Specialist	**Elize Butler,** Paleontological Specialist *Banzai Environmental*
Socio-Economic Specialist	**Hilda Bezuidenhout,** Socio-economic Specialist *CES*
Traffic Specialist	**Iris Wink,** Traffic Specialist *JG Afrika*
Visual Specialist	**Peter Velcich,** Visual Specialist *NuLeaf Planning and Environmental*

GENERAL SITE INFORMATION

PROJECT SPECIFICATIONS	
Name of Facility	Soyuz 6 Wind Energy Facility
Province	Northern Cape
District Municipality	Pixley Ka Seme District Municipality
Local Municipality	Ubuntu Local Municipality
Farm Numbers and Portions	The Farm Altringham No. 19 The Farm No. 18 Remaining Extent of the Farm Allemans Dam No. 17 Remaining Extent (Portion 0) of the Farm Allemans Combuis No. 1 Remaining Extent of Portion 1 of the Farm Combuisfonteion No. 142 Portion 1 of the Farm Allemans Dam No. 17.
Study Area Extent (ha)	14 200 ha
Facility Footprint (ha)	***CONSTRUCTION PHASE*** Up to 215 ha ***OPERATIONAL PHASE*** Up to 150 ha
Vegetation Types Present	Upper Karoo Hardeveld (least concern), Norther Upper Karoo (least concern), and Eastern Upper Karoo (least concern)
Specialists Studies	***MONITORING AND IMPACT ASSESSMENTS*** Avifaunal Monitoring and Impact Assessment Bat Monitoring and Impact Assessment ***IMPACT ASSESSMENTS*** Agricultural Impact Assessment Ecological Impact Assessment Freshwater Impact Assessment Faunal Impact Assessment Heritage (Archaeological) Impact Assessment Noise Impact Assessment Palaeontological Impact Assessment Socio-economic Impact Assessment Visual Impact Assessment Traffic/Transportation Assessment

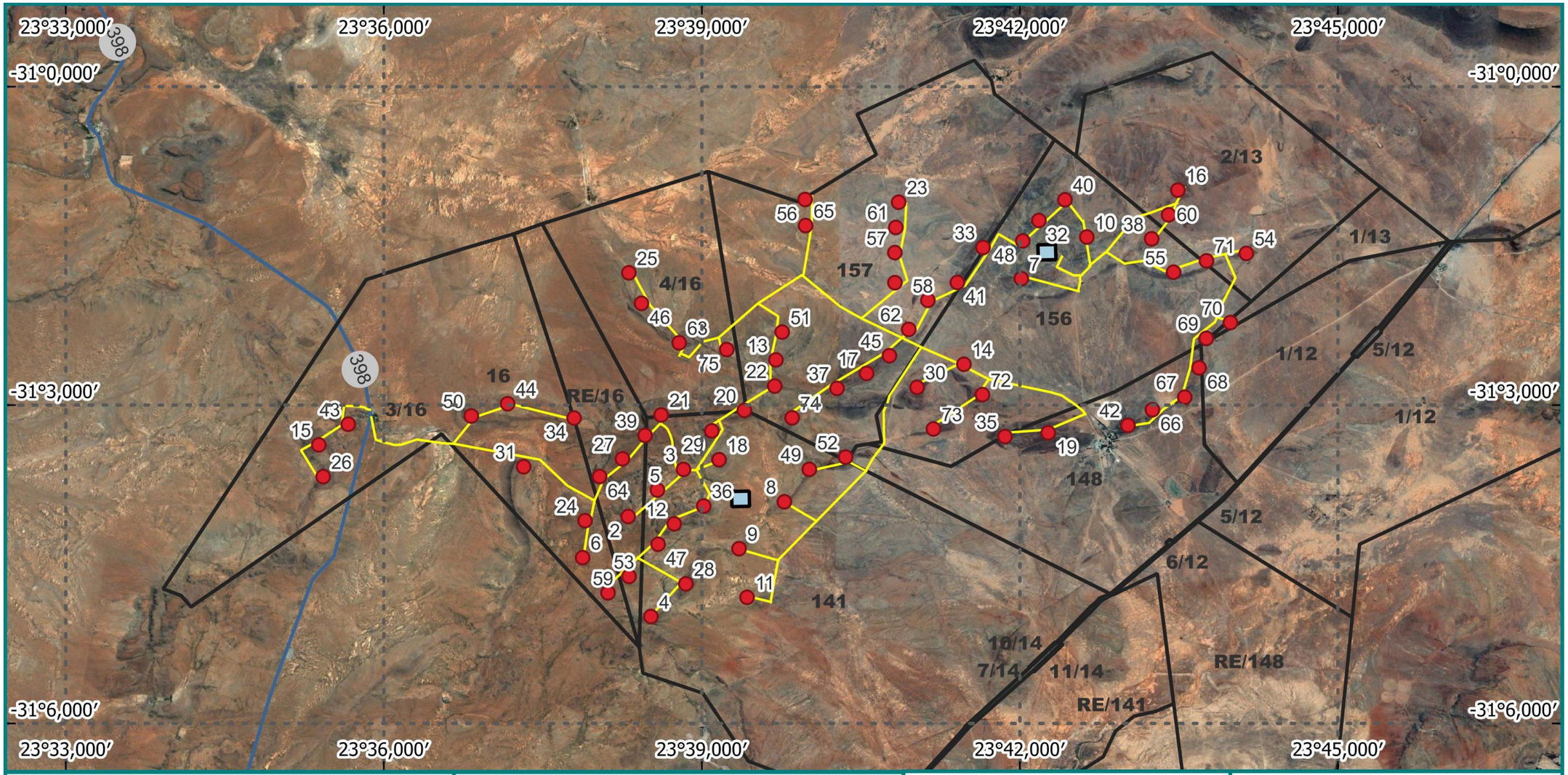
SOYUZ 6 WEF DESIGN SPECIFICATIONS	
Number of turbines	Up to 75
Power output per turbine	Unspecified
Facility output	Up to 480 MW
Turbine hub height	Up to 160 m
Turbine rotor diameter	Up to 200 m
Turbine blade length	Up to 100 m
Turbine tip height	Up to 260 m
Turbine road width	14m to be rehabilitated to 8m
BESS Technology	Solid State (Li-Ion) footprint up to 5 ha
On-site substations	Up to 4 ha
Temporary laydown areas	Up 14 ha (combined) during construction. To be fully rehabilitated.

SOYUZ 6 WEF LOCALITY MAP



MAP DETAILS	LEGEND	SITE IN SOUTH AFRICA	PRODUCED BY
Date: July 2022 Drawn by: Robyn Thomson Datum: WGS 84	Towns Roads Wards 2021 WEF Boundary Soyuz WEF cluster **Local Municipalities** Emthanjeni Kareeberg Thembelihle Ubuntu		CES ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES **PRODUCED FOR** **Soyuz 6 WEF**
SCALE 0 10 20 km			

SOYUZ 6 WEF LAYOUT MAP



MAP DETAILS	LEGEND	SITE IN SOUTH AFRICA	PRODUCED BY
Date: July 2022 Drawn by: Robyn Thomson Datum: WGS 84	Turbines Main Roads Internal Roads Farms Temporary laydown, warehousing, batching plant, BESS, & substations		CES ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES
SCALE 0 — 2 500 — 5 000 m			**PRODUCED FOR** Soyuz 6 WEF

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1 INTRODUCTION

1.1 BACKGROUND INFORMATION

The Soyuz 6 Wind Energy Facility (WEF) is located approximately 53 km south of Britstown in the Northern Cape Province. The project site is situated in the Ubuntu Municipality (LM) which forms part of the Pixley Ka Seme District Municipality. Studies conducted to date show that this area has favourable wind conditions to operate a wind farm.

CES has been appointed by Soyuz 6 (Pty) Ltd as the Environmental Assessment Practitioner (EAP) to conduct the necessary EIA Process required in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) EIA Regulations (2014 and subsequent 2017 amendments).

1.2 SCOPING PHASE

The proposed project is currently in the Scoping Phase. The aim of this phase is to determine, in detail, the scope of the EIA required for the proposed activities. The primary objectives of the Scoping Phase, in accordance with the regulatory requirements, are to:

- Describe the nature of the proposed project;
- Enable preliminary identification and assessment of potential environmental issues or impacts to be addressed in the subsequent EIA Phase;
- Define the legal, policy and planning context for the proposed project;
- Describe important biophysical and socio-economic characteristics of the affected environment;
- Undertake a Public Participation Process (PPP) which provides all Stakeholders and Interested and Affected Parties (I&APs) with opportunities to be involved;
- Identify feasible development alternatives which must be assessed in the EIA Phase;
- Identify the potential impacts of the proposed WEF; and
- Define the Plan of Study (PoS) for the EIA Phase.

1.3 NATURE AND STRUCTURE OF THIS REPORT

The structure of this report is based on Appendix 2 of GN R. 982 (326), of the EIA Regulations (2014 and subsequent 2017 amendments), which clearly specifies the required content of a Scoping Report.

This report is the first of several reports which will be produced during the EIA Process. This Scoping Report has been produced in accordance with the requirements, as stipulated in Appendix 2 of the EIA Regulations, which clearly outlines the content of a Scoping Report, and Chapter 6, Sections 39-44 which cover the activities necessary for a successful PPP.

1.3.1 STRUCTURE

The structure of this Scoping Report is as follows:

1. **Chapter 1: Introduction** – Provides background information on the proposed project, a brief description of the EIA process required in terms of the NEMA EIA Regulations and describes the key steps in the EIA process which have been undertaken thus far, and those that will be undertaken in the future. The details and expertise of the EAP who prepared this report are also provided in this Chapter.
2. **Chapter 2: Project Description** – Provides a description of the proposed development, the properties on which the development is to be undertaken and the location of the development within the properties. The technical details of the process to be undertaken are also provided in this Chapter.

3. **Chapter 3: Need and Desirability** – Provides the context of the renewable energy industry in South Africa and outlines how the Soyuz 6 WEF is likely to contribute towards reaching sustainability goals regionally, nationally, and internationally.
4. **Chapter 4: Relevant Legislation** – Identifies all the legislation and guidelines that have been considered in the preparation of this Scoping Report.
5. **Chapter 5 & Chapter 6: Description of the affected environment** – Provides a brief overview of the bio-physical and socio-economic characteristics of the site and its environs which could be affected by the proposed development. This information is compiled largely from published information and available spatial data, but it has been supplemented by information which was gathered during site investigations.
6. **Chapter 7: Alternatives** - Provides a brief discussion of the feasible and reasonable alternatives to the proposed project which have been identified and considered, some of which will be investigated further in the EIA Phase.
7. **Chapter 8: Manner in which the environment could be affected** – Provides a description of the key issues which have been identified by the project team as well as through discussions with I&APs thus far in the Scoping Phase, which will be assessed during the EIA Phase.
8. **Chapter 9: Plan of Study (PoS)** – Sets out the proposed approach to the environmental impact assessment of the proposed project including:
    - A description of the scope of work that will be undertaken as part of the EIA Phase, including any specialist reports or specialised processes, and the manner in which the described scope of work will be undertaken;
    - An indication of the stages at which the competent authority will be consulted;
    - A description of the proposed methodology for assessing the environmental issues and alternatives, including the option of not proceeding (no-go alternative) with the proposed development;
    - Particulars of the PPP which will be conducted during the EIA Phase; and
    - Any specific information required by the authority.
9. **Chapter 10: Public Participation Process** - Provides details of the Public Participation Process (PPP) which has been conducted, including:
    - The measures undertaken thus far to notify I&APs of the application;
    - Proof that notice boards, advertisements and notices, notifying potential I&APs of the application have been displayed, placed or distributed;
    - A list of all persons and organisations which have been identified and registered in terms of Regulation 57 as I&APs in relation to the application.
10. **Chapter 11: Conclusions** – This chapter consists of the concluding remarks of the Scoping Phase and any specific recommendations for the EIA Phase.
11. **Chapter 12: Appendix A EAP Affirmation**
12. **Chapter 13: Appendix B EAP CVs**

1.3.2 Assumptions and Limitations

This report is based on currently available information and, as a result, the following limitations and assumptions are implicit–

- This report is based on a project description which has been taken from design specifications for the proposed wind farm that have not yet been finalised, and which are likely to undergo a number of refinements before it can be regarded as definitive. A project description based on the final design will be provided during the EIA Phase.
- Descriptions of the natural and social environments are based on limited fieldwork and available literature. More information will be provided during the EIA Phase, once the specialist studies have been undertaken.

- The preliminary turbine site layout and associated infrastructure will be presented in the EIA Phase and subject to the necessary specialist assessments. It is anticipated that this preliminary layout will be further refined as per the outcomes of these studies and overall EIA findings.

1.4 Details and Expertise of the Environmental Assessment Practitioner

In fulfilment with the legislative requirements, the details of the Environmental Assessment Practitioner (EAP) and the environmental team that prepared this Scoping Report are provided below.

1.4.1 Dr Alan Carter (The EAP & Project Leader)

Dr Alan Carter is an Executive and the East London Branch Manager at CES. He has extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He is a member of the American Institute of Certified Public Accountants (licensed in Texas) and holds a PhD in Plant Sciences. He is also certified ISO14001 EMS Auditor with the American National Standards Institute. Alan has been responsible for leading and managing numerous and varied consulting projects over the past 30 years. He is a registered professional with the South African Council for Natural Scientific Professionals (SACNASP) and through Environmental Assessment Practitioners Association of South Africa (EAPASA). Alan has been the lead and EAP for over 20 windfarm EIAs over the past 10 years.

1.4.2 Ms Robyn Thomson (Project Manager & Lead Author)

Robyn is a Principal Environmental Consultant with more than 16 years' experience and she is based in the East London branch. She holds a BSc (Environmental Science) degree with majors in Archaeology, Environmental and Geographical Science, as well as a BSc (Hons.) in Environmental Science, with coursework in Environmental Management, Environmental Impact Assessment, Environmental Risk Assessment, Environmental Contamination Rehabilitation, Geographic Information Systems, and fundamentals in Statistics. The Honours programme also entailed a research project, which looked at the effectiveness of the community awareness programme conducted by the Asbestos Interest Group (AIG) on the effects of and attitudes towards asbestos contamination in two rural communities, Heuningvlei and Ga-Mopedi respectively, in the Northern Cape Province. The research project formed part of a larger project quantifying the extent of secondary environmental asbestos contamination in South Africa. Robyn obtained her undergraduate degree at the University of Cape Town, and her Honours degree at Rhodes University. Robyn's experience and expertise includes Basic Assessments, Environmental Impact Assessments, Environmental Monitoring, Environmental Management Plans, Water Use Licencing, public participation, GIS and project coordination. Robyn has particularly strong experience in infrastructure projects for various municipal, provincial, and national organisations.

1.4.3 Ms Sage Wansell (Public Participation Support)

Ms Sage Wansell Sage holds a Master of Science degree in Botany and has gained experience in field and laboratory work by researching invasive aquatic species in South Africa during that time. Her research focused on the ecology, spread and management strategies of an invasive wetland species. Apart from invasion biology research, Sage has a BSc Honours degree in Biotechnology. Her biotechnology, botany and microbiology background provide an understanding of environmental management, indigenous biodiversity and water quality. Sage is registered as a Candidate Botanical Natural Scientist: South African Council for Natural Scientific Professionals (SACNASP) and is a member of the Member of the International Association for Impact Assessment South Africa (IAIAsa).

PLEASE FIND THE *CURRICULUM VITAE* ATTACHED AS APPENDIX B

2 PROJECT DESCRIPTION

2.1 PROPOSED ACTIVITY

The applicant Soyuz 6 (Pty) Ltd is proposing the development of a commercial Wind Energy Facility (WEF) and associated infrastructure on a site located approximately 53 km South of Britstown within the Ubuntu Local Municipality and the Pixley ka Seme District Municipality in the Northern Cape Province.

Five additional WEFs are concurrently being considered on the surrounding properties and are assessed by way of separate impact assessment processes contained in the 2014 Environmental Impact Assessment Regulations (GN No. R982, as amended) for listed activities contained in Listing Notices 1, 2 and 3 (GN R983, R984 and R985, as amended). These projects are known as Soyuz 1 WEF, Soyuz 2 WEF, Soyuz 3 WEF, Soyuz 4 WEF and Soyuz 5 WEF.

A preferred project site with an extent of approximately 125 000 ha has been identified as a technically suitable area for the development of the six WEF projects. It is proposed that each WEF will comprise of up to 75 turbines with a contracted capacity of up to 480 MW. It is anticipated that each WEF will have an actual (permanent) footprint of up to 150 ha after construction rehabilitation.

The Soyuz 6 WEF project site covers approximately 17 800 ha and comprises the following farm portions:

- Remaining Extent of Portion 3 of the Farm No. 16.
- Remaining Extent (Portion 0) of the Farm No 16.
- Remaining Extent (Portion 0) of the Farm No 141.
- Remaining Extent (Portion 0) of the Farm No. 148.
- Portion 4 of the Farm No. 16.
- The Farm No. 157.
- The Farm No. 156.
- Portion 2 (a portion of Portion 13) of the Farm Wonderboom No. 13.
- Portion 1 of the Farm Wonderboom No. 13.
- Remaining Extent of Portion 1 of the Farm Sterkfontein No. 12.

The Soyuz 6 WEF project site is proposed to accommodate the following infrastructure, which will enable the wind farm to supply a contracted capacity of up to 480 MW:

- Up to 75 wind turbines with a maximum hub height of up to 160 m and a rotor diameter of up to 200 m;
- A transformer at the base of each turbine;
- Concrete turbine foundations;
- Turbine, crane and blade hardstands;
- Temporary laydown areas (with a combined footprint of up to 14 ha) which will accommodate the boom erection, storage and assembly area;
- Battery Energy Storage System (with a footprint of up to 5 ha);
- Cabling between the turbines, to be laid underground where practical;
- Two on-site substations with a combined footprint of up to 4 ha in extent to facilitate the connection between the wind farm and the electricity grid;
- Access roads to the site and between project components inclusive of stormwater infrastructure. A 12 m road corridor may be temporarily impacted upon during construction and rehabilitated to 6m wide after construction. The WEF will have a total road network of up to 125 km.
- A temporary site camp establishment and concrete batching plants (with a combined footprint of up to 2 ha); and
- Operation and Maintenance buildings (with a combined footprint of up to 2 ha) including a gate house, security building, control centre, offices, warehouses, a workshop and visitor's centre.

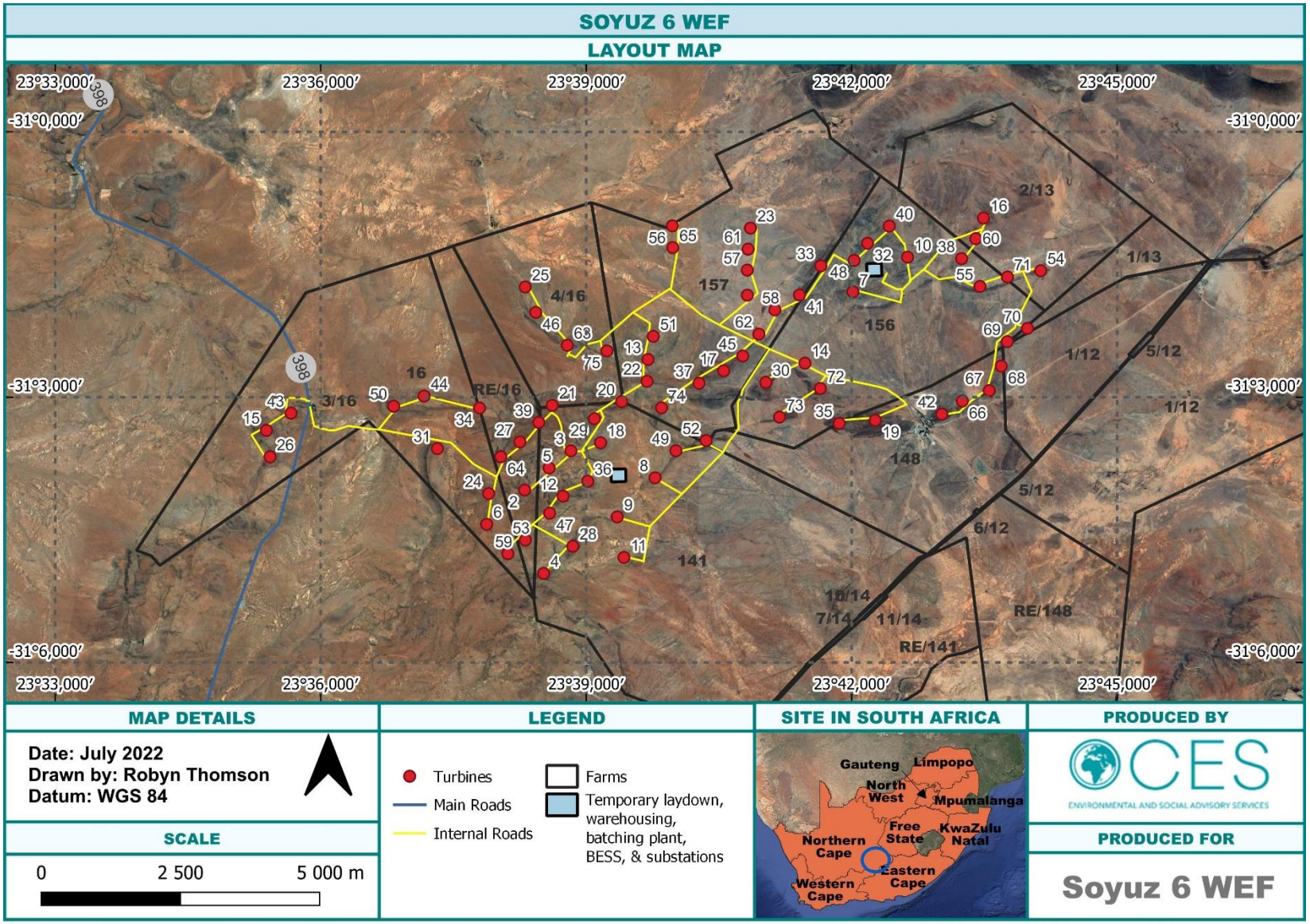


Figure 2-1: Soyuz 6 WEF Layout Map.

The preliminary footprint of the facility is shown in Table 2-1 below. The footprint extent may change slightly during the EIR phase and will be refined based on the results of the detailed specialist studies.

Table 2-1: Preliminary Construction Footprint of the Soyuz 6 WEF.

FACILITY COMPONENT	CONSTRUCTION FOOTPRINT	FINAL FOOTPRINT AFTER REHABILITATION
Turbine Foundation	TOTAL Up to 1024 m^2 x 75 turbines = 76 800 m^2 which equates to **7.68 ha**	TOTAL Up to 1024 m^2 x 75 turbines = 76 800 m^2 which equates to **7.68 ha**
Turbine Crane Pad	TOTAL Up to 3150 m^2 x 75 turbines = 236 250 m^2 which equates to **23.63 ha**	TOTAL Up to 3150 m^2 x 75 turbines = 236 250 m^2 which equates to **23.63 ha**
Turbine Blade Pad	Up to 3600 m^2 x 75 turbines = 270 000 m^2 which equates to **27 ha**	Up to 3600 m^2 x 75 turbines = 270 000 m^2 which equates to **27 ha**
Crane Boom Pad and Assembly Area	Up to 6000 m^2 x 75 turbines = 450 000 m^2 which equates to **45 ha**	Up to 1000 m^2 x 75 turbines = 75 000 m^2 which equates to **7.5 ha**
Construction Laydown Areas	Up to 14 ha	None
Internal Access Roads	A 12 m wide road corridor may be temporarily impacted during construction and rehabilitated to 6 m wide after construction. The WEF will have a total road network of about 125 km. Temporary clearing of up to 50 m may be required in areas where cut and fill may be required as well as for the construction of the bell mouth road junction, turning circles and temporary passing lanes.	Permanent roads will be 6 m wide and may require side drains on one or both sides. The roads will also have underground cables running next to them. Roads will be wider where bell mouth junctions and turning circles are required. The WEF will have a total road network of about 125 km.
WEF Substation	Substations – Up to 4 ha	Substations – Up to 4 ha
BESS	Up to 5 ha	Up to 5 ha
Gate House and Security	Up to 0.5 ha	Up to 0.5 ha
Operational & Maintenance Buildings	Includes Control Centre, Offices, Warehouses, Workshop, Canteen, Visitors Centre, Staff Lockers, etc. with a footprint of up to 2 ha	Includes Control Centre, Offices, Warehouses, Workshop, Canteen, Visitors Centre, Staff Lockers, etc. with a footprint of up to 2 ha
Concrete Batching Plant	A temporary site camp establishment and concrete batching plant of up to 2 ha.	None
TOTAL FOOTPRINT:	**Up to 215 ha *of clearing needed for the construction phase of the development of the proposed Soyuz 6 WEF***	**Up to 150 ha *of clearing remaining during the post-construction operational phase (after rehabilitation) of the proposed Soyuz 6 WEF***

2.2 PROJECT LOCALITY

The project area is potentially up to 17 800 hectares (ha) in extent, with a total development footprint of up to 215 ha (pre-rehabilitation) and up to 150 ha (post-rehabilitation) depending on the final layout design. It is located in the Ubuntu LM and it is situated approximately 53 km south of Britstown. The N12 and R398 roads connect the WEF to Britstown directly to the North and Richmond to the Southeast, respectively. The direction and distance from the project area the nearest towns are indicated in Table 2-2 below:

Table 2-2: Towns in the vicinity of the Soyuz 6 WEF.

TOWN NAME	APPROXIMATE DISTANCE	DIRECTION
Britstown	**53 km**	**South**
Victoria West	**58 km**	**Northeast**
De Aar	**40 km**	**Southwest**
Richmond	**36 km**	**Northeast**
Vosburg	**86 km**	**Southeast**

Table 2-3 indicates the property portions and farm names associated with the Soyuz 6 WEF project area. The proposed project is situated on approximately 17 800 ha, consisting of ten (10) farm portions.

Table 2-3: Soyuz 6 WEF Properties.

SOYUZ 6 WEF		
SG DIGIT NUMBER	**FARM NUMBER/PORTION**	**AREA (HA)**
N071C06300000000000141000000	141	2971
N071C06300000000000013000010	1/13	194
N071C06300000000000013000020	2/13	1074
N071C06300000000000012000010	1/12	2787
N071C06300000000000148000001	RE/148	1004
N071C06300000000000156000000	156	1545
N071C06300000000000157000000	157	1856
N071C06300000000000016000040	4/16	810
N071C06300000000000016000001	RE/16	481
N071C06300000000000016000030	3/16	1924
TOTAL		**16243**

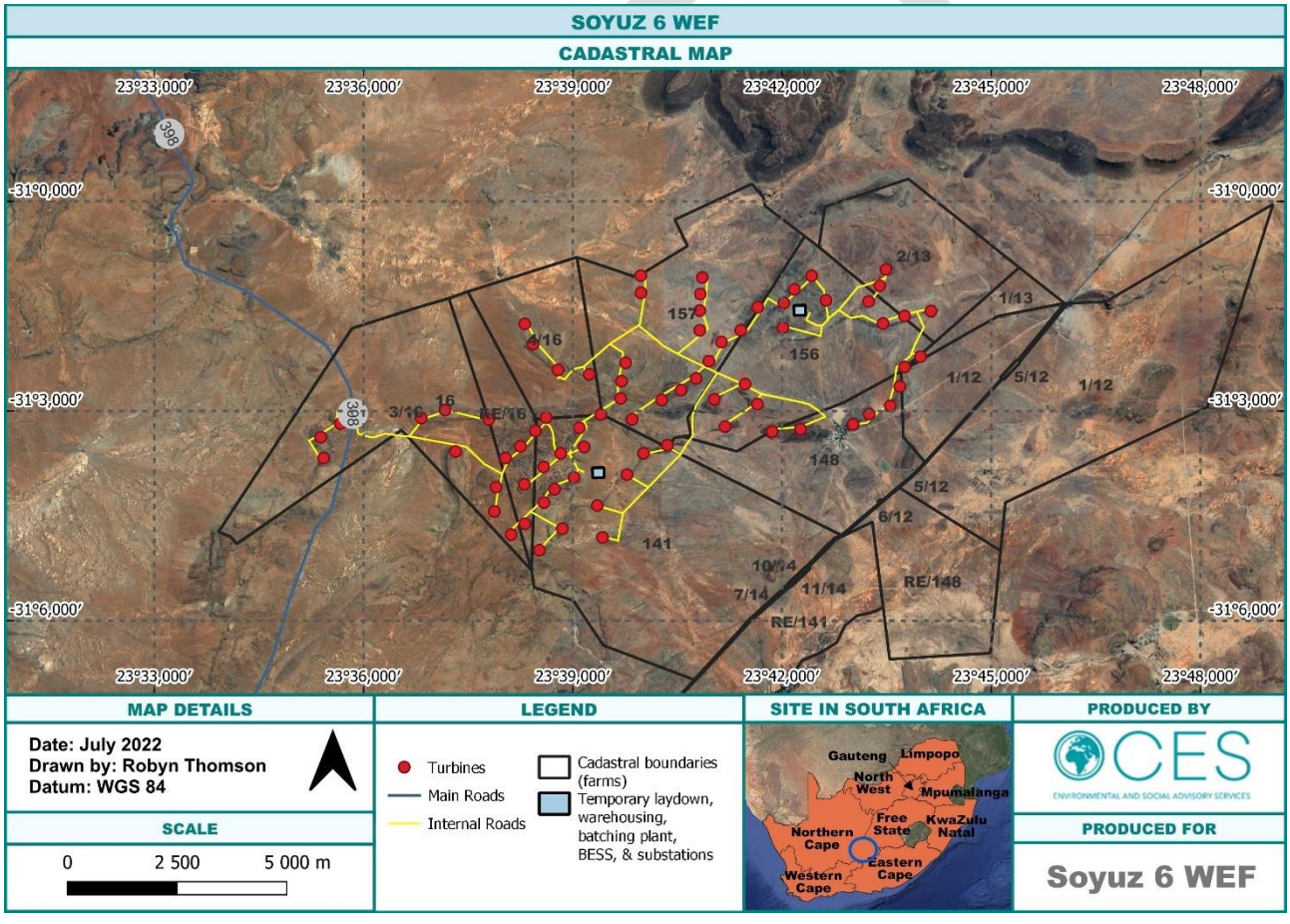


Figure 2-2: Cadastral Map of the Affected Properties within the Proposed Site.

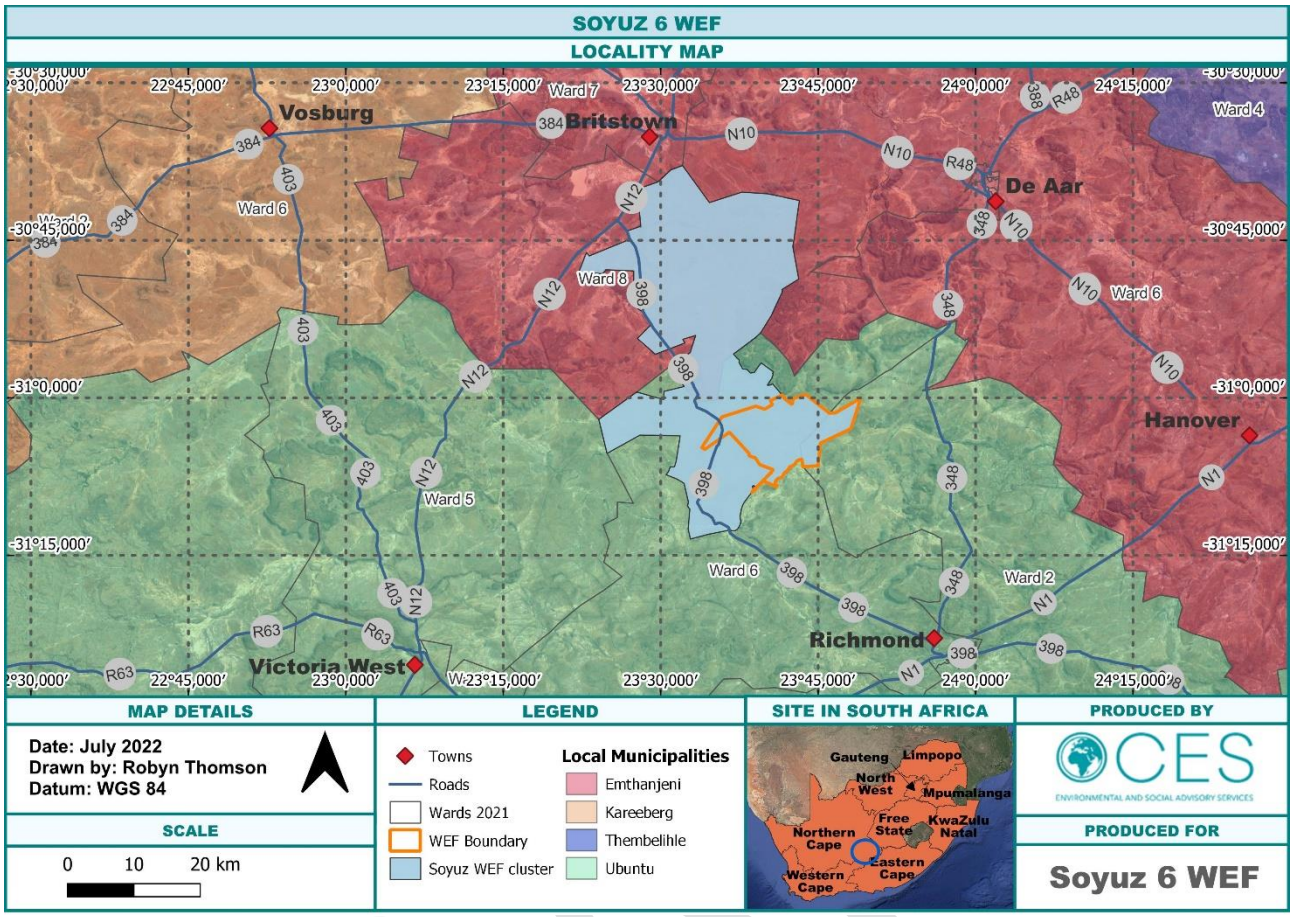


Figure 2-3: Locality Map of the Proposed Soyuz 6 WEF Site.

2.3 ENVIRONMENTAL AUTHORISATIONS IN SOUTH AFRICA

The regulation and protection of the environment within South Africa, occurs mainly through the application of various items of legislation, within the regulatory framework of the Constitution (Act No. 108 of 1996).

The primary legislation regulating EIAs within South Africa is the NEMA (Act No. 107 of 1998 and subsequent amendments). The NEMA makes provision for the Minister of Environmental Affairs to identify activities which may not commence prior to authorisation from either the Minister or the provincial Member of the Executive Council ("the MEC"). In addition to this, the NEMA also provides for the formulation of regulations in respect of such authorisations.

The NEMA EIA Regulations (2014 and subsequent 2017 amendments) allow for a Basic Assessment (BA) Process for activities with limited environmental impact (listed in GN R. 983/GN R. 327 & GN R. 985/GN R. 324) and a more rigorous two- tiered approach to activities with potentially greater environmental impact (listed in GN R. 984/GN R. 325). This two-tiered approach includes both a Scoping and EIA Process. The proposed Soyuz 6 WEF project activities trigger the need for a Scoping and EIA Process in accordance with the NEMA EIA Regulations (2014 and subsequent 2017 amendments) Listing Notices 1, 2 and 3 and published in Government Notices No. R. 983 (GN R. 327), R. 984 (GN R. 325) and R. 985 (GN R. 324) respectively. The listed activities which are being applied for are provided in Table 2-4 below.

Table 2-4: Listed activities triggered by the proposed Soyuz 6 WEF

LISTING NOTICE		ACTIVITY DESCRIPTION
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1** of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
11	**The development of facilities or infrastructure for the transmission and distribution of electricity–** **Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.**	The project will require the construction and operation of an on-site 33kV/132kV facility substation to facilitate the connection of the wind farm to the national grid. Medium voltage underground (where possible) electrical cables will be laid to transmit electricity generated by the wind turbines to the onsite facility substations.
12	The development of— **(i) infrastructure or structures with a physical footprint of 100 square metres or more;** where such development occurs— **(a) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —** **(b) In front of a development setback; or** **(c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.**	This relates to the proposed cabling routes, internal roads, substations, laydown areas, construction compound area, and operation and maintenance buildings which may be constructed within 32m of watercourse. The final siting of this infrastructure will be refined throughout the process.
19	**The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;**	This relates specifically to road and cable crossings that may be required during internal road construction and cable installation connecting the turbines as well as access road installation and upgrading for the WEF.
24	**The development of a road–** **A road with a reserve wider the 13.5 metres, or where no reserve exists where the road is wider than 8 metres.**	The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) to ensure that the delivery of turbine parts is possible and that maintenance teams are able to access each individual turbine throughout the lifespan of the project. A 12 m road corridor may be temporarily impacted upon during the construction phase.
28	**Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development:** **Will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.**	The total area of land to be developed for the Soyuz 6 wind farm is larger than 1 hectare and the land is currently used for agriculture. The total footprint of the proposed WEF will be approximately up to 150 ha in extent (post-construction rehabilitation).

LISTING NOTICE		ACTIVITY DESCRIPTION
48	**The expansion of-** **(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; where such expansion occurs—** **(a) within a watercourse; or** **(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse**	The road network will need to be upgraded (using all technically feasible existing farm roads where possible) to ensure that the delivery of turbine parts is possible and that maintenance teams are able to access each individual turbine throughout the lifespan of the project.
56	**The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre**	The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) to ensure that the delivery of turbine parts is possible and that maintenance teams are able to access each individual turbine throughout the lifespan of the project. A 12 m wide road corridor may be temporarily impacted upon during the construction phase. It is also anticipated that the wind farm will have a total road network of up to 125 km, which will include the lengthening of some roads by more than 1 km.
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3** of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
4	**The development of a road wider than 4 metres with a reserve less than 13,5 metres.** **g. Northern Cape** **Outside urban areas:** **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;**	The WEF is traversed by an Ecological Support Area as defined in the Northern Cape Critical Biodiversity Areas Technical Report (2016). The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) to ensure that the delivery of turbine parts is possible and that maintenance teams are able to access each individual turbine throughout the lifespan of the project. A 12 m wide road corridor may be temporarily impacted upon during the construction phase.
12	**The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.** **g. Northern Cape** **ii. Within critical biodiversity areas identified in bioregional plans;**	The WEF will result in the loss of Indigenous vegetation in excess of 300 square metres. The WEF is traversed by an Ecological Support Area as defined in the Northern Cape Critical Biodiversity Areas Technical Report (2016).

LISTING NOTICE		ACTIVITY DESCRIPTION
14	The development of— **i. infrastructure or structures with a physical footprint of 10 square metres or more;** where such development occurs— **(a) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** **a. Northern Cape** i. Outside urban areas: **(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;**	This relates to the proposed cabling routes and internal roads which may be constructed within a watercourse. The combined physical footprint at the various water course crossings exceeds 10 square metres. The WEF is traversed by an Ecological Support Area as defined in the Northern Cape Critical Biodiversity Areas Technical Report (2016).
18	**The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.** **a. Northern Cape** **i. Outside urban areas:** **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;** **(ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland**	The proposed internal roads will be wider than 4m in certain areas. The WEF is traversed by an Ecological Support Area as defined in the Northern Cape Critical Biodiversity Areas Technical Report (2016) and is within 100m from the edge of a watercourse.
23	**The expansion of –** **(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs –** **(a) within a watercourse;** **(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** **g. Northern Cape** **ii. Outside urban areas:** **(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.**	The total area of land to be developed for the Soyuz 6 WEF is larger than 10 square metres on land containing watercourses within a Critical Biodiversity Area (CBA).
Activity No(s):	Provide the relevant **Scoping and EIR Activity(ies)** as set out in **Listing Notice 2** of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.	The proposed WEF will include the construction of up to 75 turbines with a maximum output capacity of up to 480MW. This wind energy facility is classified as a renewable energy facility.
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed development will include the clearing of indigenous vegetation. The total footprint of the proposed WEF will be approximately up to 150ha in extent (post-mitigation).

The Applicant, or the EAP on behalf of the Applicant, is initially required to submit a report detailing the Scoping Phase (Scoping Report – this report) and set out the ToR for the EIA Process (Plan of Study for EIA). This is then followed by a report detailing the EIA Phase, the Environmental Impact Report (EIR). The Competent Authority will issue a final decision after their review of the Final EIR.

The application relates to the generation of electricity using wind energy, as identified in the Integrated Resources Plan (IRP) 2010 – 2030. Published under GNR 779 of 01 July 2016, the Minister of Environmental Affairs has, in terms of section 24C(1), 24C(2)(a)(i) and 24D of the NEMA, identified the Minister as the competent authority in respect of any activities pertaining to the IRP 2010–2030 that require an environmental authorisation in terms of the NEMA. Therefore, the competent authority for this project is the National Department of Forestry, Fisheries and the Environment (DFFE).

In addition to the requirements for an Environmental Authorisation (EA) in terms of the NEMA, there may be additional legislative requirements that need to be considered prior to commencing with the activity, these include but are not limited to:

- National Heritage Resources Act (Act No. 25 of 1999);
- National Water Act (Act No. 36 of 1998);
- Civil Aviation Act (Act No. 74 of 1962) as amended;
- National Environmental Management Biodiversity Act (Act No. 10 of 2004);
- National Forests Act (Act No. 84 of 1998); and the

These are discussed in detail in Chapter 4 of this report.

2.4 TECHNICAL: PROPOSED ACTIVITY

2.4.1 WIND ENERGY FACILITY (WEF)

The proposed Soyuz 6 WEF will consist of up to 75 wind turbines, for a total combined maximum output capacity of up to 480 MW.

Winds are caused by the uneven heating of the atmosphere by the sun, the irregularities of the Earth's surface, and the rotation of the Earth. Wind flow patterns are modified by the Earth's terrain, bodies of water, and vegetation. This wind flow or motion energy (kinetic energy) can be used for generating electricity. The term “wind energy” describes the process by which wind is used to generate mechanical power or electricity. Wind turbines convert the kinetic energy in the wind into mechanical power and a generator can then be used to convert this mechanical power into electricity. The components of a typical wind turbine subsystem are depicted by Figure 2-4 below:

- A rotor, or blades, which are the portion of the wind turbine that collect energy from the wind and convert the wind's energy into rotational shaft energy to turn the generator. The speed of rotation of the blades is controlled by the nacelle, which can turn the blades to face into the wind (‘yaw control’) and change the angle of the blades (‘pitch control’) to make the most use of the available wind. The maximum rotor diameter for the Soyuz 6 WEF turbines is up to 200 m.
- A nacelle (enclosure) containing a drive train, usually including a gearbox (some turbines do not require a gearbox) and a generator. The generator converts the turning motion of a wind turbine’s blades (mechanical energy) into electricity. Inside this component, coils of wire are rotated in a magnetic field to produce electricity. The nacelle is also fitted with brakes, so that the turbine can be switched off during very high winds, such as during storm events. This prevents the turbine from being damaged. All this information is recorded by computers and is transmitted to a control centre, which means that operators don't have to visit the turbine very often, but only occasionally for mechanical monitoring.
- A tower, to support the rotor and drive train, on which a wind turbine is mounted is not only a support structure, but also raises the wind turbine so that the blades safely clear the ground and reach the stronger winds at higher elevations. The tower must also be strong enough to support the wind turbine

and to sustain vibration, wind loading, and the overall weather elements for the lifetime of the turbine. The maximum hub height of the Soyuz 6 WEF turbines is up to 160 m.

- Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.

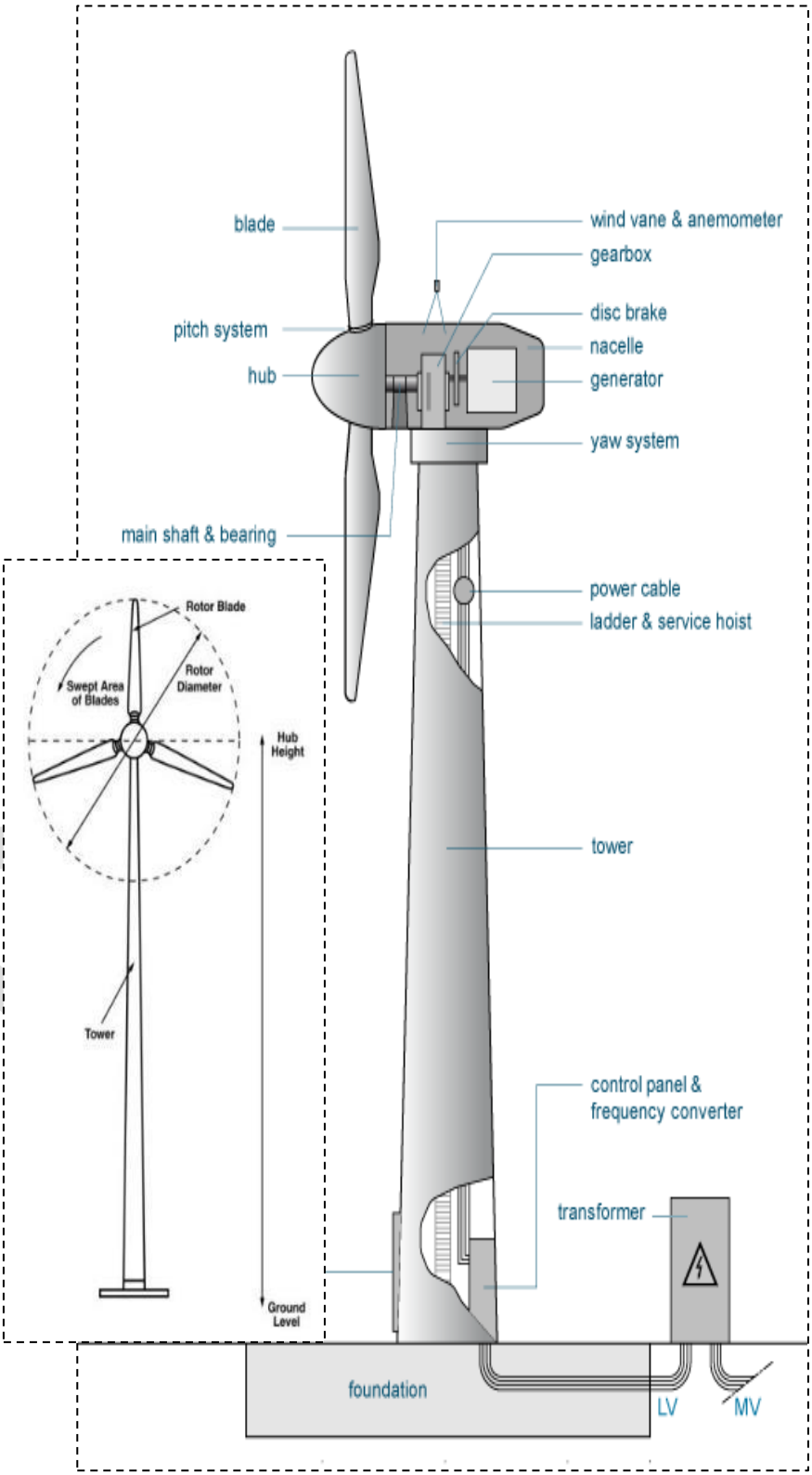


Figure 2-4: Illustrations of the main components of a typical wind turbine. *Note that the transformer would typically be inside the tower (likely at the base). Sources: www.newen.ca and www.soleai.com.

2.4.2 STAGES OF WIND FARM DEVELOPMENT

Typically, building a wind farm is divided into four (4) phases, namely:

- Preliminary civil works;
- Construction;
- Operation; and
- Decommission.

A) PRELIMINARY CIVIL WORKS

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

B) CONSTRUCTION

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

These platforms will be connected by access roads with the following requirements:

- Minimum of 12 m width (9 m running width and 1.5 m verge either side) on straight sections with widening required on corners;
- Temporary clearing of up to 50 m may be required in areas where cut and fill may be required as well as for the construction of the bell mouth road junction, turning circles and temporary passing lanes
- Should a "crawler" type crane be used, then road widths of up to 12 m on straight sections may be required, of which 6 m would be retained for the life of the wind farm;
- Typical 300 mm deep road section;
- Maximum 10% vertical gradient on gravel roads;
- Turning heads provided within 200 m of each crane pad; and
- Passing places of c. 50 m length and 5 m width located approximately every 1 km.

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

Other works to be undertaken during the construction phase include:

(a) Geotechnical studies and foundation works

A geotechnical study of the area is undertaken for safety purposes. This comprises of drilling, penetration and pressure assessments. For the purpose of the foundations, approximately 1500 m^3 of soil would need to be excavated for each turbine. These excavations are then filled with steel-reinforced concrete (typically 45 tons of steel reinforcement per turbine including a "bolt ring" to connect the turbine foundation to the turbine tower). Foundation design will vary according to the type and quality of the soil.

(b) Electrical cabling

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

(c) Establishment of hard standing surfaces and laydown areas

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

(d) Site preparation

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

(e) Establishment of substation and ancillary infrastructure

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

(f) Turbine erection

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

(g) Undertake site remediation

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

(h) Electrical Connection

Each turbine is fitted with its own transformer that steps up the voltage usually to 22 or 33 kV. The entire wind farm is then connected to the "point of interconnection" which is the electrical boundary between the wind farm and the municipal or national grid.

C) OPERATIONAL PHASE

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

(a) Facility re-powering

The wind turbines are expected to have a lifespan of approximately 20 years (with appropriate maintenance). The infrastructure would only be decommissioned once it has reached the end of its economic or technological life. If economically feasible, the disassembly and replacement of the individual components with more appropriate technology/infrastructure available at the time will take place.

D) DECOMMISSIONING OF THE WIND FARM

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

(a) Site preparation

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

(b) Disassemble all individual components

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

3 PROJECT NEED AND DESIRABILITY

3.1 BACKGROUND

The current section has taken note of the revised Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2014. DFFE Integrated Environmental Management Guidelines Series 9. 2017.

When considering an application for Environmental Authorisation (EA), the competent authority must comply with section 24O of the National Environmental Management Act, No 107 of 1998 (NEMA), and must have regard for any guideline published in terms of section 24J of the Act and any minimum information requirements for the application. This includes this need and desirability guideline.

Additionally, the Environmental Impact Assessment (EIA) regulations require environmental assessment practitioners (EAPs) who undertake environmental assessments, to have knowledge and take into account relevant guidelines. A person applying for an EA must abide by the regulations, which are binding on the applicant.

The guideline contains information on best practice and how to meet the peremptory requirements prescribed by the legislation and sets out both the strategic and statutory context for the consideration of the need and desirability of a development involving any one of the NEMA listed activities. Need and desirability is based on the principle of sustainability, set out in the Constitution and in NEMA, and provided for in various policies and plans, including the National Development Plan 2030 (NDP). Addressing the need and desirability of a development is a way of ensuring sustainable development – in other words, that a development is ecologically sustainable and socially and economically justifiable – and ensuring the simultaneous achievement of the triple bottom-line.

The Guideline sets out a list of questions which should be addressed when considering need and desirability of a proposed development. These are divided into questions that relate to ecological sustainability and justifiable economic and social development. The questions that relate to ecological sustainability include how the development may impact ecosystems and biological diversity; pollution; and renewable and non-renewable resources. When considering how the development may affect or promote justifiable economic and social development, the relevant spatial plans must be considered, including Municipal Integrated Development Plans (IDP), Spatial Development Frameworks (SDF) and Environmental Management Frameworks (EMF). The assessment reports will need to provide information as to how the development will address the socio-economic impacts of the development, and whether any socio-economic impact resulting from the development impact on people's environmental rights. Considering the need and desirability of a development entails the balancing of these factors.

Sustainable development refers to the integrated relationship between social, economic and environmental factors in planning, implementation and decision-making so as to ensure that development serves present and future generations (National Sustainable Development Framework). Sustainable development is a programme to change the process of economic development so that it ensures a basic quality of life for all people and protects the ecosystems and community systems that make life possible and worthwhile.

3.2 CURRENT CONTEXT

Increasing pressure is being placed on countries internationally to reduce their reliance on fossil fuels, such as oil and coal, which contribute towards greenhouse gases (GHG) being emitted into the atmosphere and thus contributing to global climate change. Renewable energy resources such as wind energy facilities and solar PV farms are being implemented as alternative sources of energy at a global and national scale.

South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA).

The draft of the South African Integrated Resource Plan (IRP 2018) was released for public comment in August 2018, setting out a new direction in energy sector planning. The plan included a shift away from coal, increased adoption of renewables and gas, and an end to the expansion of nuclear power. The revised plan marks a major shift in energy policy. The draft policy aimed to decommission a total of 35 GW (of 42 GW currently operating) of coal generation capacity from Eskom by 2050, starting with 12 GW by 2030, 16 GW by 2040 and a further 7 GW by 2050.

The IRP 2019 was Gazetted in October 2019 and makes provision for the procurement of 1.6 GW of wind energy per annum from 2020 to 2030.

The implementation of the IRP constitutes significant progress in the transformation of the South African energy sector. To be in line with the Paris Agreement goals for mitigation, South Africa would still need to adopt more ambitious actions by 2050 such as expanding renewable energy capacity beyond 2030, fully phasing out coal by mid-century, and substantially limiting unabated natural gas use.

3.3 ELECTRICITY SUPPLY IN SOUTH AFRICA

South Africa's current electricity generation and supply system is unreliable. Currently, Eskom has a net output of 47,201MWp, and it produces 85% of South Africa's electricity, which is an equivalent of 40% of Africa's electricity. Renewable energy accounts for 5% of South Africa's electricity. This is mainly due to the targets set in the IRP2010-2030 that aimed to change the electricity landscape from high coal (91.7%) to medium coal (48%) using electricity produced by the Independent Power Producers, with the utility company, Eskom, as the single buyer of the electricity.

South Africa has a high level of renewable energy potential and presently has in place a target of 17 800 MW of renewable energy. The REIPPP Programme has been designed to contribute towards the national target and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa.

In terms of the REIPPPP, bidders will be required to bid on tariff and the identified socio-economic development objectives of the DoE. The tariff will be payable by the Buyer (currently ESKOM) pursuant to the Power Purchase Agreement (PPA) to be entered into between the Buyer and the Project Company of a Preferred Bidder. Please see section 6.3.8 for more information regarding the REIPPPP.

The DMRE launched the Request for Proposals (RFP) for the Sixth (6th) Bid Window under the REIPPPP in May 2022.

This procurement bid window is the second to be released in line with the Ministerial Determination, promulgated on 25th September 2020, which seeks to procure 11 813 MW of power from various sources including renewable energy, storage, gas, and coal.

The RFP calls for proposals from Independent Power Producers (IPPs) to develop new generation capacity of 5 200 MW, including 3 200 MW from onshore wind energy and 2 000 MW from Solar Photovoltaic (Solar PV) power plants.

This 6th Bid Window has been designed to contribute towards socio-economic and environmentally sustainable growth, to continue the successes of the REIPPPP since its inception, and to further stimulate increased local participation and economic empowerment in the South African Renewable Energy industry.

3.4 SOCIAL AND ECONOMIC DEVELOPMENT

Soyuz 6 WEF intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the project's operational phase. A local community trust will be established in order to ensure that funds are channelled to these social development schemes.

The need and desirability of the proposed Soyuz 6 WEF project can be demonstrated in the following main areas:

- Move to green energy due to growing concerns associated with climate change and the on-going exploitation of non-renewable resources;
- Security of electricity supply, where over the last few years, South Africa has been adversely impacted by interruptions in the supply of electricity; and
- Stimulation of the green economy where there is a high potential for new business opportunities and job creation.

The above main drivers, for renewable energy projects, are supported by the following International, National and Provincial (Northern Cape Province) policy documents.

3.5 INTERNATIONAL

3.5.1 THE 1992 UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

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

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The UNFCCC is relevant in that the proposed Soyuz 6 WEF project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity. South Africa has committed to reducing emissions to demonstrate its commitment to meeting international obligations.

3.5.2 THE KYOTO PROTOCOL (2002)

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

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The Kyoto Protocol is relevant in that the proposed Soyuz 6 WEF project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity and will assist South Africa to begin demonstrating its commitment to meeting international obligations in terms of reducing its emissions.

3.6 NATIONAL

3.6.1 NATIONAL DEVELOPMENT PLAN (2011)

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

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

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

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF will contribute towards additional energy capacity in South Africa and will contribute towards a reduction in greenhouse gas emissions.

3.6.2 NATIONAL CLIMATE CHANGE RESPONSE WHITE PAPER (2012)

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

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

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

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

- The prioritisation of mitigation interventions that significantly contribute to a peak, plateau and decline emission trajectory where greenhouse gas emissions peak in 2020 to 2025 at 34% and 42% respectively

below a business as usual baseline, plateau to 2035 and begin declining in absolute terms from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.

- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF project will provide an alternative to fossil fuel-derived electricity and will contribute to climate change mitigation.

3.6.3 White Paper on Renewable Energy Policy (2003)

The White Paper on the Renewable Energy Policy (2003) commits the South African Government support for the development, demonstration and implementation of renewable energy sources for both small and large scale applications. It sets out the policy principles, goals and objectives to achieve, "An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation".

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF is consistent with the White Paper and the objectives therein to develop an economy in which renewable energy has a significant market share and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation.

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

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

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

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

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The Soyuz 6 WEF is in line with the IEP with regards to diversification of energy supply and the promotion of universal access to clean energy.

3.6.5 Integrated Resource Plan for Electricity 2010-2030 (Revision 2, 2011)

The Integrated Resource Plan (IRP, 2010) for South Africa was initiated by the DoE and lays the foundation for the country's energy mix up to 2030, and seeks to find an appropriate balance between the expectations of different stakeholders considering a number of key constraints and risks, including:

- Reducing carbon emissions.
- New technology uncertainties such as costs, operability and lead time to build.
- Water usage.
- Localisation and job creation.
- Southern African regional development and integration.
- Security of supply.

The Policy-Adjusted IRP includes recent developments with respect to prices and allocates 17 800 MW for renewables, of the total 42 600 GW (including both renewables and non-renewables) new-build up to 2030 allocated as follows:

- Wind at 8 400 MW.
- Concentrated solar power at 1 000 MW.
- Photovoltaic at 8 400 MW.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The Soyuz 6 WEF is in line with the IRP for electricity and will contribute towards finding an appropriate balance between the various stakeholders as per the IRP2011.

3.6.6 Integrated Resource Plan for Electricity 2010-2030 (Revision 3, 2019)

The Integrated Resource Plan (IRP, 2019) for South Africa was initiated by the DoE and lays the foundation for the country's energy mix up to 2030, and seeks to find an appropriate balance between the expectations of different stakeholders considering a number of key constraints and risks, including:

- Reducing carbon emissions;
- New technology uncertainties such as costs, operability and lead time to build;
- Water usage;
- Localisation and job creation;
- Southern African regional development and integration; and
- Security of supply.

The IRP is an electricity infrastructure development plan based on the least-cost electricity supply and demand balance, taking into account security of supply and the environment through the minimisation of negative emission and water use. It is important because it is South Africa's plan for the procurement of generation capacity up to 2030. The last such plan was the Integrated Resource Plan 2010 (IRP 2010) promulgated in March 2011, and such plans are intended to be updated every two years.

Since the promulgation of IRP 2010, a total of 18 000 MW of new generation capacity has been committed comprising 9,564 MW of coal power at Medupi and Kusile, 1,332 MW of water pumped storage at Ingula, 6,422 MW of renewable energy by independent power producers (IPPs), and 1,005 MW of Open Cycle Gas Turbine (OCGT) peaking plants currently using diesel at Avon and Dedisa.

6,000 MW of new solar PV capacity and 14,400 MW of new wind power capacity will be commissioned by 2030 under IRP 2019. The current annual build limits on solar PV and wind have been retained pending a report on the just transition strategy. There will be no new concentrated solar power commissioned under IRP 2019 up to 2030 beyond the 300 MW already committed to being commissioned in 2019. The following image outlines the steps taken between the last IRP Revision (2011) and the latest IRP Revision (2019). As per the CSIR summary (Online: https://researchspace.csir.co.za/)

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF is in line with the draft IRP 2019 with respect to the energy mix and movement to a low carbon economy up to 2030 and beyond.

3.6.7 Renewable Energy Independent Power Producer Procurement Programme (REIPPPP)

South Africa has a high level of renewable energy potential and presently has in place a target of 17 800 MW of renewable energy. The REIPPP Programme has been designed so as to contribute towards the national target and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa.

In terms of the REIPPPP, bidders will be required to bid on tariff and the identified socio-economic development objectives of the DoE. The tariff will be payable by the Buyer (currently ESKOM) pursuant to the Power Purchase Agreement (PPA) to be entered into between the Buyer and the Project Company of a Preferred Bidder.

Table 3-1 below summarises the REIPPPP bidding windows which have already been completed.

Table 3-1: REIPPPP bidding windows

Bidding Window 1	Bidding Window 2	Bidding Window 3	Bidding Window 3.5	Bidding Window 4	Bidding Window 5
• Submission Date: 04/11/2011 • 28 Preferred Bidders • 1 425 MW of contracted capacity	• Submission Date: 05/03/2012 • 19 Preferred Bidders • 1 040 MW of contracted capacity	• Submission Date: 19/08/2013 • 17 Preferred Bidders • 1 457 MW of contracted capacity	• Submission Date: 31/04/2014 • 2 Preferred Bidders • 200 MW of contracted capacity	• Submission Date: 18/08/2014 • 26 Preferred Bidders • 2 205 MW of contracted capacity	• Submission Date: 28/10/2021 • 25 Preferred Bidders • 2 205 MW of contracted capacity

According to the REIPPP website the DMRE launched the Request for Proposals (RFP) for the Sixth (6th) Bid Window under the REIPPPP with a BID submission deadline of 22 September 2022.

This procurement bid window is the second to be released in line with the Ministerial Determination, promulgated on 25th September 2020, which seeks to procure 11 813 MW of power from various sources including renewable energy, storage, gas and coal.

The RFP calls for proposals from Independent Power Producers (IPPs) to develop new generation capacity of 5 200 MW, including 3 200 MW from onshore wind energy and 2 000 MW from Solar Photovoltaic (Solar PV) power plants.

This 6th Bid Window has been designed to contribute towards socio-economic and environmentally sustainable growth, to continue the successes of the REIPPPP since its inception, and to further stimulate increased local participation and economic empowerment in the South African Renewable Energy industry.

Given the energy challenges the country is facing the qualification criteria has been developed to promote the participation of projects that are fully developed and will be able to be constructed and connected to the national grid as soon as possible, but not later than 24 months post Commercial Close.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

In terms of REIPPPP, bids would be awarded for renewable energy supply to Eskom through up to 6 bidding phases and additional phases in the years to come. The 1st, 2nd, 3rd, 4th, and 5th round bidding processes have been completed where projects are currently reaching financial close in order to implement the projects. REIPPPP is currently entering the 6th bidding window.

3.6.8 Long Term Mitigation Scenarios (2007)

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

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

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF will contribute towards an overall reduction in emissions and aligns with the world stance on efforts towards the mitigation of climate change.

3.6.9 Industrial Policy Action Plan 2011/12 – 2013/14

The South African Industrial Policy Action Plan (IPAP 2) 2011/12 – 2013/14 represents a further step in the evolution of this work and serves as an integral component of government's New Growth Path and notes that there are significant opportunities to develop new 'green' and energy-efficient industries and related services; and indicates that in 2007/2008, the global market value of the 'Low-Carbon Green Sector' was estimated at £3 trillion (or nearly US$5 trillion), a figure that is expected to rise significantly in the light of climate-change imperatives, energy and water security imperatives.

Based on economic, social and ecological criteria, IPAP identified a number of sub-sectors and an initial round of concrete measures were proposed for development of the renewable energy sector with the following key action programmes:

- Solar and Wind Energy - Stimulate demand to create significant investment in renewable energy supply and the manufacturing of local content for this supply.
- Green Industries special focus: The South African Renewables Initiative (SARi) - SARi is an intra-governmental initiative set to catalyse industrial and economic benefits from an ambitious program of renewables development; including financing and associated institutional arrangements that would not impose an unacceptable burden on South Africa's economy, public finances, or citizens.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF will contribute towards an overall reduction in emissions, and it aligns with the world stance on efforts towards the mitigation of climate change.

3.6.10Strategic Infrastructure Projects (2012)

The National Infrastructure Plan that was adopted in 2012 together with the New Growth Path, which sets a goal of five million new jobs by 2020, identifies structural problems in the economy and points to opportunities in specific sectors and markets or "jobs drivers" resulted in the establishment of the Presidential Infrastructure Coordinating Committee (PICC) which in turn resulted in the development of 18 Strategic Infrastructure Projects (SIPS).

SIPS relevant to renewable energy include:

SIP 8: Green energy in support of the South African economy

- Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010).

SIP 9: Electricity generation to support socio-economic development

- Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The Soyuz 6 WEF will contribute to SIP project role out.

3.7 PROVINCIAL

3.7.1 NORTHERN CAPE PROVINCIAL GROWTH AND DEVELOPMENT STRATEGY

The Northern Provincial Growth and Development Strategy (2019) (NCPGPS) aims to place the Northern Cape Province on a new development trajectory of sustainable development which forms part of its long-term strategic approach. The strategy is based on the 2015 Sustainable Development Goals (SDGs'), which is the blueprint for global development in order to achieve a better and more sustainable future for all. The NCPGDS recognises that social wellbeing is a complex concept, and refers to several aspects relating to human life, such as happiness, material fulfilment and personal needs. Although many aspects of social well-being can only be achieved by an individual and their subjective feelings and experiences, access to basic infrastructure and economic opportunities acts as a catalyst for achieving various levels of human well-being.

In terms of the Economy, the Northern Cape is perfectly placed to be at the forefront of another industrial revolution. The Strategy points out that the Provinces vast resources including sun, wind, open spaces, ocean, the various minerals and semi-precious stones, amongst others provides the province with competitive and comparative advantages. Environmental sustainability can only be achieved if the province's environmental assets and natural resources are protected and enhanced. The Northern Cape Province is endowed with rich natural resources and mineral deposits which offers the opportunity to fund the transition to a low-carbon future and a more diverse and inclusive green economy if used responsibly.

Furthermore, the Northern Cape Province Strategic Plan 2020-2025 references the need to ensure the availability of inexpensive energy as a means to promote economic growth in the Northern Cape. The availability of electricity to key industrial users at critical localities at competitive rates will ensure the competitiveness of these industries. At the same time, the development of new sources of energy through the promotion of the adoption of energy applications that display synergy with the province's natural resource endowments must be encouraged. The report further states that the development of energy sources such as wind energy, the natural gas fields, bio-fuels, etc., could be some of the means by which new economic opportunity and activity is generated in the Northern Cape. This also highlights the importance of close co-operation between public and private sectors in order for the economic development potential of the Northern Cape to be realised.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF is in line with the Northern Cape Provincial Development Plan as it entails the development of a wind farm which could potentially contribute up to 480 MW of electricity to the Eskom Grid.

3.7.2 PIXLEY KA SEME DISTRICT MUNICIPALITY INTEGRATED DEVELOPMENT PLAN

The Vision for the District Municipality as presented in the Integrated Development Plan (IDP) is "Sustainably Developed District for future Generations". Along with the following Strategic goals:

- Supporting of local municipalities to create a home for all individuals in the towns, settlements and
- rural areas to render dedicated services;
- Providing political and administrative leadership and direction in the development planning process;
- Promoting economic growth that is shared across and within communities;

- Promoting and enhancing integrated development planning in the operations of all local municipalities; Aligning development initiatives in the district to the National Development Plan.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF is in line with the Pixley Ka Seme IDP in that the SWOT analysis undertaken identified solar and wind farms as potential opportunities.

3.7.3 Ubuntu Local Municipality Integrated Development Plan

The Ubuntu LM IDP (2022/2023) lists Electricity as one of the main economic activities in the municipality, after Agriculture, Wholesale Trade, Construction, Finance and Other, Transport and Communication, Manufacturing, and Commerce and Personal Service. Farms in the Loxton area seem to be where most of the Electricity activities are located.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF would contribute to the identified economic development within the LM and is in line with the development trajectory as described within the IDP.

3.8 Site Selection: Wind Capability

In order to determine the wind resource potential of a proposed WEF site, it is necessary to erect a wind measurement mast to gather wind speed data and correlate these measurements with other meteorological data. A measurement campaign of at least 12 months in duration is necessary to ensure verifiable data is obtained. This data has advised on the economics of the project and will be used to finalise the positions of the wind turbines. The masts were marked as per the requirements of the Civil Aviation Authority (CAA).

3.9 Renewable Energy Development Zones

On the 17th of February 2016, the Cabinet of the Republic of South Africa (Cabinet) approved the gazetting of Renewable Energy Development Zones (REDZs).

REDZs refer to geographical areas where wind and solar PV development can occur in concentrated zones, which will lead to:

- a reduction of negative environmental consequences;
- alignment of authorisation and approval processes;
- attractive incentives; and
- focused expansion of the South African electricity grid.

Cabinet further stated that the REDZs will, among others, accelerate infrastructure development and contribute in creating a “predictable regulatory framework that reduces bureaucracy related to the cost of compliance”.

The then DEA’s media statement issued in respect of the approved gazetting of the REDZs provided that in Phase 1 8 REDZs and 5 Power Corridors were identified. The REDZs are located in Overberg (Western Cape), Komsberg (Western Cape), Cookhouse (Eastern Cape), Stormberg (Eastern Cape), Kimberley (Free State/Northern Cape), Vryburg (North West), Upington (Northern Cape) and Springbok (Northern Cape). Phase 2 saw the addition of 3 additional REDZ which are located in Emalahleni (Mpumalanga), Klerksdorp (Free State / North West) and Beaufort West (Western Cape).

The 5 Power Corridors are planned as follows: The central corridor runs for the first time from the south of the country to the north. Two corridors run along the east and west coasts, while the fourth and fifth include interconnections with Botswana, Namibia and Zimbabwe to accommodate current and forecasted imports and exports of electricity. Eskom estimates that the thousands of kilometres of transmission lines and

infrastructure needed to create these corridors of power will take eight years to construct and cost approximately R213bn.

The proposed Soyuz 6 WEF falls approximately 57 km North of the Beaufort West REDZ. The site does however fall within the Central Power Corridor.

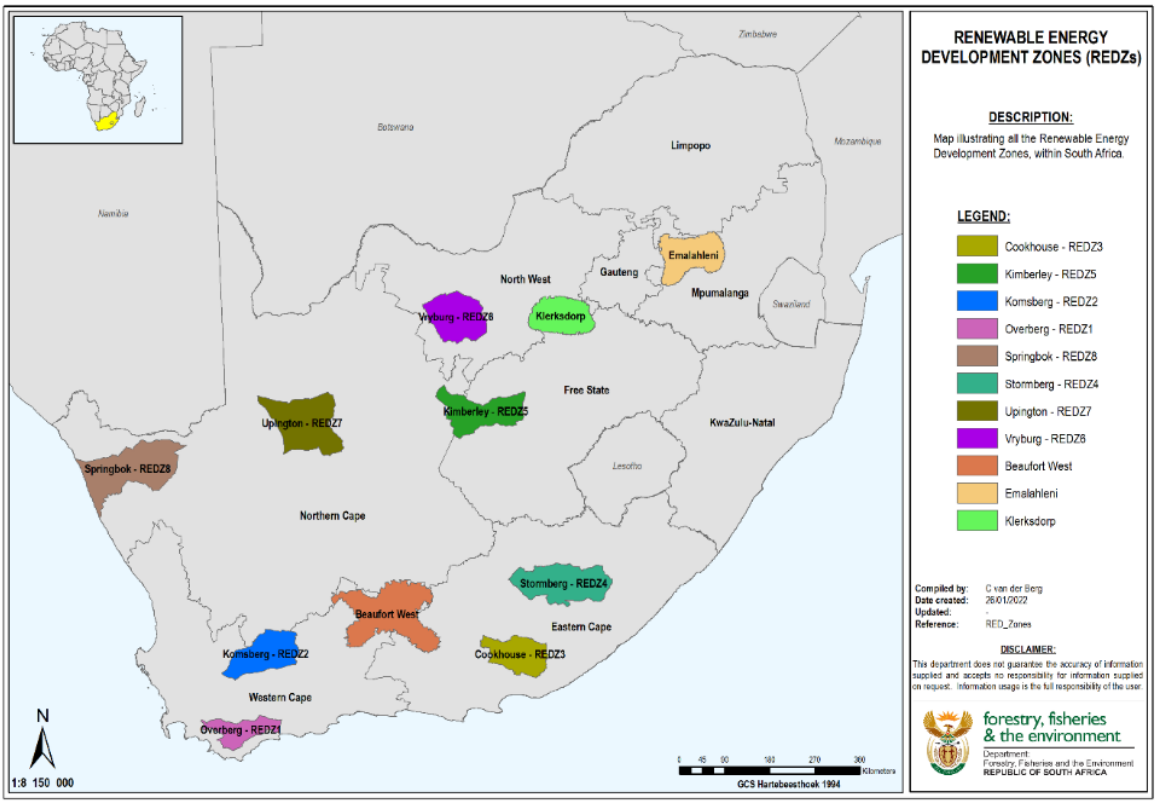


Figure 3-1: DFFE Renewable Energy Development Zones (REDZ).

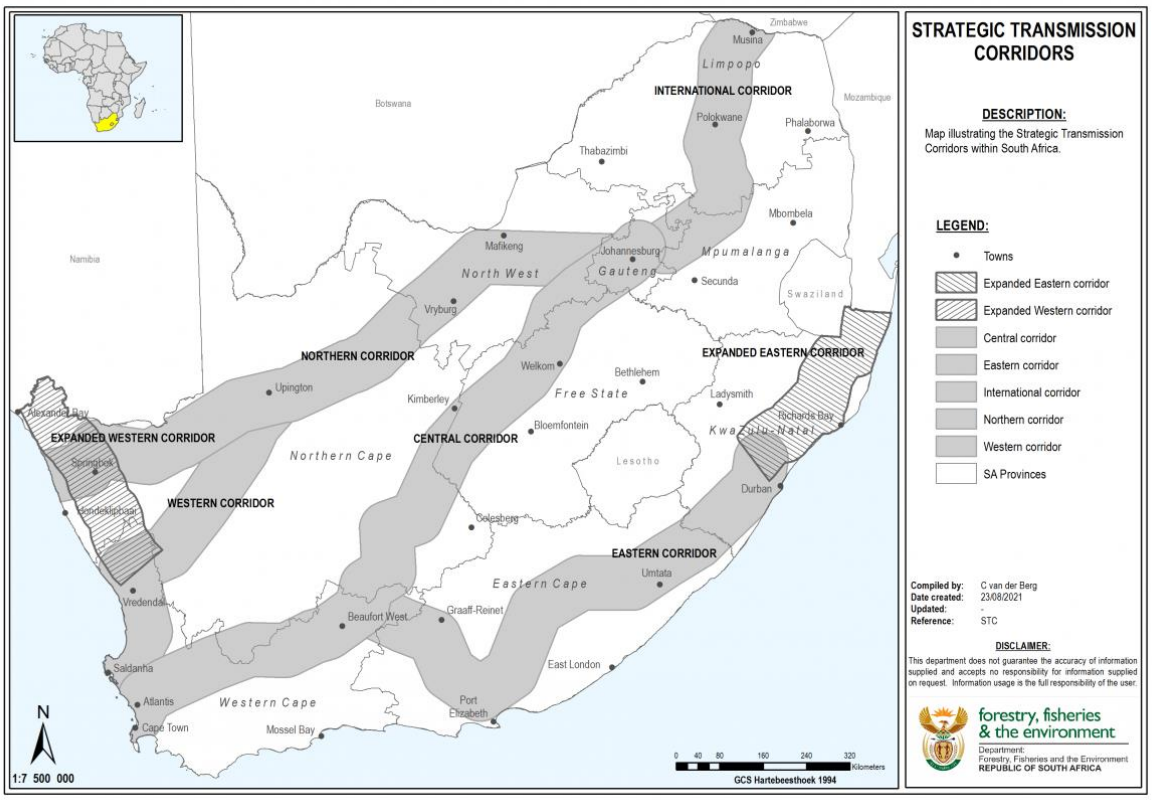


Figure 3-2: DFFE Strategic Transmission Corridors (the site is situated in the central transmission corridor).

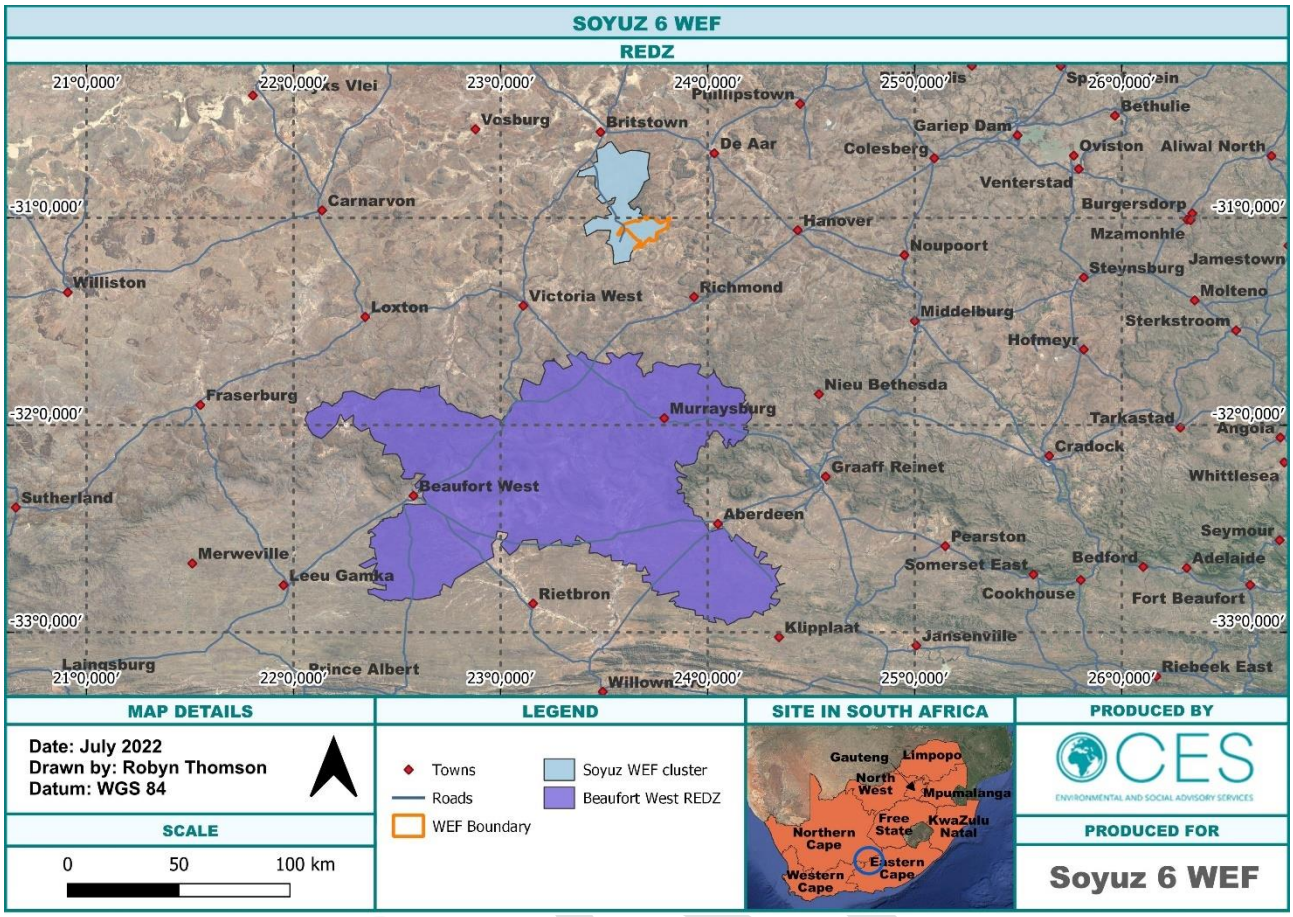


Figure 3-3: Proposed WEF locations in relation to the closest REDZ (Beaufort West).

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

Although the proposed Soyuz 6 WEF does not occur within a REDZ area, it is situated within the central transmission corridor.

3.10 BIODIVERSITY CONSERVATION PROGRAMMES

The proposed Soyuz 6 WEF occurs within or is within close proximity to various important conservation areas as described below.

3.10.1 NATIONAL VEGETATION MAP (SANBI)

As indicated in the baseline ecological assessment at Section 5 of this Scoping Report, according to SANBI's National Vegetation Map (2018), the proposed WEF occurs within one (1) vegetation type, namely Eastern Upper Karoo (least concern) (Figure 3-4).

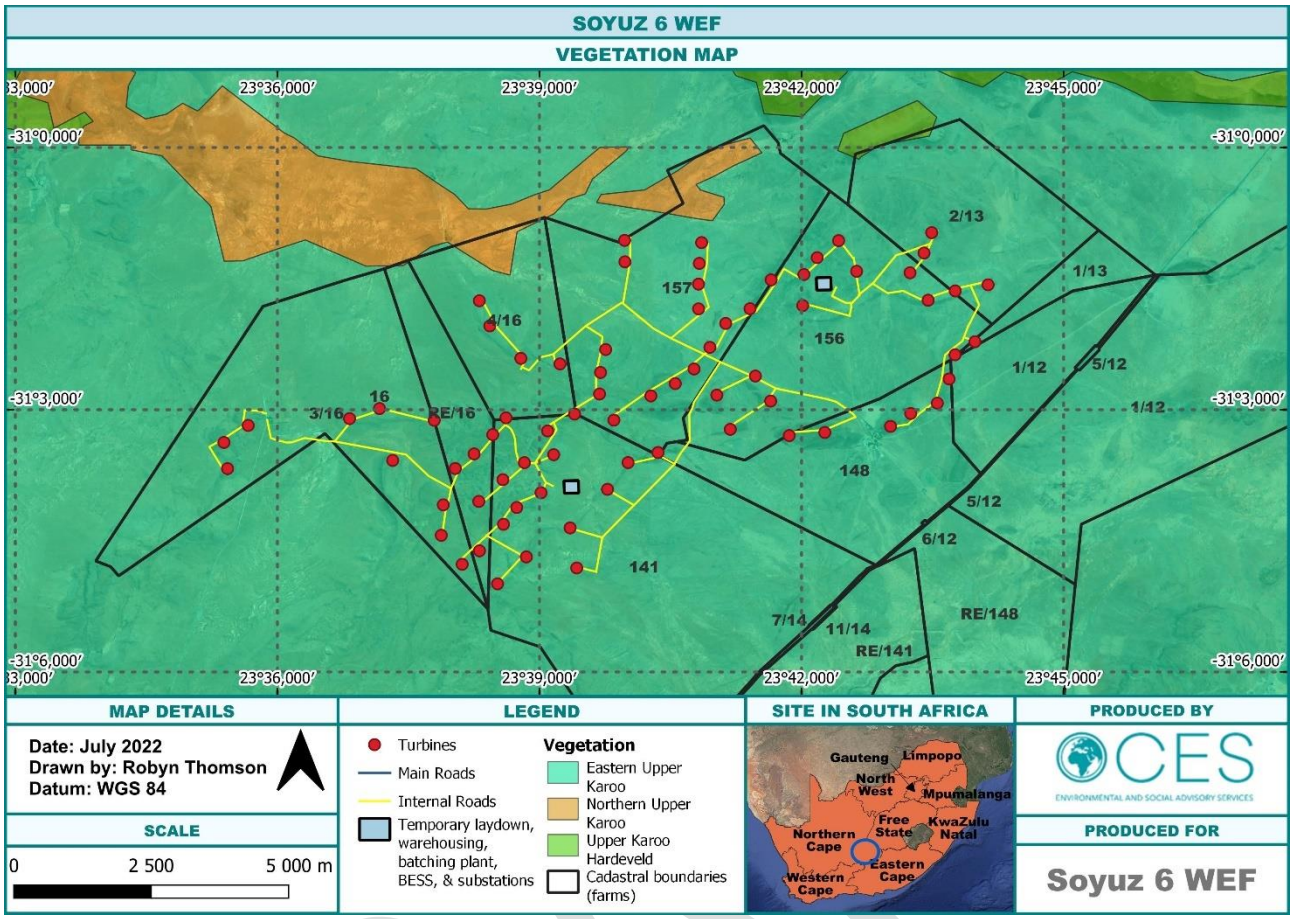


Figure 3-4: National Vegetation Map for the proposed Soyuz 6 WEF site area.

3.10.2 Critical Biodiversity Areas

No CBAs occur on the site; however, an ESA corridor traverses the centre of the WEF. It is likely that development within the ESA cannot be avoided.

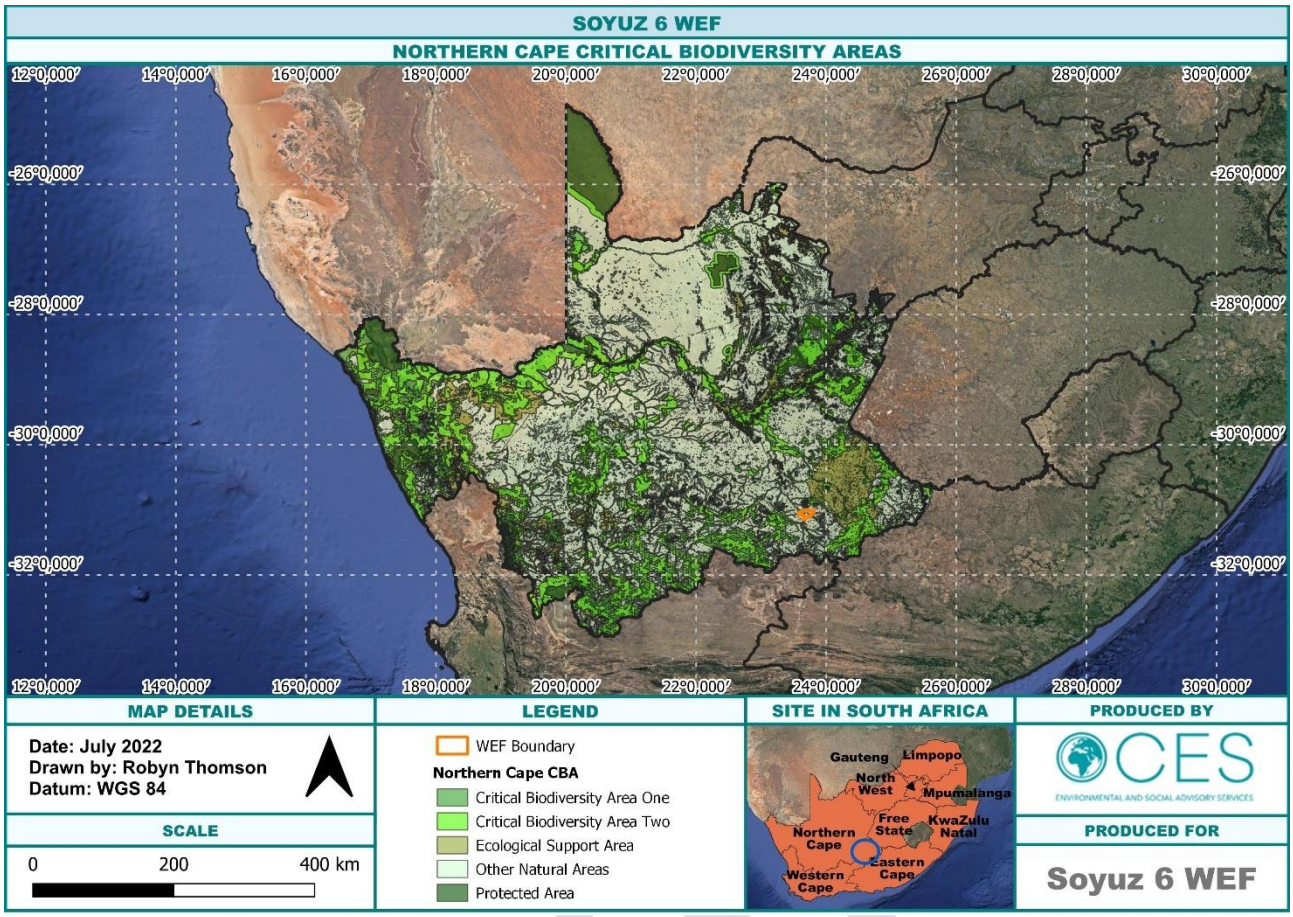


Figure 3-5: Northern Cape Critical Biodiversity Areas.

3.10.3 Protected Areas

No protected areas are located on the proposed WEF site (Figure 3-6, Figure 3-7, and Figure 3-8). The closest protected area is the National Mountain Zebra/ Camdeboo Environment, located approximately 100 km to the southeast. The Meerkat National Park is located 150 km to the west of the WEF. Several areas surrounding the WEF, approximately 70 km north and east and 100 km south of the WEF, have been identified by the NCPAES as a Primary Focus areas.

There are no provincially legislated Protected Areas occurring within the study area (Figure 3-6).

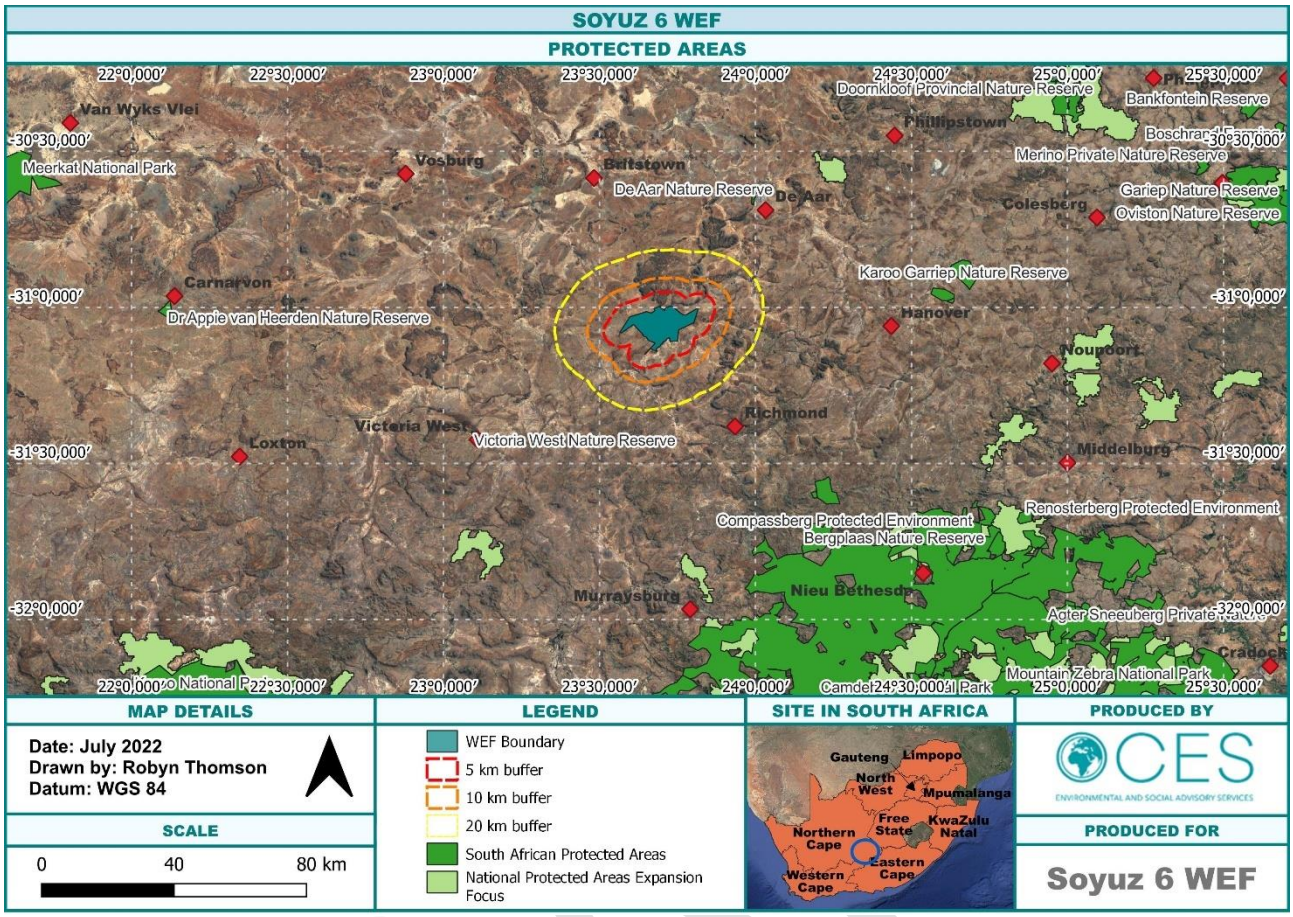


Figure 3-6: Legislated Protected Areas in or around the proposed WEF site.

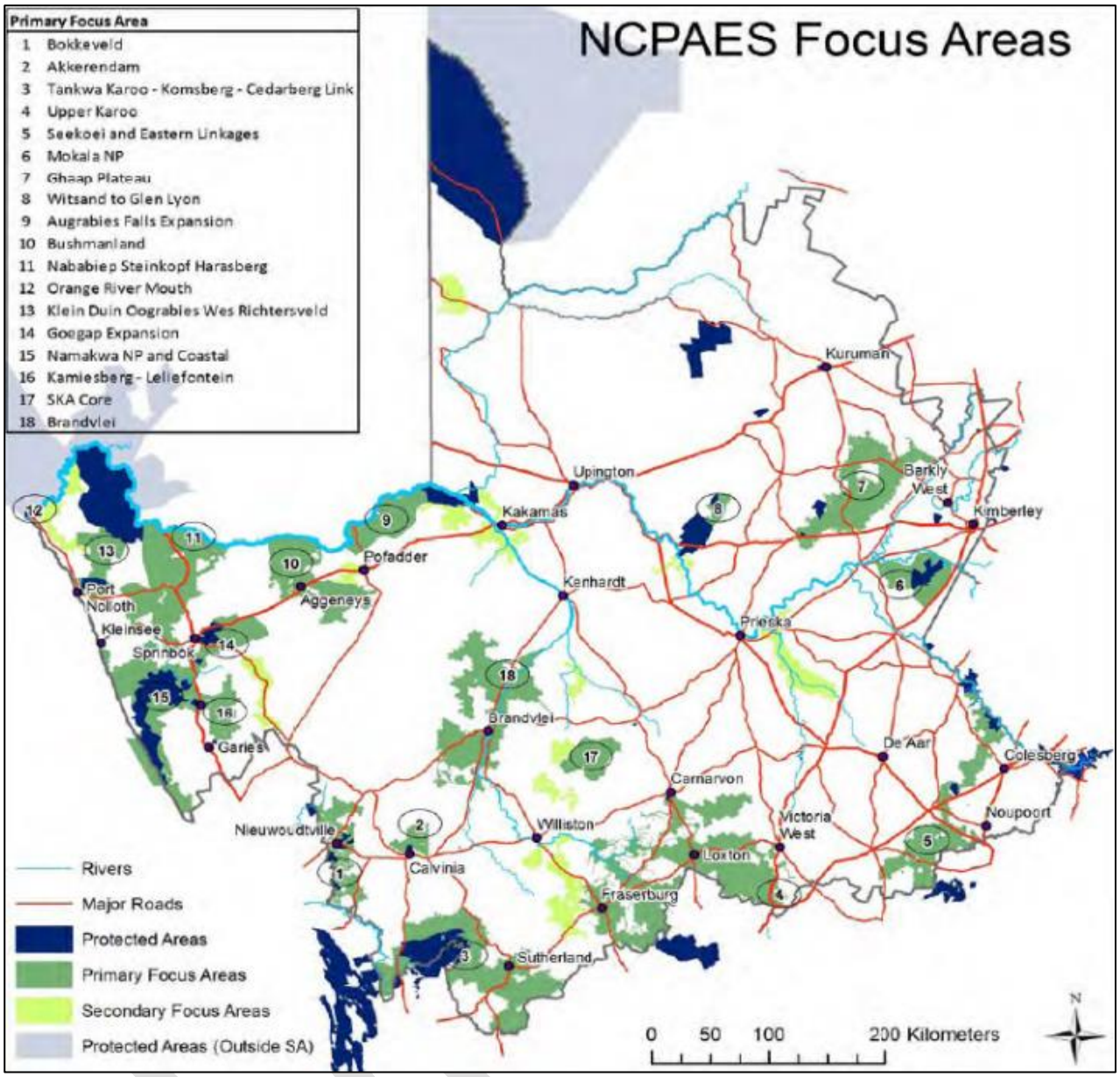


Figure 3-7: NCPAES Focus Areas (Oosthuysen et al. 2017).

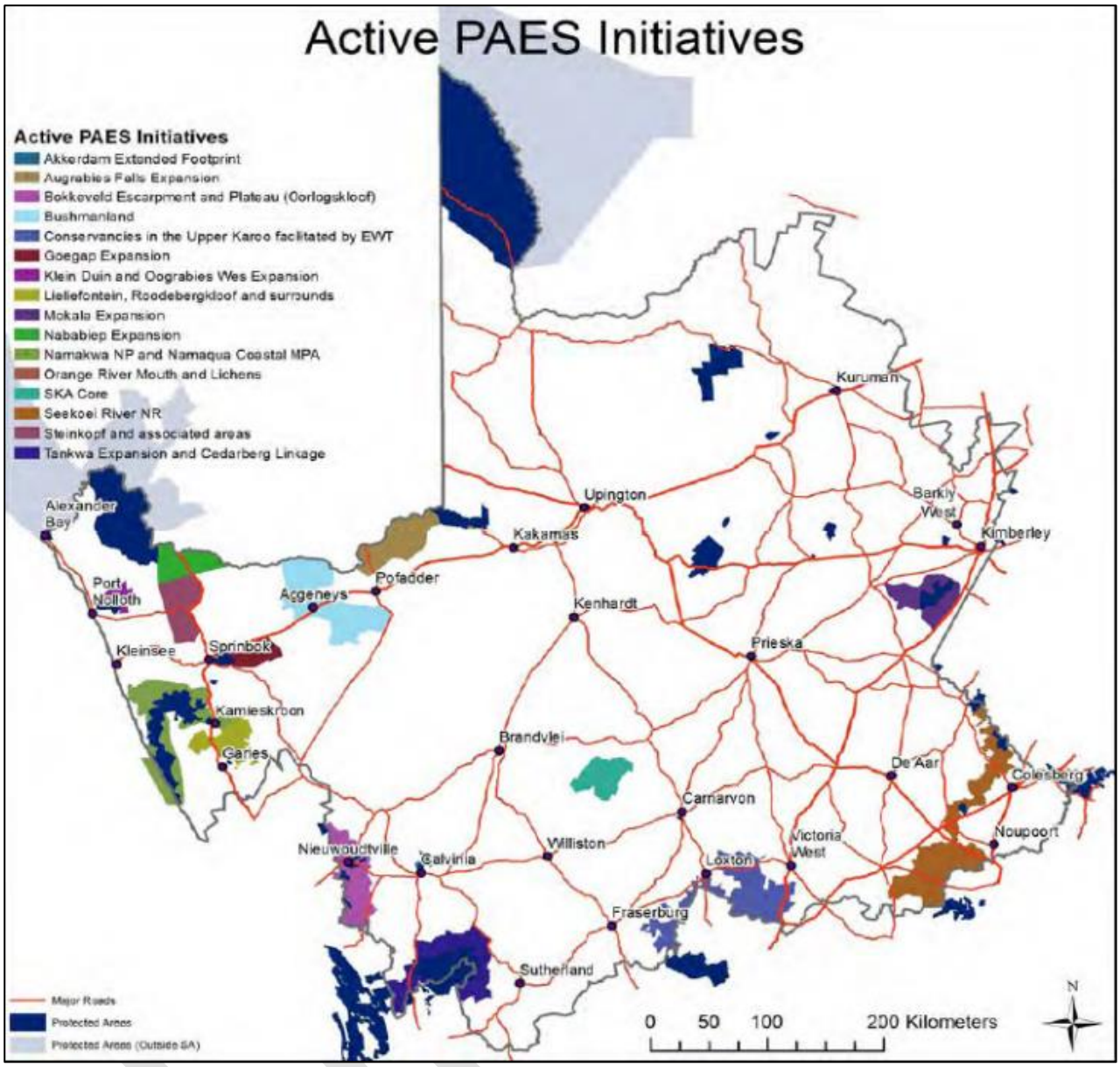


Figure 3-8: Active PAES Initiatives (Oosthuysen et al. 2017).

3.11 CONCLUDING REMARKS

The Northern Cape is the largest Province in South Africa while also being the least densely populated. It is 6th on the list of provinces in terms of GDP but holds a unique advantage in that it is one of the best sites in the world to produce renewable energy and this potential has attracted to the Province a large number of investors under the DoE's Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP).

When considering the overall need for the development of the proposed WEF, it is clear that the need and desirability is not only supported from a planning and policy perspective on a national level but also at the provincial, district, and most importantly, the local level.

The proposed WEF project developer has also indicated that local socio-economic benefits will be realised with the development of the WEF, specifically in line with the socio-economic development goals under the REIPPPP, which will include:

- The realisation of the local needs and requirements within the area;

- Job creation within an area;
- The creation of a second income for the affected landowners;
- An increase in the standard of living; and
- An overall economic and social upliftment within the area.

The construction and operation of the proposed WEF will contribute to local developmental objectives of poverty eradication and other social and socio-economic benefits that are integral to the REIPPPP process. The development of wind farms attracts significant direct foreign financial investment into South Africa and local communities. REIPPPP local content requirements can lead to the creation of local industry and both skilled and un-skilled jobs in the RE industrial sector.

Further positive social and socio-economic benefits will be realised by the landowners which will host turbines, in the form of rental income which in turn will have multiplier effects on the local economy due to local spend. In addition, farming activities can continue alongside the wind turbines, while rental income may also be used to enhance farming activities.

However, when considering the overall need for the development of the proposed WEF project, it is also important to consider the potential costs of the proposed WEF. Relevant costs associated with the proposed WEF could be particularly applicable due to potential negative impacts on biodiversity conservation initiatives in the affected area (such as the NPAES) and on the commercial activities such as tourism, that rely on the scenic value of the area to attract tourists. These aspects need to be thoroughly investigated in the EIR phase of the EIA process.

4 RELEVANT LEGISLATION

The development of the proposed Soyuz 6 WEF will be subject to the requirements of various items of South African legislation. These are described below.

4.1 THE CONSTITUTION ACT (ACT NO. 108 OF 1996)

This is the supreme law of the land. As a result, all laws, including those pertaining to the proposed development, must conform to the Constitution. The Bill of Rights - Chapter 2 of the Constitution, includes an environmental right (Section 24) according to which, everyone has the right:

(a) To an environment that is not harmful to their health or well-being.
(b) To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:
    (i) Prevent pollution and ecological degradation.
    (ii) Promote conservation.
    (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

- *The WEF developer has an obligation to ensure that the proposed activity will not result in pollution and ecological degradation.*
- *The WEF developer has an obligation to ensure that the proposed activity is ecologically sustainable, while demonstrating economic and social development.*

4.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998 AND SUBSEQUENT AMENDMENTS)

The National Environmental Management Act (NEMA, Act No. 107 of 1998) provides for basis for environmental governance in South Africa by establishing principles and institutions for decision-making on matters affecting the environment.

A key aspect of the NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. Section 2 of NEMA contains principles (Table 4-1) relevant to the proposed WEF project, and likely to be utilised in the process of decision making by DFFE.

Table 4-1 NEMA Environmental Management Principles

NEMA ENVIRONMENTAL MANAGEMENT PRINCIPLES	
(2)	Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably.
(3)	Development must be socially, environmentally, and economically sustainable.
(4)(a)	Sustainable development requires the consideration of all relevant factors including the following: i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;

NEMA ENVIRONMENTAL MANAGEMENT PRINCIPLES	
	iii. That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.
(4)(e)	Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
(4)(i)	The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
(4)(j)	The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
(4)(p)	The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
(4)(r)	Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

As these principles are utilised as a guideline by the competent authority in ensuring the protection of the environment, the proposed development should, where possible, be in accordance with these principles. Where this is not possible, deviation from these principles would have to be very strongly motivated.

NEMA introduces the duty of care concept, which is based on the policy of strict liability. This duty of care extends to the prevention, control and rehabilitation of significant pollution and environmental degradation. It also dictates a duty of care to address emergency incidents of pollution. A failure to perform this duty of care may lead to criminal prosecution and may lead to the prosecution of managers or directors of companies for the conduct of the legal persons.

Employees who refuse to perform environmentally hazardous work, or whistle blowers, are protected in terms of NEMA.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

- *The WEF developer must be mindful of the principles, broad liability and implications associated with NEMA and must eliminate or mitigate any potential impacts.*
- *The WEF developer must be mindful of the principles, broad liability and implications of causing damage to the environment.*

4.3 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT (ACT NO. 57 OF 2003)

The National Environmental Management: Protected Areas Act (NEMPAA, Act No. 57 of 2003) mainly provides for the following:

- Declaration of nature reserves and determination of the type of reserve declared.
- Cooperative governance in the declaration and management of nature reserves.
- A system of protected areas in order to manage and conserve biodiversity.
- Utilization and participation of local communities in the management of protected areas.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The Soyuz 6 WEF is not within close proximity to any formal protected area.

4.4 NATIONAL ENVIRONMENT MANAGEMENT: BIODIVERSITY ACT (NO. 10 OF 2004)

The National Environment Management: Biodiversity Act (NEM:BA, Act No. 10 of 2004) provides for the management and conservation of South Africa's biodiversity and the protection of species and ecosystems that warrant national protection.

The objectives of this Act are to:

- Provide, within the framework of the National Environmental Management Act.
- Manage and conserve of biological diversity within the Republic.
- Promote the use of indigenous biological resources in a sustainable manner.

The Act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act 107 of 1998. In terms of the Biodiversity Act, the developer has a responsibility for:

1 The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (including The Endangered and Threatened Ecosystem Regulations, Government Notice R. 1002 dated 9th December 2011).
2 Application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.
3 Limit further loss of biodiversity and conserve endangered ecosystems.

The Act's permit system is further regulated in the Act's Threatened or Protected Species Regulations Government Notice R. 152, dated the 23rd of February 2007.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

- *The WEF developer must not cause a threat to any endangered ecosystems and must protect and promote biodiversity;*
- *The WEF developer must assess the impacts of the proposed development on endangered ecosystems;*
- *The WEF developer may not remove or damage any protected species without a permit; and*
- *The WEF developer must ensure that the site is cleared of alien vegetation using appropriate means (AIS Regulations, Government Notice R. 598 of the 1st of April 2014 are applicable)*

4.5 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (NO. 39 OF 2004)

The National Environmental Management: Air Quality Act (NEM:AQA, Act No. 39 of 2004) is the principal legislation regulating air quality in South Africa. The objects of the Act are to:

- Give effect to Section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people, and
- Protect the environment by providing reasonable measures for:
  - Protection and enhancement of the quality of air in the Republic.
  - Prevention of air pollution and ecological degradation.
- Securing ecologically sustainable development while promoting justifiable economic and social development.

The Air Quality Act empowers the Minister to establish a national framework for achieving the objects of this Act. The said national framework will bind all organs of state. The said national framework will inter alia have to establish national standards for municipalities to monitor ambient air quality and point, non-point and mobile emissions.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

Although no major air quality issues are expected, the WEF developer needs to be mindful of the Act as it also relates to potential dust generation during construction, etc.

4.6 National Environmental Management: Waste Management Act (No. 59 of 2008)

The National Environmental Management: Waste Management Act (NEM:WA, Act No. 59 of 2008) gives legal effect to the Government's policies and principles relating to waste management in South Africa, as reflected in the National Waste Management Strategy (NWMS).

The objects of the Act are (amongst others) to protect health, well-being and the environment by providing reasonable measures for:

- Minimising the consumption of natural resources;
- Avoiding and minimising the generation of waste;
- Reducing, re-using, recycling and recovering waste;
- Treating and safely disposing of waste as a last resort;
- Preventing pollution and ecological degradation; and
- Securing ecologically sustainable development while promoting justifiable economic and social development.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

- *The WEF developer must ensure that all activities associated with the project address waste related matters in compliance with the requirements of the Act.*
- *The WEF developer must consult with the local municipalities to ensure that waste is disposed of at a registered landfill site.*

4.7 National Forests Act (No. 84 of 1998)

The objective of this Act is to monitor and manage the sustainable use of forests. In terms of Section 12 (1) (d) of this Act and GN No. 1012 (promulgated under the National Forests Act), no person may, except under licence:

- Cut, disturb, damage or destroy a protected tree.
- Possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

If any protected trees or indigenous forest in terms of this Act occur on site, the WEF developer will require a licence from the Department of Forestry, Fisheries and the Environment (DFFE) to perform any of the above-listed activities.

4.8 National Heritage Resources Act (No. 25 of 1999)

The protection of archaeological and paleontological resources is the responsibility of a provincial heritage resources authority and all archaeological objects, paleontological material and meteorites are the property of the State. "Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority".

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

- *SAHRA must be informed of the project and EIA process.*
- *A Heritage Impact Assessment (HIA) must be undertaken by a suitably qualified specialist.*
- *No person may alter or demolish any structure or part of a structure, which is older than 60 years or disturb any archaeological or paleontological site or grave older than 60 years without a permit issued by the relevant provincial heritage resources authority.*
- *No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter or deface archaeological or historically significant sites.*

4.9 Electricity Regulation Act (No. 4 of 2006)

The Electricity Regulation Act (Act No. 4 of 2006) came into effect on the 1st of August 2006 and the objectives of this Act are to:

- Facilitate universal access to electricity.
- Promote the use of diverse energy sources and energy efficiencies.
- Promote competitiveness and customer and end user choice.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed WEF is in line with the call of the Electricity Regulation Act as it has the potential to improve energy security of supply through diversification.

4.10 Occupational Health and Safety Act (No. 85 of 1993)

The objective of this Act is to provide for the health and safety of persons at work. In addition, the Act requires that, "as far as reasonably practicable, employers must ensure that their activities do not expose non-employees to health hazards". The importance of the Act lies in its numerous regulations, many of which will be relevant to the proposed Soyuz 6 WEF. These cover, among other issues, noise and lighting.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The WEF developer must be mindful of the principles and broad liability and implications contained in the OHSA and mitigate any potential impacts.

4.11 Aviation Act (No. 74 of 1962): 13th Amendment of the Civil Aviation Regulations 1997

Section 14 of obstacle limitations and marking outside aerodrome or heliport (CAR Part 139.01.33) under this Act specifically deals with wind turbine generators (wind farms). According to this section, "A wind turbine generator is a special type of aviation obstruction due to the fact that at least the top third of the generator is continuously variable and offers a peculiar problem in as much marking by night is concerned. The Act

emphasizes that, when wind turbine generators are grouped in numbers of three or more, they will be referred to as "wind farms".

Of importance to the proposed Soyuz 6 WEF project are the following:

- Wind farm placement: Due to the potential of wind turbine generators to interfere on radio navigation equipment, no wind farm should be built closer than 35 km from an aerodrome. In addition, much care should be taken to consider visual flight rules routes, proximity of known recreational flight activity such as hang gliders, en-route navigational facilities etc.
- Wind farm markings: Wind turbines shall be painted bright white to provide the maximum daytime conspicuousness. The colours grey, blue and darker shades of white should be avoided altogether. If such colours have been used, the wind turbines shall be supplemented with daytime lighting, as required.
- Wind farm lighting: Wind farm (3 or more units) lighting: In determining the required lighting of a wind farm, it is important to identify the layout of the wind farm first. This will allow the proper approach to be taken when identifying which turbines need to be lit. Any special consideration to the site's location in proximity to aerodromes or known corridors, as well as any special terrain considerations, must be identified and addressed at this time.
- Turbine Lighting Assignment: The following guidelines should be followed to determine which turbines, need to be equipped with lighting fixtures. Again, the placement of the lights is contingent upon which type of configuration is being used.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

Due to requirements of the Act to ensure the safety of aircrafts, the WEF developer must engage directly with the Civil Aviation Authority regarding the structural details of the facility.

4.12 NATIONAL WATER ACT (NO. 36 OF 1998)

The National Water Act (NWA, Act No. 36 of 1998) provides for fundamental reform of the law relating to water resources in South Africa.

The purpose of the Act amongst other things is to:

- Ensure that the national water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:
  - Promoting equitable access to water.
  - Promoting the efficient, sustainable and beneficial use of water in the public interest.
  - Facilitating social and economic development.
  - Protecting aquatic and associated ecosystems and their biological diversity.
  - Reducing and preventing pollution and degradation of water resources.

The NWA is concerned with the overall management, equitable allocation and conservation of water resources in South Africa. To this end, it requires registration of water users and licenses to be obtained for water use except for certain limited instances set out in the Act. These instances include domestic use, certain recreational use, where the use occurs in terms of an existing lawful use or where the Department of Water Affairs (DWA) has issued a general authorisation that obviates the need for a permit.

Water use for which a permit is required

For the purposes of this Act, water uses for which a permit is required (amongst other), are defined in Section 21 as follows:

- Taking water from a water resource.
- Storing water.
- Impeding or diverting the flow of water in a watercourse.
- Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.

- Disposing of waste in a manner which may detrimentally impact on a water resource.
- Altering the bed, banks, course, or characteristics of a watercourse.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

There may be certain instances where the WEF developer may need to obtain approval in terms of the Water Act.

4.13 Conservation of Agricultural Resources Act (No. 43 of 1983)

The Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983) is the main statute that deals with agricultural resource conservation.

The objects of the Act are to provide for the conservation of the natural agricultural resources of South Africa by the maintenance of the production potential of land. In order to maintain production potential of land, CARA provides for the following mechanisms; namely:

- Combating and prevention of erosion and weakening and destruction of water sources.
- Protection of vegetation.
- Combating of weeds and invader plants.

In order to give meaning to mechanisms aimed maintaining production potential of land provided for in CARA, Minister of Agriculture published regulations under CARA (CARA Regulations) which prescribes control measures which all land users have to comply, in respect of a number of matters, including the:

- Cultivation of virgin soil.
- Protection of cultivated land.
- Utilisation and protection of the veld.
- Control of weed and invader plants.
- Prevention and control of veld fires and the restoration and reclamation of eroded land.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

The proposed Soyuz 6 WEF site is not deemed to be situated on high agricultural land with high potential. Preventative measures must be considered as part of the EMPr to ensure that farmers are able to continue using their land as livestock grazing as far as possible.

4.14 Subdivision of Agricultural Land Act (No. 70 of 1970)

The Subdivision of Agricultural Land Act (Act No. 70 of 1970) controls the subdivision of all agricultural land in South Africa and prohibits certain actions relating to agricultural land. In terms of the Act, the owner of agricultural land is required to obtain consent from the Minister of Agriculture in order to subdivide agricultural land.

The purpose of the Act is to prevent uneconomic farming units from being created and degradation of prime agricultural land. The Act also regulates leasing and selling of agricultural land as well as registration of servitudes.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

Approval will be required from the DALRRD for any proposed rezoning, long-term lease, or sub-divisions of agricultural land.

4.15 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (NO. 28 OF 2002)

Mineral and Petroleum Resources Development Act (MPRDA, Act No. 28 of 2002) makes provision for equitable access to and sustainable development of the South Africa's mineral and petroleum resources and to provide for matters connected therewith.

The objects of this Act are (amongst others) to:

- Give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources.
- Promote equitable access to the nation's mineral and petroleum resources to all the people of South Africa.
- Give effect to Section 24 of the Constitution by ensuring that the nation's mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development.

Application for a mining right

As per Section 27 (1) of the Act, the Department of Minerals Resources (DMR) must grant permission for all mining operations. Both the removal of sand and/or stone from a borrow pit or quarry requires an application for a mining permit or a mining right.

There are two (2) categories of permission relevant to borrow pits and hard rock quarries, namely; "Mining Permits" and secondly "Mining Rights." As is reflected in Table 4-2below, these categories are linked to the size of the proposed operation and the proposed operational period.

Table 4-2 DMRE mining permitting and licence requirements

CATEGORY	SIZE	PERIOD OF OPERATION	DMRE REQUIREMENT
Mining Permit	< 1.5 ha	< 2 years	EIA: Basic Assessment Environmental Management Programme (EMPr)
Mining Right (Licence)	> 1.5 ha	< 30 years	EIA: Scoping and EIA Environmental Management Programme (EMPr)

In addition, Section 53 of the Act requires that Ministerial approval is attained for "any person who intends to use the surface of any land in any way which may be contrary to any object of this Act or is likely to impede any such object".

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

- *Any activities associated with the WEF requiring extraction of sand or hard rock for construction purposes will require the submission of an application to DMRE for either a mining permit or mining licence.*
- *The Soyuz 6 WEF must apply to the Minister of Mineral Resources for approval to use the land for the purposes of the WEF.*
- *The DMRE has aligned its authorisation process with that of the DEA, and from August 2015, all applications for mining activities require an Environmental Impact Assessment, as per the EIA Regulations.*

4.16 NATIONAL ROAD TRAFFIC ACT (NO. 93 OF 1996)

The National Road Traffic Act (NRTA, Act No. 93 of 1996) provides for all road traffic matters and is applied uniformly throughout South Africa. The Act enforces the necessity of registering and licensing motor vehicles. It also stipulates requirements regarding fitness of drivers and vehicles as well as making provision for the transportation of dangerous goods.

RELEVANCE TO THE PROPOSED SOYUZ 6 WEF

All the requirements stipulated in the NRTA will need to be complied with during the construction and operational phases of the proposed wind farm.

4.17 National Veld and Forest Fire Act (No. 101 of 1998)

The aim of the Act is to "prevent and combat veld, forest and mountain fires" in South Africa. Of particular relevance to the proposed Soyuz 6 WEF development the following requirements of the Act need to be considered:

RELEVANT SECTION OF THE ACT	RELEVANT TO THE PROPOSED SOYUZ 6 WEF:
Section 3: Fire Protection Associations.	The proposed Soyuz 6 WEF must register as a member of the fire protection association in the area.
Chapter 4 Section 12-14: Veld fire prevention: duty to prepare and maintain firebreaks	The proposed Soyuz 6 WEF will be required to take all practicable measures to ensure that fire breaks are prepared and maintained according to the specifications contained in Section 12 – 14.
Section 17: Firefighting: readiness	The proposed Soyuz 6 WEF must have the appropriate equipment, protective clothing, and trained personnel for extinguishing fires.

4.18 Other Relevant National Legislation

Other legislation that may be relevant to the proposed Soyuz 6 WEF includes:

- The Environment Conservation Act No 73 of 1989 (ECA) Noise Control Regulations, which specifically provide for regulations to be made with regard to the control of noise, vibration and shock, including prevention, acceptable levels, powers of local authorities and related matters.
- The Telecommunication Act (1966) which has certain requirements with regard to potential impacts on signal reception.
- Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974), which lists species of special concern which require permits for removal. Schedules 1 to 4 list protected and endangered plant and animal species.
- Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013 – came into force on 1 July 2015) aims to provide inclusive, developmental, equitable and efficient spatial planning at the different spheres of the government. This act repeals national laws on the Removal of Restrictions Act, Physical Planning Act, Less Formal Township Planning Act and Development Facilitation Act.

In addition to the above, aside from the environmental authorisation, there are other permits, contracts and licenses that will need to be obtained by the project proponent for the proposed project some of which fall outside the scope of the EIA. However, for the purposes of completeness, these include:

- Local Municipality: Land Rezoning Permit.
- National Energy Regulator of South Africa (NERSA): Generation License.
- Eskom: Connection agreement and Power Purchase Agreement (PPA).
- Ubuntu Local Municipality Spatial Development Framework (SDF), Integrated Development Plan (IDP) and municipal by-laws.
- Pixley Ka Seme District Municipality SDF and IDP.

5 DESCRIPTION OF THE ENVIRONMENT: BIOPHYSICAL

The following chapter outlines the biophysical features of the property portions on which the proposed Soyuz 6 WEF is being proposed.

5.1 GEOLOGY AND LANDFORM

The Northern Cape Province is the largest in South Africa, with an area of 372,889 km². While the province contains a wide variety of landscapes it is dominated by the Karoo Basin and consists mostly of sedimentary rocks and some dolerite intrusions.

5.2 TOPOGRAPHY

The project site is located to the south of Britstown within the Ubuntu Local Municipality. This area is dominated by flats with gently sloping plains. The area known as the Upper Karoo Hardeveld in the west is interspersed with hills and some rocky areas. The average height range of for this area is between 1000-1700 masl.

5.3 GEOLOGY

The geology of the project site is mostly dominated by horizons of dolerite rocks. Dolerite covers approximately 36% of the Greater Pixley Ka Seme area, followed by Tillite (12%) and the rock types Sand, Andesite, and Quartzite covering between 7% and 5% of the area respectively. The remainder of the rock types cover less than 4%. (Pixley Ka Seme District SDF 2007).

Overall, the region's rocky areas and hilltops are mostly caved sandstone with a shallow covering of loose sandy soils. The lower lying areas, flatter slopes and undulating territory have deeper layers of loose sandy top soils that are underlain either by decomposed shale, mudstones or sandstones. Over time those areas dominated by shale deposits have decomposed turning into clay. In many of the areas where the drainage is poor it is found that the underlying soils consist of decomposed clay minerals.

The project area itself is in the Southern Portion of the Pixley Ka Seme Municipality and is mostly underlain by Mudstone. This area is characterised by sedimentary rocks that are built up of particles originating from the weathering of other rocks and deposited in one or another depositional basin. Clay-sized particles (referred to as Mud) are transported in suspension in water and eventually settle in freshwater lakes. After compaction and cementing this results in what is referred to as mudstone. Mudstone occurs after a process of coarse-grained sandstone alternating with fine-grained mudrock. The most widespread occurrence is in the Karoo strata, which covers 75% of the central subcontinent. This mudstone weathers to a clayey soil, which may have expansive characteristics depending on the origins of the soils from which the rock formed. In some areas mudrock is weathered to great depths. The soils are usually highly erodible and dispersive. The soils in this area are highly dispersive and this result in deep dongas forming on many slopes in the Karoo.

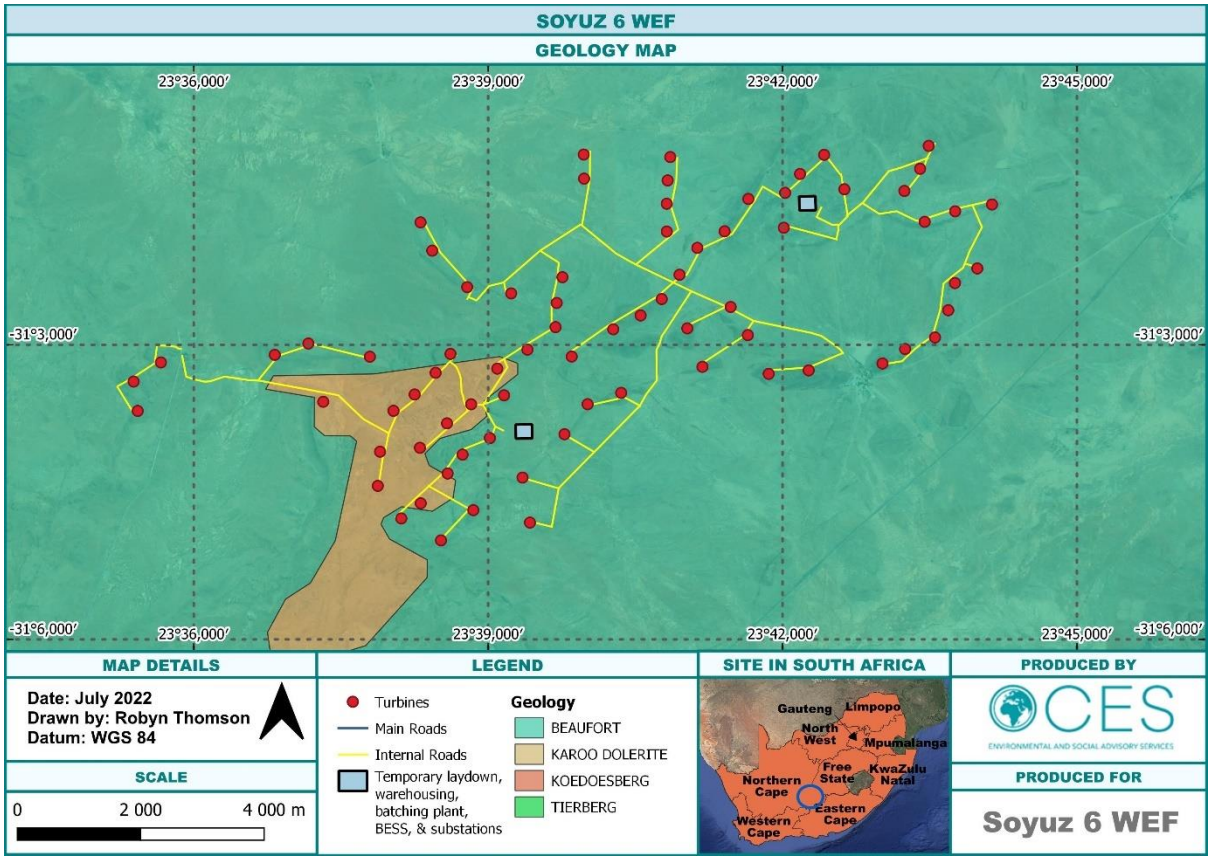


Figure 5-1: Geology Map of the Soyuz 6 WEF site.

5.4 CLIMATE

Due to the large size of the Northern Cape Province the climate profile is complex and varies greatly from the coastal to the inland regions. The weather in the Britstown area is influenced by the local steppe climate, meaning there is little rainfall throughout the year with the peak being between Autumn and Summer. January and March generally experience the highest levels of precipitation (en.climate-data.org).

The area surrounding Britstown and the project site experiences seasonally high winds. The highest average wind speeds are between June and February, with average ground level wind speeds of more than 17 km per hour. The windiest month of the year in the area is November, with an average ground level hourly wind speed of 19 km per hour (weatherspark.com).

Table 5-1: Soyuz 6 WEF General Climate Table (Source: en.climate-data.org).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temp (°C)	23.1	22.8	20.6	16.0	12.3	8.6	8.4	10.6	14.2	17.6	19.8	22.2
Min. Temp (°C)	15.1	15.3	13.5	9.6	6.2	2.6	2.1	3.3	6.1	9.2	11.1	13.9
Max. Temp (°C)	30.6	30.1	27.7	22.5	18.8	15.2	15.3	17.9	21.9	25.3	27.6	30.0
Precipitation / Rainfall (mm)	40	37	40	25	16	11	10	11	12	20	23	30

5.5 AGRICULTURAL ENVIRONMENT

5.5.1 LAND TYPE CLASSIFICATION

The project site of the proposed Soyuz 6 WEF project, consists of five different land types i.e. Land Type Da140, Da139, Fb159, Db214 and Ic162 occur in the study area. Landtype Da139 and Db214 are found in the northern side of the study area, while Fb159 are found in the central and western parts of the study area. Land Type Da139 is present on Portion 2 of Farm 13 as well as farm 16 and 157. Land Type Db214 is also present on Portion 4 of Farm 16 and farm 157. The far southern corner of the eastern half of the project site consists of Land Types Da140 and Fb159.

Each of the land type groups present are described below:

- **"**Da**"** land types include land where duplex soils are dominant. While Da land types refer to land where the colour of the B horizon of these soils is red.
- "Db" land types are also dominated by duplex soils but have non-red (yellow and brown) soil colours in the B horizon.
- "Fb" land types indicate land in pedologically young landscapes where lime occurs regularly in one or more valley bottom soils.
- "Fc" land types accommodate pedologically young landscape where soil formation has resulted in the development of orthic topsoil and clay illuviation has resulted in lithocutanic horizons. Lime occurs regularly in both upland and valley bottom soils.
- "Ic" land types refers to land types with exposed rock (including exposed country rock, stones, or boulders) that cover more than 80% of the area.

The position of the land types within the project site, is shown in in Figure 5-2.

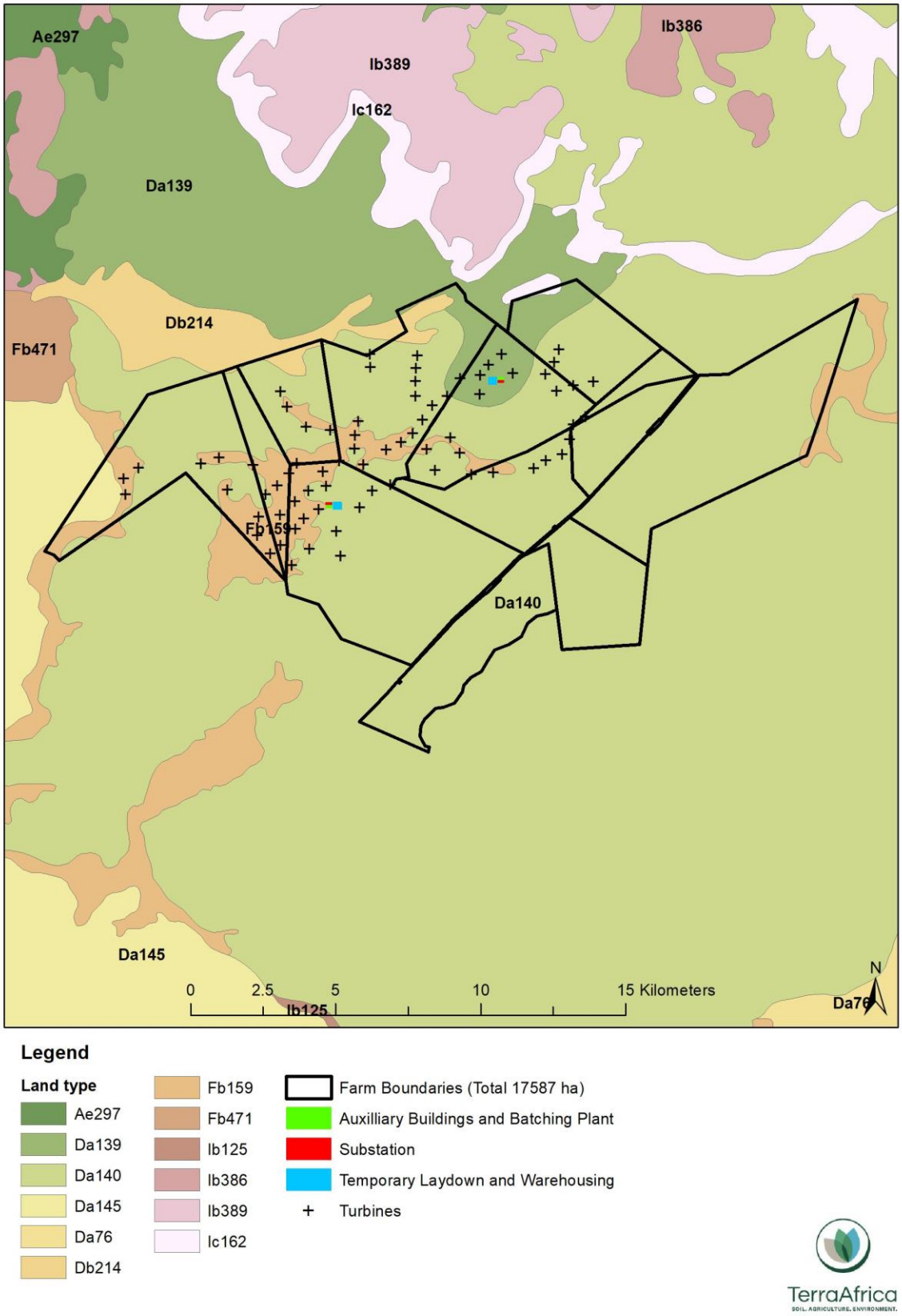


Figure 5-2: Land type map of the proposed Soyuz 6 WEF project site.

5.5.2 LAND CAPABILITY CLASSIFICATION

The land capability classification of the proposed Soyuz 6 WEF project site according to the DALRRD raster data (DALRRD, 2016), is shown in Figure 5-3.

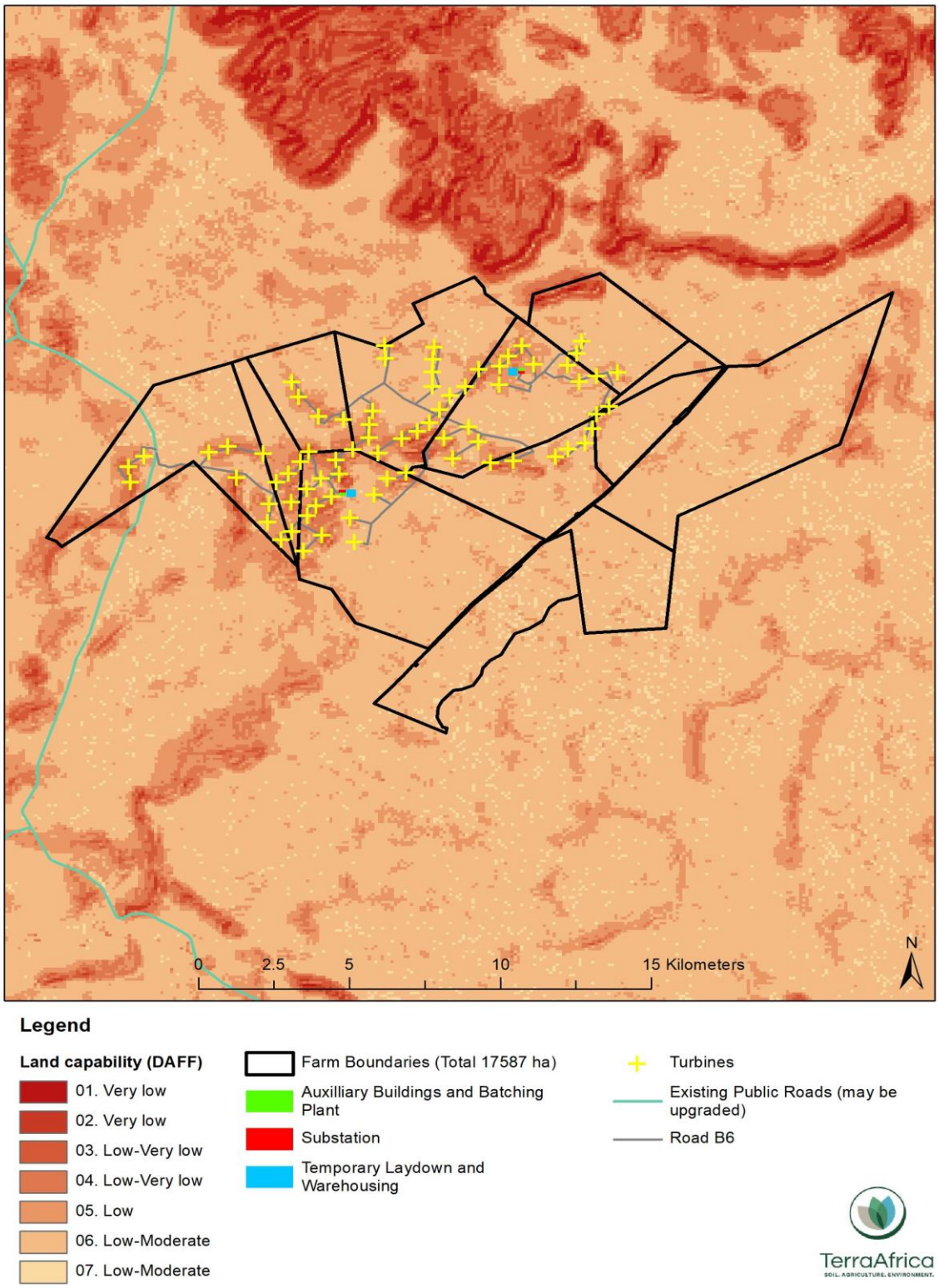


Figure 5-3: Land capability map of the proposed Soyuz 6 WEF project site (data source: DALRRD, 2016).

The land capability classification of the Soyuz 6 WEF project site shows that the site is only suitable for livestock farming and not suitable for rainfed crop production. The site consists of seven different land capability classes ranging from **Very low** (Class 01) to **Low-Moderate** (Class 07). The lowest land capability classes are located along the north-eastern boundary of the project site, mainly on Portion (a portion of Portion 13) of Farm Wonderboom No. 13. The low land capability of this area is because of the exposed rock that is present at 60% or more of the surface. The Remaining Extent of Portion 3 of the Farm No. 16 and the Remaining Extent (Portion 0) of the Farm No. 16, also consists mainly of Low to Very low land capability.

The remaining areas consist mainly of **Low-Moderate** (Class 06) land capability. The highest land capability class (Class 07 Low-Moderate) is present in two narrow strips along the north-western and south-eastern part of the study area and is associated with the surface water flow paths of this area. Other very small areas of Low-Moderate (Class 07) land capability are scattered throughout the project site.

5.5.3 AGRICULTURAL PRODUCTION

According to the Crop Estimates Consortium (2019), the Soyuz 6 WEF project site has very small, isolated areas with field crop boundaries present. According to the data, the field crops of all these areas consist of rainfed grain crops or planted pastures (Crop Estimates Consortium, 2019). It is only on the Remaining Extent (Portion 0) of the Farm No. 148, where pivot irrigation is found. The rest of the rainfed grain crops or planted pastures areas are located on the following properties:

- Remaining Extent (Portion 0) of the Farm No 141
- Remaining Extent of Portion 3 of the Farm No. 16
- Remaining Extent of Portion 1 of the Farm Sterkfontein No. 12.
- Remaining Extent (Portion 0) of the Farm No. 148.

A few very small, scattered fields of rainfed crops or planted pastures are located between 3 and 30 km north, east, west and south of the project site boundaries. Apart from the isolated small crop field areas, the rest of the project site is used for livestock grazing or otherwise left derelict where drought in the past decade has forced farmers to reduce or stop livestock production.

The grazing capacity of the largest part of the Soyuz 6 WEF project site is 20ha/LSU. Land with lower grazing capacity is present along the western boundary of the site where the grazing capacity is 26ha/LSU. The project site of 17587 ha therefore has the capacity to feed between 676 and 879 head of cattle. Land with grazing capacity of between 20 to 26ha/LSU is considered to have low to low-moderate grazing potential. It is much lower than the wetter, eastern parts of the country such as Mpumalanga where the grazing capacity ranges from 4 to 6 ha/LSU or the Kalahari region where the grazing capacity in ranges between 11 and 17 ha/LSU. It is only the grazing capacity of very dry areas such as the Karoo that is much lower than that, with some areas having grazing capacity as low as 70ha/LSU. It must be noted that the Britstown area has experienced crippling drought during the past decade and that the actual grazing capacity of the project site may currently be much lower after the prolonged drought has forced farmers to graze whatever vegetation was left, thereby increasing the risk of land degradation.

5.5.4 HIGH POTENTIAL AGRICULTURAL AREAS

The project does not overlap with any HPAA. The nearest HPAA is the Smart Syndicate PAA, a Category B Irrigation area, that is located about 45 km northwest of the project site.

5.6 HERITAGE FEATURES

5.6.1 ARCHAEOLOGY

The history of the Northern Cape Province is reflected in a rich archaeological landscape, mostly dominated by Stone Age and Colonial Period occurrences. In addition to prehistoric remnants, the archaeological record reflects the development of a rich colonial frontier, characterised by farming and later, a number of war conflicts, particularly the Anglo Boer War (or the South African War) left behind the remnants of battlefields, skirmishes and concentration camps.

The archaeology of the Northern Cape is rich and varied covering long spans of human history. Some areas are richer than others, and not all areas are equally significant. According to Humphreys (1987:117), `the amount of archaeological research that has been undertaken in the Karoo is in no way proportional to its importance in terms of area in South Africa'. While it is true to say that this part of the Karoo has probably been relatively marginal to human settlement for most of its history, it is in fact exceptionally rich in terms of Stone Age and rock art (Beaumont & Morris 1990; Morris and Beaumont 2004). Archaeologists from the McGregor Museum in Kimberley have focussed much of their attention on the Upper Karoo region and the northern periphery of the Karoo, where most of their academic research has been done. A few Archaeological Impact Assessments have been undertaken (as part of the EIA process) in Victoria West and De Aar (Morris 2000, 2004, 2006, 2007, 2010, 2012, 2019), where these have been required.

Contrary to its arid appearance, the Karoo had a relatively high carrying capacity and teamed with game long before European Colonization. Hunter gatherers (mainly San) successfully occupied the central interior of South Africa during the last 4500 years, subsisting on the large herds of grazing animals that occurred during that time (Sampson 1985; Sampson et al 1989). Late Stone Age archaeological sites dating to the late Holocene (within the last 4000 years) are surprisingly common. Although the Karoo is presently more suited to the keeping of small stock such as sheep and goats, research in the Eastern Karoo has revealed that, at about 1200 – 1400 AD, a climatic fluctuation (known as the Little Ice-Age) may well have caused an increased rainfall in the central Karoo resulting in the area being more suitable for grazing of cattle and occupation by Khoekhoen pastoralist groups. They left behind an archaeological legacy that consists of stone kraal complexes of which several hundred have been recorded in the Zeekoe Valley in the eastern Karoo and the Riet River area in the Northern Cape (Hart 1989). The indigenous people of Karoo waged a bitter war against colonial expansion as they gradually lost control of their traditional land. With the implementation of the commando system in the late 18th and early 19th centuries, the Karoo "Bushmen" were eventually destroyed or indentured into farm labour (Hart 1989).

Remnants of Stone Age archaeology in this landscape are mainly MSA and LSA tools. These tool scatters are often found spread very thinly and unevenly on the surface. MSA tools comprise mainly thick chunky flakes, chunks, flaked chunks, blade tools and a few retouched flakes mostly on weathered hornfels/lydianite. LSA lithics often comprise mostly unmodified, utilized and retouched flakes, chunks and cores on un-weathered hornfels. Formal tools such as scrapers, points and adzes are found in these contexts. In certain instances, the stone tools occur in association with organic remains or other cultural remains such as pottery or ostrich eggshell or even potable art. Rock art in the form of engravings on large boulders – often dolerite – as well as stone "gongs" are often found in these areas on rock outcrops and koppies. For example, Kaplan (2010) located several rock engravings on the Swartkoppies Mountains near Britstown northeast of the project areas where imagery of eland and ostriches were pecked on dolerite boulders.

Depending on the range, extent and integrity of site and artefact contexts, the significance of archaeological remains ranges from low to high on a regional level.

5.6.2 HISTORICAL/COLONIAL PERIOD

The first "Trekboers" moved through the landscape during the early 19th century but it was only in 1876 that Britstown was established as a Dutch Reformed Church parish. The town became an important staging point along the Diamond Way linking Cape Town with the diamond fields in Kimberley and later the gold fields along the Witwatersrand and the landscape was divided into farms towards the end of the 1800's. As a result, important historical remnant in this area are farmsteads and associated features. Farmsteads are complex features in the landscape made up of different yet interconnected elements. Typically, these farmsteads consist of a main house, gardens, outbuildings, sheds and barns, with some distance from that labourer housing and family cemeteries. Farm buildings are generally single storied but town houses often reached two floors. Walls are thick and built with stone and the ridged roof, thatched or tiled, are terminated at either end by simple linear parapet gables. In some instances, outbuildings would be in the same style as the main house, if they date to the same period. Roads and tracks, stock pens and wind mills occur on farms across the project landscape.

Farms also hold the remains of "veewagtershuise" or shepherd's huts, typically single roomed buildings constructed out of undressed sandstone blocks. The huts occur in the veld where they served as temporary shelter for livestock sheperds. Material culture such as glass, metal fragments and fragments of ceramics and earthenware are often found at these sites. Infrastructure and industrial heritage such as roads, bridges, railway lines, electricity lines and telephone lines are also feature in this landscape. In addition, infrastructure associated with the Anglo Boer War (fortifications, block houses – e.g. at Merriman, the remains of field hospitals, burial sites) occur around De Aar and Britstown. A good example is the remains of the Imperial Yeomanry Hospital, the Yeomanry Hotel and war burial ground at Deelfontein along the southern periphery of the project area. Historical / Colonial Period remnants are generally viewed to have a medium to high significance on a regional level.

5.6.3 GRAVES/CEMETERIES

Apart from the formal cemeteries that occur in municipal areas (e.g. in Britstown), informal burial sites occur in the project landscape. These might range from family graveyards at farmsteads to individual unmarked graves in the veld and war graves.

The various cemeteries, burial places and graves are viewed to have a high significance on a local level.

5.7 PALAEONTOLOGICAL CONTEXT OF THE AREA

The project is underlain by the alluvium (Qs, yellow single bird figure), Jurassic Karoo dolerite (Jd, red), as well as the Abrahamskraal Formation (Pa- light green) (Beaufort Group, Karoo Supergroup). This part of the basin is extensively intruded by dolerite (Jd, red) dykes and sills and the surrounding Beaufort Group sediments have been baked, thus compromising the fossil heritage of the area through thermal metamorphism. According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Quaternary superficial deposits is Moderate while that of the Adelaide Subgroup is Very High (Almond *et al*, 2013; SAHRIS website).

The Quaternary superficial deposits are the youngest geological deposits formed during the most recent geological period. Most of the superficial deposits are unconsolidated sediments and consist of clay, gravel, sand, silt, that form relatively thin, discontinuous patches of sediments. These sediments comprise of channel, floodplain, and stream deposits.

The Late Caenozoic deposits are very important because palaeoclimatic changes are reflected in the different geological formations (Hunter *et al*., 2006). During the climate fluctuations in the Cenozoic Era most geomorphologic features in southern Africa where formed (Maud, 2012). Barnosky (2005) indicated that various warming and cooling events occurred in the Cenozoic but states that climatic

changes during the Quaternary Period, specifically the last 1.8 Ma, were the most drastic climate changes relative to all climate variations in the past. Climate variations that occurred in the Quaternary Period were both drier and wetter than the present and resulted in changes in river flow patterns, sedimentation processes and vegetation variation (Tooth *et al*., 2004).

Late Caenozoic fossil assemblages are generally rare and low in diversity and occur over a wide-ranging geographic area. These fossil assemblages may in some cases occur in extensive alluvial and colluvial deposits. In the past, palaeontologists did not focus on superficial deposits although they sometimes comprise of significant fossil deposits. These fossil assemblages resemble modern animals and may comprise of mammalian teeth, bones and horn corns, reptile skeletons and fragments of ostrich eggs. Microfossils, non-marine mollusc shells are also known from Quaternary deposits. Plant material such as foliage, wood, pollens, and peats are recovered as well as trace fossils like vertebrate tracks, burrows, termitaria (termite heaps/ mounds) and rhizoliths (root casts).

A few dolerite dykes and sills are present in the development footprint while the area north and west of the development is extensively intruded by dolerite dikes and sills (Jd, red) of the Karoo Igneous Province. These dolerite intrusions have baked the surrounding potentially fossiliferous bedrock through thermal metamorphism thus influencing the quality of fossil preservation. The Karoo Igneous Province in southern Africa is a classic continental flood basalt province that was formed during the Early Jurassic Period. This province occurs over a comprehensive area in southern Africa and comprises a widespread system well developed igneous bodies (dykes, sills) that invaded the sediments of the Main Karoo Basin. Flood basalts do not typically form any visible volcanic structures, but with a series of outbursts form a suite of fissures of sub-horizontal lava flows that may vary in thickness. The Karoo is an old flood basalt province and is preserved today as erosional remnants of a more extensive lava cap that covered much of southern Africa in the geological past. This Suite is entirely unfossiliferous.

The flood plains of the Beaufort Group (Karoo Supergroup) are internationally renowned for the early diversification of land vertebrates and provide the world's most complete transition from early "reptiles" to mammals. The Beaufort Group is subdivided into a series of biostratigraphic units based on its faunal content (Kitching 1977; Keyser *et al*, 1977; Rubidge 1995; Smith *et al*, 2020; Viglietti 2020).

The Soyuz 6 WEF is underlain by the Abrahamskraal Formation that is biostratigraphically represented by the *Tapinocephalus* and upper *Eodicynodon* AZ . As the second oldest tetrapod biozone in the Karoo, the *Tapinocephalus* AZ is basically restricted to the Abrahamskraal Formation. The lower margin of the AZ is variable due to diachrony. This AZ comprises of the upper third of the *Abrahamskraal* Formation in the southwestern boundary of the basin. The Abrahamskraal Formation is present in the southern portion of the main Karoo Basin and consists of abundant greenish-grey and less common reddish-brown mudrock. Subordinate light grey fine-grained sandstone is arranged in fining -upward cycles. This Formation is at its thickest (2200 to 2565 m) in the southwestern part of the basin thinning north-eastward. In the southwestern portion of the basin the Abrahamskraal Formation comprises of several arenaceous zones. These sediments were deposited on a large alluvial plain (Cole et al, 2016).

The *Tapinocephalus* AZ is characterised by the tapinocephalid dinocephalian species *Tapinocephalus atherstonei* and *Moschops capensis*, the dicynodont *Eosimops newtoni*, and *Robertia broomiana* and the pareiasaur *Bradysaurus baini*. The *Tapinocephalus* AZ is a rich tetrapod assemblage zone that consists of basal members of therapsid clades Biarmosuchia, Anomodontia, Dicynodontia, Therocephalia, and Gorgonopsia; basal members of the parareptilian clade Pareiasauria; and rare varanopids as well as derived members of the therapsid clade Dinocephalia.

This AZ includes dinocephalians (*Moschops capensis*), basal pareiasaurs (*Bradysaurus*) that co-occur with pylaecephalid dicynodonts *Eosimops*. and *Robertia*. This AZ has a maximum thickness of about 1500 m. The Assemblage Zone can be subdivided into two subzones based on the absence of the dicynodont *Diictodon feliceps*: in the lower Eosimops - Glanosuchus Subzone and the presence of

Diictodon in the upper Diictodon Eosimops - Glanosuchus Subzone. The contact between these subzones is the first appearance of *Diictodon felips* at the base of the Moordenaars Member. The upper part of the biozone reflects the Capitanian mass extinction and the low diversity post extinction. The first appearance of *Endothiodon bathystoma* terminates the zone.

Rubidge et al (2000) described silicified wood fragments, leaves, and stems from this Formation while *Glossopteris* leaf impressions are abundant in the east (Mason, 2007). Bivalve fossils have been uncovered in the Formation. Trace fossils include fish trails, arthropod trackways (*Monomorphichnus and Umfolozia)* with some occurrences of therapsid footprints and vertebrate burrow casts (Smith, 1986, 1990a; Smith and Keyser, 1995a).

5.8 LANDCOVER

The site visit illustrated that the project area is used for various activities such as livestock farming, game farming and households.

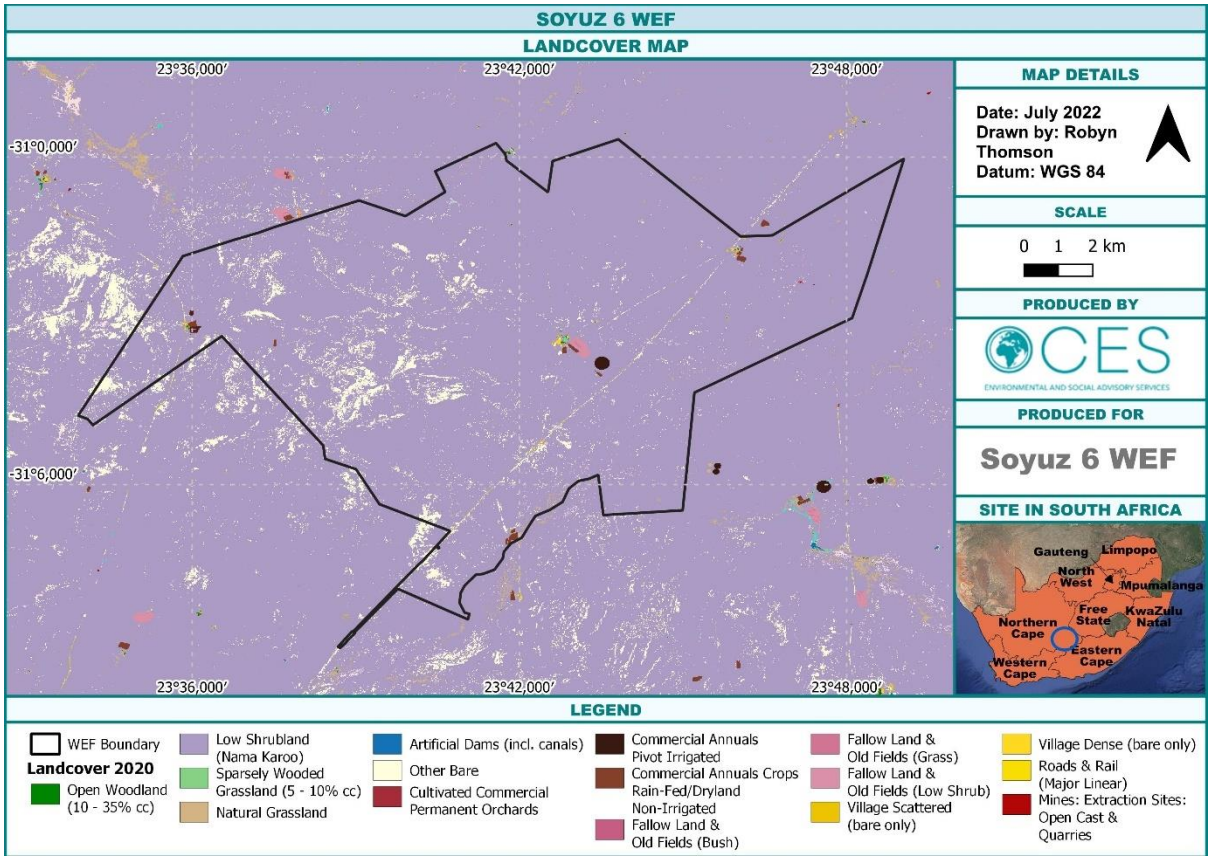


Figure 5-4 illustrates the landcover of the Soyuz 6 WEF site and surrounding areas (Northern Cape Land Use Data, AGIS).

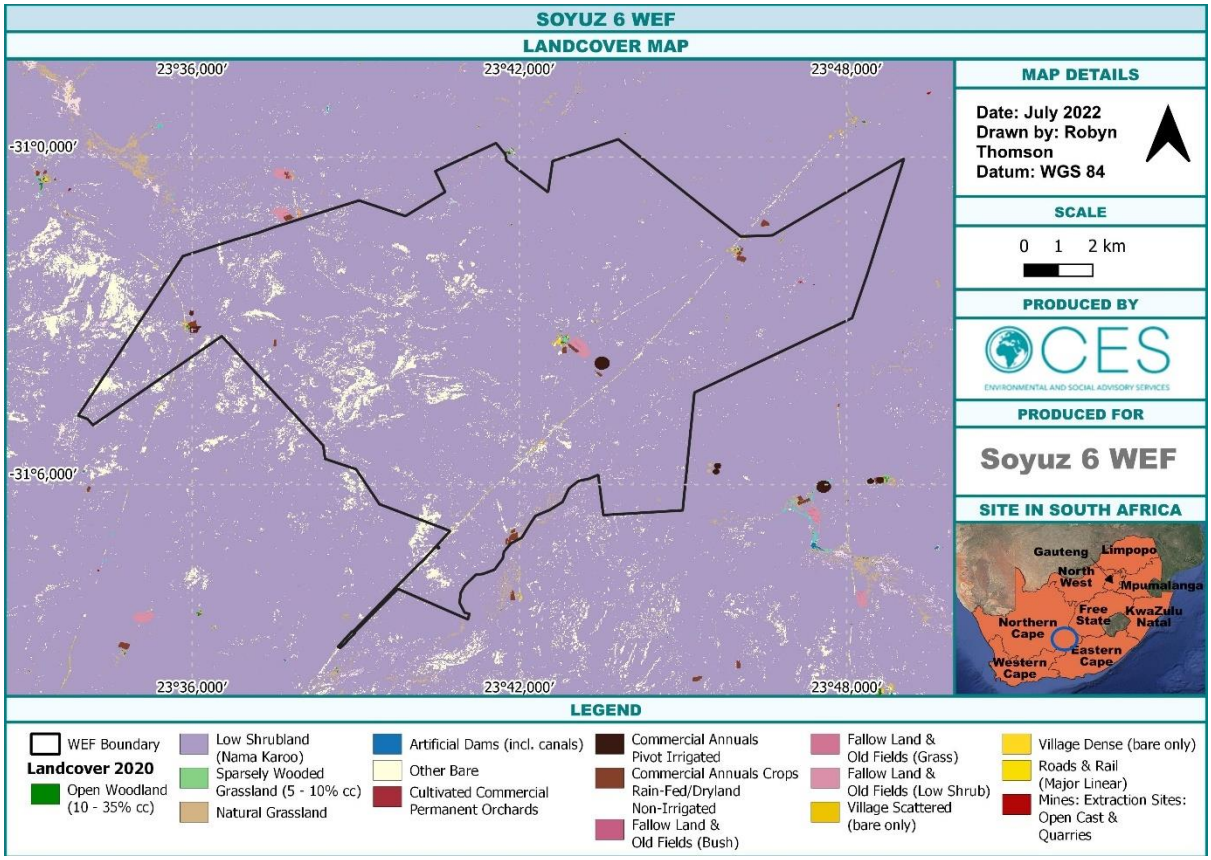


Figure 5-4: Landcover Map of the Soyuz 6 WEF site and surrounding areas.

5.9 VEGETATION & FLORISTICS

5.9.1 EASTERN UPPER KAROO

The Eastern Upper Karoo vegetation type is the dominant vegetation type within the project site. It is relatively widespread occurring in the Northern Cape, Eastern Cape and Western Cape Provinces between Carnarvon, Loxton, De Aar, Petrusville and Venterstad in the north, Burgersdorp, Hofmeyer and Cradock in the east and the Great Escarpment in the south (Mucina *et al.,* 2011).

It occurs on gently sloping plains that are typically interspersed with rocky areas of Upper Karoo Hardeveld in the west, Besemkaree Koppies Shrubland in the northeast and Tarkastad Montane shrubland in the southeast. This vegetation type is characterised by dwarf microphyllous shrubs interspersed with grasses such as *Aristida and Eragrostis.*

Eastern Upper Karoo occurs within the flat to gently sloping areas of the site and is broken up by high lying ridges of Upper Karoo Hardeveld. Although the vegetation present is near natural, it does show evidence of disturbance from grazing.

Within the project site there were distinct differences in species assemblages within this vegetation type. Areas characterised by shallow calcrete soils were dominated by dwarf karoo scrub with a low grass cover. Species assemblages included *Eriocephalus ericoides, Chrysocoma ciliata, Pentzia incana, Ruschia intricata, Aptosimum spinescens* and *Asparagus exvuvialis. Chrysocoma ciliata* typically colonises over-grazed areas characterised by disturbance and as such indicates that areas where it is abundant are considered degraded (Fitchett *et al.*, *2017)*.

Species assemblages within washes were similar to those observed within the shallow calcrete soils and were dominated by dwarf karoo scrub dominated by *Chrysocoma ciliata.* Grass cover in these areas was sparse.

Deeper soils typically had a higher grass cover and fewer shrubs. Species assemblages included *Chloris virgata, Aristida congesta, Aristida diffusa, Eriocephalus ericoides, Eragrostis lehmanniana, Stipagrostis ciliata* and *Pentzia incana*.

Eastern Upper Karoo is listed as Least Concern with a conservation target of 21%. Although listed as poorly protected, current data indicates that 97% of this vegetation type remains intact (RLE, 2021).

5.9.2 Northern Upper Karoo

The Northern Upper Karoo occurs in the Northern Cape and Free State Provinces and is described as a shrubland dominated by dwarf karoo shrubs, grasses and *Senegalia mellifera subsp. Detinens* (Mucina *et al.,* 2011).

This vegetation type is listed as Least Concern with a conservation target of 21%. Although listed as not protected, current data indicates that 94% of this vegetation type remains intact (RLE, 2021).

This vegetation type was not recorded on site.

5.9.3 Upper Karoo Hardeveld

This vegetation type is relatively widespread occurring in the Northern Cape, Eastern Cape and Western Cape Provinces between Middelpos, Strydenberg, Richmond and Nieu-Bethesda. It is associated with steep slopes and ridges including dolerite dykes and sills that form mesas, buttes and koppies, as well as parts of the Great Escarpment. These areas are typically covered by large boulders and rocks and support dwarf karoo scrub and grasses belonging to the genera *Aristida, Eragrostis and Stipagrostis* (Mucina *et al.,* 2011).

Upper Karoo Hardeveld occurred on the slopes and plateaus of the mesas and dykes present within the site (Figure 3.5). These areas are typically more diverse than the Eastern Upper Karoo and includes species such as *Searsia burchelli, Euclea coriacea, Lycium cinereum, Lycium horridus, Diospyros lycioides, Boophone disticha, Aloe claviflora, Hermannia cf. vestita, Cheilanthes eckloniana, Themeda triandra* as well as on occasion succulents such as *Stomatium mustellinum* and *Curio radicans.*

Upper Karoo Hardeveld is listed as Least Concern and has a conservation target of 21%. Although listed as poorly protected, it is estimated that 100% of the natural remaining extent is intact.

5.9.4 Floristics

A total of 81 species from 35 families were recorded within the project site. The Asteraceae family had the highest number of species (13 species) followed by Poaceae (ten species), Amaranthaceae and Scrophulariaceae (both had four species) and then Aizoaceae, Anacardiaceae, Asparagaceae, Ebenaceae, Malvaceae and Solanaceae (all with three species). Of the 81 recorded species, 75 species are listed as least concern and six are listed as Not Evaluated. No Species of Conservation Concern (SCC) were recorded on site and no SCC were identified in the Plants of Southern Africa (POSA) database for the general area.

Although no SCC were recorded, one species is listed as Schedule 1 and fourteen as Schedule 2 species on the Northern Cape Nature Conservation Act (2009). These species will require permits for their removal/destruction if impacted by project infrastructure.

The DFFE screening report for the project site lists two SCC that could occur within the site:

- *Hereroa concava*
- *Tridentea virescens*

The likelihood of occurrence within the site was assessed for both species (Table 3.2). *Hereoa concava* was determined to have a moderate likelihood of occurrence on shale plateaus and outcrops and *Tridentea virescens* was determined to have a high likelihood of occurrence within the washes present

on site. Since these two species are associated with specific niche habitats, project infrastructure can be placed to avoid impacting these populations should they be found on site.

5.9.5 Alien Species

Six exotic species were recorded within the project site (Table 3.3) and were typically found within disturbed sites such as along road verges. Of these six species, only one (*Opuntia ficus-indica*) is a listed (Category 1b) alien invasive species. The spread of a category 1b species is prohibited and as such an alien invasive management plan for the removal of this species must be included in the EMPr.

5.10 Northern Cape Critical Biodiversity Areas

Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services. The CBAs for each province have been compiled based on extensive biological data as well as input from key stakeholders. While the CBAs are a high-level reflection of the conditions expected it is imperative that the actual status of the environment be determined.

1. Critical Biodiversity Area 1 (CBA 1) – CBA 1 designated areas are those that have been identified as priority areas to be retained in order to meet conservation targets. The land use guidelines for CBA 1 designated areas recommend no further development. The designation may not necessarily be based on the condition of the habitat, species composition, ecological connectivity or overall ecological value since it is largely based on a statistical analysis process.
2. Critical Biodiversity Area 2 (CBA 2) – As for above, however these areas are deemed to be degraded but deemed priority areas. The land use recommendations for CBA 2 designated areas are broadly speaking restore and maintain to meet conservation targets.

Although there are CBAs and ESAs within the project area, only one ESA will be affected by project infrastructure. The biodiversity features driving the ESA classification includes all natural wetlands and rivers. It is recommended that infrastructure is placed to avoid this area, and where avoidance is not possible, minimise the footprint, to reduce the impact of the project on the functioning of the ESA. The following is therefore recommended:

- The western substation, temporary laydown area and auxiliary buildings and batching plants should be shifted outside of the ESA.
- There are seven turbines on the edge or just within the ESA. These turbines should be reassessed to determine if they can be moved outside of the ESA.

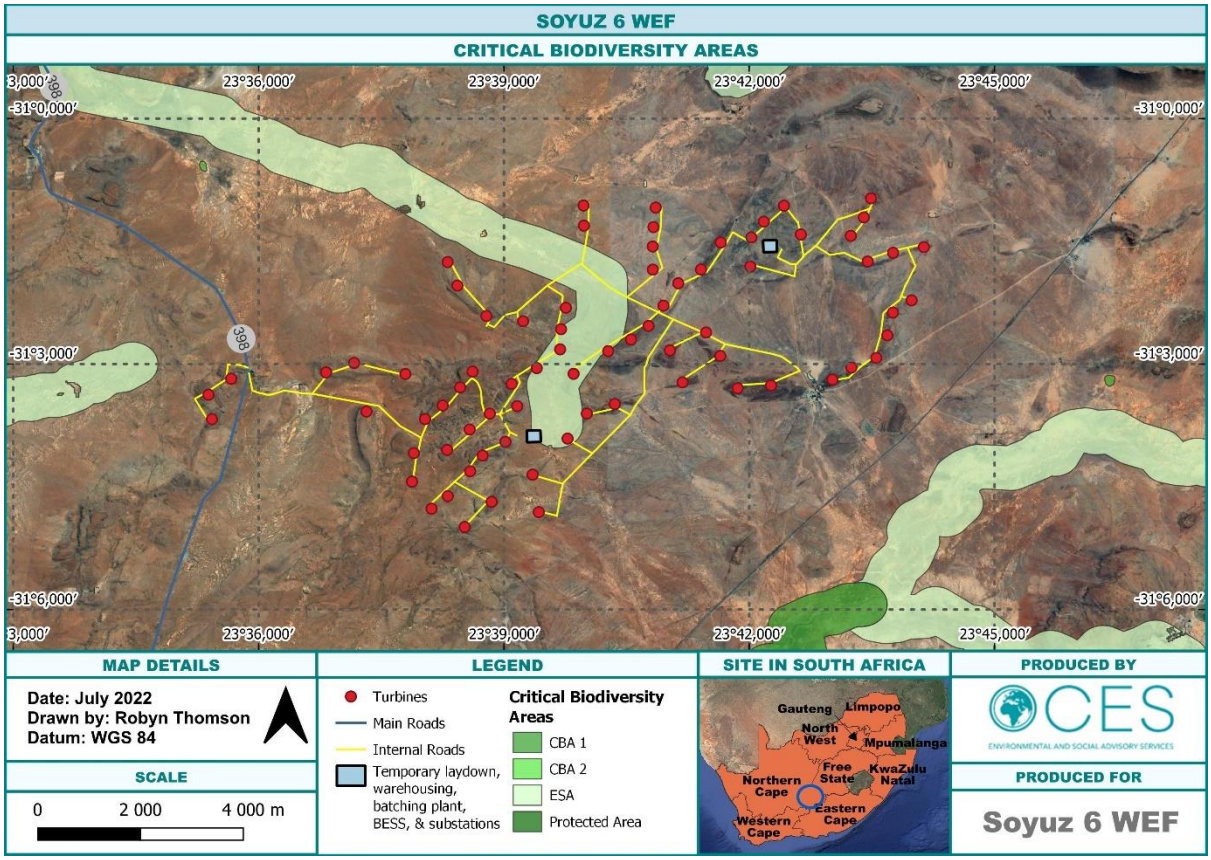


Figure 5-5: CBA Map of the proposed Soyuz 6 WEF site and surrounding areas.

5.11 NORTHERN CAPE PROTECTED AREA EXPANSION STRATEGY

No protected areas are located on the proposed WEF site (Figure 3-6). The closest protected area is the National Mountain Zebra/ Camdeboo Environment, located approximately 100 km to the southeast. The Meerkat National Park is located 150 km to the west of the WEF. Several areas surrounding the WEF, approximately 70 km north and east and 100 km south of the WEF, have been identified by the NCPAES as a Primary Focus area.

5.12 FAUNAL HABITATS

Habitats are defined in this study as the natural environment or place where faunal species live, breed and/or forage. Each habitat type has different environmental conditions and structure which influences a species distribution range. Five faunal habitats were identified in the study area, namely:

1. Grassland (subset of Eastern Upper Karoo).
2. Wash and Dwarf Succulent Karoo Shrubland (subset of Eastern Upper Karoo).
3. Rocky slopes and plateaus (subset of Upper Karoo Hardeveld).
4. Rivers (annual and perennial), wetlands and incidental pools.
5. Manmade.

5.12.1 GRASSLAND

The grassland was present in the flat, low-lying plains of the project area. This habitat typically has a canopy cover of 75-90% in the summer months during which it is dominated by grasses but this decreases during the dry winter months to <50%, leaving the scattered dwarf shrubs visible. Vegetation structure was approximately 0.5m and uniform throughout the site. These areas typically had termite mounds and burrows, including confirmed burrows for bat-eared foxes.

5.12.2 Wash and Dwarf Succulent Karoo Shrubland

The washes typically had a higher moisture content but were structurally similar to the dwarf succulent karoo which occurred on shallow calcrete soils. Canopy cover was 50-75% and plant height were less than 0.5m. There were occasional larger shrubs of 1-1.5 m in height scattered throughout this habitat.

5.12.3 Rocky Habitat (Slopes, Plateaus and slabs)

Plant cover on the rocky slopes was 25-50% and was interspersed between the rocks and boulders present. Structurally, the vegetation was more diverse with larger shrubs and small trees of 2-2.5 m interspersed between grassland, herbs and succulent shrubs. Additionally, the rocky outcrops and ledges provided crevices for faunal species to hide. The rocky habitats present differently on the mesas, buttes and plateaus and dolerite sills and dykes.

5.12.4 Rivers, wetlands and incidental pools

The study area landscape offers a number of aquatic related habitat, including riverine systems, large bodies of water, saturated depressions creating temporary pools and vleis, wetlands or inundated grasslands. Each present a different structure for fauna to inhabit, wetlands provide vegetation for cover whereas incidental pools provide temporary access to water.

5.12.5 Manmade

Built structures such as houses and sheds etc. offer faunal species shelter, some small faunal species often take refuge in the eaves of roofs and crevices in walls.

5.13 Faunal Species

The Nama Karoo Biome hosts approximately 50 frog species, 221 reptile species and 177 mammal species (CSIR, 2019). The Britstown project area is within the distribution range of 13 amphibian, 48 reptile species and 64 mammal species (FitzPatrick, 2022; IUCN, 2022; iNat, 2022).

5.13.1 Amphibians

Of the 13 amphibian species with a distribution that includes the project area nine species have been confirmed within the study area (FitzPatrick, 2022; iNat, 2022). The field survey recorded three of these amphibian species, namely, the Tandy's Sand Frog (*Tomopterna tandyi*) was recorded from two drift fence funnel traps in the north of the study area, puddles in the road and from small pools in wash in the central east of the study area. Boettger's Caco (*Cacosternum boettgeri*) recorded from the northeastern drift fence funnel trap and storage dam in the north. The Giant African Bullfrog (*Pyxicephalus adspersus*) was recorded from the wash in the west of the study area.

Microhabitats important to amphibian species include terrestrial and aquatic habitats i.e., not all amphibians require permanent access to water, some species only require access to water for breeding and egg/tadpole development and some species do not require any water and are fully terrestrial.

5.13.2 Reptiles

Of the 48 reptile species with a distribution that includes the project area 36 species have been confirmed within the study area (FitzPatrick, 2022; iNat, 2022). The field survey recorded three snake species, two tortoise, one terrapin and eight lizard species.

The Leopard Tortoise (*Stigmochelys pardalis*) was recorded from 14 locations across the study area with the majority see along the R398 road and in grassland habitats.

The Marsh Terrapin (*Pelomedusa galeata*) was recorded from a road puddle in the central east area of the study area.

The Cape Cobra (*Naja nivea*) was recorded from grassland habitat outside of the Soyuz 6 project site. Three of the drift fence funnel traps in the north of the study area trapped snakes including the Karoo Sand Snake (*Psammophis notostictus*), Spotted Skaapsteker (*Psammophylax rhombeatus*) and a juvenile Cape Cobra.

Rocky outcrops across the study site hosted lizards associated with the habitat including the Southern Rock Agama (*Agama atra*), Karoo Girdled Lizard (*Karusasaurus polyzonus*) and Western Rock Skink (*Trachylepis sulcate*). The Bibron's Gecko (*Chondrodactylus bibronii*) was also at rocky outcrops as well as at the buildings in the north of the study area capitalising on the insects attracted to the light. The Spotted Desert Lizard (*Meroles suborbitalis*), Spotted Sandveld Lizard (*Nucras intertexta*) and Karoo Sand Lizard (*Pedioplanis laticeps*) were recorded in the Grassland and Dwarf Succulent Karoo Shrubland habitats. The Common Ground Agama (*Agama aculeata*) and Variegated Skink (*Trachylepis variegate*) were common across the site with many *A. aculeata* sunning themselves on the roads.

Two reptile species of conservation concern have a distribution which includes a portion of the study area. Namely, the Karoo Dwarf Tortoise (*Chersobius boulengeri*) listed as Endangered and the Tent Tortoise (*Psammobates tentorius*) listed as Near-Threatened (Hofmeyr, *et. al*., 2018; Hofmeyr, Leuteritz & Baard, 2018).

The Karoo Dwarf Tortoise (*Chersobius boulengeri*) has a distribution which includes the north-western portion of the study area. This species is endemic to South Africa and inhabits dwarf shrubland (800-1500m asl) in portions of the Succulent Karoo, Nama Karoo and Albany Thicket biome were dolerite ridges and rocky outcrops associated with succulent and grassy vegetation elements occur. It shelters under rocks in vegetated areas or in rock crevices (Hofmeyr, *et. al*., 2018). It has an EOO: 135,090km^2 and an AOO: 4 708 km^2. The nearest recent record is from near Loxton approximately 140km SW (iNat, 2022).

This species has a *high likelihood of occurrence* within the study area that contains rocky outcrop habitat. The actual footprint of all six wind energy facilities is estimated at 9km^2 (900ha), which is 0.007% of the species extent of occurrence. This species is considered to be well protected within south African conservation areas (Tolley, *et. al.,* 2019). Given the size of the proposed project in relation to the species area extent of occurrence and that it is considered well protected the project is unlikely to negatively influence the viability of this species. However, it is still an endangered species and mitigation measures must be implemented to prevent further loss of this species by this project.

The Tent Tortoise (*Psammobates tentorius)* is listed as Near-threatened and is restricted to South Africa and Namibia to areas below 1500m asl (Hofmeyr, Leuteritz & Baard, 2018). Although widespread (EOO: 595,920km^2) the population density is generally low with 5-6 sub-populations representing three subspecies, namely, *Psammobates t. tentorius*; *Psammobates t. trimeni and Psammobates t. verroxii* (Hofmeyr, Leuteritz, & Baard, 2018). Subspecies distribution appears is linked to rainfall and elevation; however, all subspecies inhabit shrubland. P.t. *tentorius occurs in* scrubland with succulents, annuals, grasses and geophytes and *P.t. trimeni occurs in areas* dominated by dwarf succulent shrubs and annuals (Hofmeyr, Leuteritz, & Baard, 2018).

This species was *confirmed* within the study area, three individuals were recorded from the R398, the road bisecting the study area. This species is therefore highly likely to occur throughout the study area. Given the proposed project is 0.002% of this species EOO and that it is considered well protected, the project is unlikely to negatively influence the viability of this species. However, it is still an endangered species and mitigation measures must be implemented to prevent further loss of this species by this project.

5.13.3 MAMMALS

Of the 64 mammal species with a distribution that includes the project area, 36 species have been confirmed within the study area (FitzPatrick, 2022; iNat, 2022). The field survey recorded 20 mammal species.

The field survey recorded seven carnivore species. At the southern trap array a number of burrows were found in the grassland habitat and camera traps confirmed the presence of Bat-eared Fox (*Otocyon megalotis*) and five individuals were seen one morning investigating the trap array. Two individuals were also found dead on the R398. Other roadkill included the African Wildcat (*Felis silvestris*), the Southern Aardwolf (*Proteles cristatus*) and Yellow Mongoose (*Cynictis penicillata*). A live Aardwolf was recorded on a camera trap in the large wash habitat in the central east portion of the study area. The Yellow Mongoose (*Cynictis penicillata*) and Meerkat (*Suricata suricatta*) were the most prevalent diurnal carnivores recorded in the study area. In addition, the Slender Mongoose (*Herpestes sanguineus*) and Cape Grey Mongoose (*Herpestes pulverulentus*) was also recorded. Farmers in the area report the Black-backed Jackal (*Canis mesomela*) as a pest as they will prey on lambs.

Six rodents were recorded from the study area with the most conspicuous being the Ground Squirrel (*Xerus inauris*), this diurnal species lives in colonies of up to 30 individuals and their extensive burrow system is often within the road and road verges and was recorded as common across the study area. The Highveld Gerbil (*Gerbilliscus brantsii*), Pouched Mouse (*Saccostomus campestris*), Four-striped Grass Rat (*Rhabdomys pumilio*) and Pigmy Mouse (*Mus minutoides*) were captured in traps (Sherman or funnel). Evidence of the Cape Porcupine (*Hystrix africaeaustralis*) was found across the site e.g., quills, skat, burrows, and foraging sites.

The study area host both naturally occurring antelope and introduce game antelope. Introduced species include the Eland, Gemsbok, Sable and Kudu. Naturally occurring species include the Steenbok, Duiker, Grey Rhebok, Mountain Reedbuck, Blesbok and Springbok. Although some farms stock Springbok, vast herds of Springbok used to migrate through the region and small herds still occur naturally (CSIR, 2019). Five Antelope species were confirmed during the field survey including Steenbok, Mountain Reedbuck and Springbok were sited within the study area and the camera traps captured Steenbok, Springbok and Blesbok.

Other mammal's species recorded in the study area include the Rock Sengi (*Elephantulus sp*.), recorded at three different rocky outcrops, an individual Vervet Monkey (*Chlorocebus pygerythrus*) recorded at an abandoned farmhouse in the central east of the study area, Rock Hyrax (*Procavia capensis*) recorded at multiple rocky outcrops across the study area and two Lagomorphs. A Rock Hare (*Pronolagus sp.)* was flushed on top of one of the meses and Scrub Hares (*Lepus sp.*) were seen at multiple sites across the study area while driving and walking.

The study area intersects the distribution of eight mammal species of conservation concern, five threatened and three near-threatened species. Threatened species includes the Riverine Rabbit (*Bunolagus monticularis*), Mountain Reedbuck (*Redunca fulvorufula*), Black-footed Cat (Felis nigripes), African White-

tailed Mouse (*Mystromys albicaudatus*) and Leopard (*Panthera pardus*). Near-threatened species includes the Grey Rhebok (*Pelea capreolus*), Brown Hyaena (*Parahyaena brunnea*) and Cape Clawless Otter (*Aonyx capensis*). Two species, Black-footed Cat (Felis nigripes) and African White-tailed Mouse (*Mystromys albicaudatus*), have a high likelihood of occurrence in the study area and the Mountain Reedbuck (*Redunca fulvorufula*) was confirmed at two locations within the study area.

The Riverine Rabbit (*Bunolagus monticularis*) was flagged by the DFFE Screener as Medium sensitivity due to the proximity of the existing population and potential suitable habitat within the study area. Riverine Rabbit (*Bunolagus monticularis*) is listed as critically endangered and occurs mainly outside of formally protected areas. There are three known populations with 12 subpopulations (9 in the northern range and 3 southern range). It has an EOO of 54,227 km^2 and an AOO of 2,943 km^2. The Riverine Rabbit inhabits dense, discontinuous vegetation fringing the seasonal rivers and constructs burrows in soft and deep alluvial soils along the river courses for breeding. It is a browser strongly associated with selected plant species such as *Pteronia erythrochaetha, Kochia pubescens, Salsola glabrescens* and *Mesembryanthemaceae.* The Riverine Rabbit is considered a cryptic species, it is predominately solitary and nocturnal.

5.13.4AVIFAUNA (BIRDS)

The second South African Bird Atlas Project (SABAP2 – www.sabap2.birdmap.africa) has recorded a combined total of 145 species. This included 19 Priority Species, 8 species classified as Endangered, Near Threatened or Vulnerable and 17 endemic or near-endemic species. Due to the relatively few full protocol surveys conducted in some of the pentads this list cannot be considered to be complete.

There are 10 Co-ordinated Avifaunal Roadcount (CAR) routes (NK033, NK201, NK202, NK203, NK321, NK322, NK323, NK451, NK452, and NK453) that run through the proposed development area. Blue Crane, Karoo Korhaan, Northern-black Korhaan, Ludwig's Bustard, and Secretarybird have been recorded along these routes. Four Co-ordinated Waterbird Counts Project (CWAC) sites (Nuwejaarsfontein Farm Dam, Nuwejaarsfontein House Dam, De Aar Sewage Works, and Wortelfontein Dam) are located near the proposed development area, between 22 and 31 km in an easterly direction. Priority Species that have been recorded at these sites include Black Stork, African Fish Eagle, Greater Flamingo and Maccoa Duck.

The proposed development area is located adjacent to the Platberg–Karoo Conservancy (SA037) Important Bird Area (IBA), with its closest point less than 2 km away. The IBA was established specifically due to the presence of several globally and regionally threatened species of large terrestrial birds and raptors, certain biome-restricted passerines, and congregatory species. Globally threatened bird species include Blue Crane, Ludwig's Bustard, Kori Bustard, Secretarybird, Martial Eagle, Blue Korhaan, Black Harrier and Denham's Bustard. Regionally threatened species include Black Stork, Lanner Falcon, Tawny Eagle, Karoo Korhaan and Verreaux's Eagle. Biome-restricted species include Karoo Lark, Karoo Longbilled Lark, Karoo Chat, Tractrac Chat, Sickle-winged Chat, Namaqua Warbler, Layard's Tit-Babbler, Pale-winged Starling, and Black-headed Canary. Besides the presence of large resident raptors, congregatory species such as Amur Falcon and Lesser Kestrel also occur here, with almost 10% of the global population of Lesser Kestrels roosting in this conservancy during summer. The IBA is also seasonally important for White Stork during insect outbreaks.

The Verreaux's Eagle Risk Assessment (VERA) tool identified several previously identified Verreaux's Eagle nest locations on the Kombuisfonteinberg and Waterval se Berge in the central-eastern portion of the site as well as on the dolerite intrusions on Perdepoort and Twyfelhoek. The output of the VERA tool was used in conjunction with the Verreaux's Eagle habitat suitability model to determine areas likely to be utilised by the species.

The species predicted to occur on the project site was determined by the desktop study results. The desktop study revealed 29 potential Priority or Avifaunal Species of Conservation Concern (SCC) that are known to occur in and around the study area, including the Endangered Ludwig's Bustard and Martial Eagle, as well as the Vulnerable Secretarybird and Verreaux's Eagle. In addition to these red-listed species, Priority Species such as Northern Black Korhaan, Blue Korhaan, and Jackal Buzzard have been recorded in the area and likely occur in the broader impact zone in good numbers. Long-term data on waterbird numbers reveal that most

red-listed water-dependant species appear to occur infrequently at low densities in the area, but include the Vulnerable Black Stork, as well as the Near-Threatened Maccoa Duck and Greater Flamingo.

The shrubland plains habitat usually supports a relatively low diversity of bird species comprising both small passerines and non-passerines. The passerine species assemblage of the site is expected to be typical of similar areas in the Nama Karoo Biome, with the most commonly encountered species expected to be African Rock Pipit (Near-Threatened), Eastern Clapper Lark, Spike-heeled Lark, African Pipit, Rufous-eared Warbler, and Largebilled Lark. We therefore predict to find many endemic and near-endemic passerine species throughout the study site. Many of the red-listed non-passerines usually occur in shrubland plains and therefore it is highly likely for them to occur in the study site. It is also predicted that raptors use the ridges on a regular basis in addition to the plains.

5.13.5 BATS

Approximately nine species of bat can potentially occur at the proposed site (African Chiroptera Report 2018; Monadjem et al. 2010). It is possible that more (or fewer) species may be present because the distributions of some bat species in South Africa, particularly rarer species, are poorly known. Analysis of the acoustic monitoring data suggests that at least five species of bat are present. Recent taxonomic research suggests that the Egyptian free-tailed bat may be at least two separate species (D. Jacobs, pers. Comm, 2020) but is considered as one for the purposes of this report and until its taxonomic status is clarified further.

For foraging bats, one of the most important ecological constraints is clutter; objects (e.g. vegetation) that have to be detected and avoided by bats during flight (Schnitzler and Kalko 2001). Clutter presents perceptual and mechanical problems for bats. Perceptually, bats are constrained by their sensory capabilities to find prey amongst clutter (e.g. having an echolocation system adapted to find prey in dense vegetation versus in the open). Mechanically, bats are constrained by their flight ability (e.g. adaptations in wing morphology that enable flight in dense vegetation versus in the open). Habitats can therefore be defined according to clutter conditions. These include uncluttered space (open spaces, high above the ground and far from vegetation), background cluttered space (near the edges of vegetation, in vegetation gaps, and near the ground or water surfaces), and highly cluttered space (very close to surfaces such as leaves or the ground). Habitat complexity is therefore an important consideration for bats because areas that offer a variety of clutter conditions are more likely to support a greater diversity of bat species. The relative uniformity of the landscape, with a limited degree of clutter complexity, will reduce the diversity of species present on the site. Despite this, there is a range of suitable habitat for bats that can be used for roosting, foraging and commuting in the study area.

The availability of roosting space is a critical factor for bats (Kunz and Lumsden 2003) and a major determinant of whether bats will be present in a landscape, as well as the diversity of species that can be expected. There are no confirmed roosts in the study area. Based on unpublished data from the South African Bat Assessment Association, the nearest major bat roost is located ca. 93 km north of the site. There are however, several potential roosting features on site that may be used by bats. These include buildings and trees (which are mainly associated with the farmsteads) and rocky outcrops. A number of bat species can make use of rocky crevices (Monadjem et al. 2010) and others, such as the Cape serotine and Egyptian free-tailed bat, readily make use of buildings as roosts (Monadjem et al. 2010). There do not appear to be any large caves in the study area which suggests that there may not be large colonies of bats however several hundred bats may occupy building roosts in the study area. Investigations of rocky outcrops did not reveal any signs of roosting bats.

Water sources are important for bats as a direct resource for drinking and because these areas tend to attract insects and promote the growth of vegetation (e.g. riparian vegetation). Therefore, besides providing drinking water, bats can also be attracted to water sources as potential foraging and roosting sites (Greif and Siemers 2010; Sirami et al. 2013). There are numerous wetlands, reservoirs and farms dams in the study area that will be attractive to bats. Rivers, and drainage lines will be equally important for foraging and commuting. Some of these water resources are non-perennial because of the arid nature of the site, and therefore only available to bats during some parts of a year. This could then restrict potential impacts to bats

to periods when key resources are available. Limited areas of cultivation areas are present near farmsteads which are important foraging areas as some species forage over agricultural fields to hunt insect pests (Noer et al. 2012; Taylor et al. 2011). Bats are known to use linear landscape features for commuting routes to get to and from foraging sites, roost sites and to access water sources. Linear landscape elements, such as tree lines and edge habitats, provide protection to bats from predators, shelter from wind, orientation cues as well as foraging habitat (Verboom and Huitema 1997; Verboom 1998). The primary linear landscape features are drainage lines which typically (but not always) are associated with vegetation, providing linear and edge habitats that bats can access. Rivers, tree lines, and other edge habitats might also be used as commuting routes or navigation cues.

5.13.6 Consolidated Species of Conservation Concern

The following table is a consolidated list of species of conservation concern which have been observed on the proposed Soyuz 6 WEF site.

Table 5-2: Red Listed Species of Conservation Concern, Consolidated Table (as per avifaunal and ecological specialist screening).

SCIENTIFIC NAME	FAMILY	STATUS	COMMENT/PRESENCE
MAMMALS			
Redunca fulvorufula (Mountain Reedbuck)	Bovidae	EN, EN	Suitable habitat is present within the site including water sources for drinking and rocky hilly slopes that offer protection. **Faunal Impact Study is being undertaken**
BIRDS			
Aquila verreauxii (Verreaux's Eagle)	Accipitridae	VU, NEST (H, M)	**Avifaunal Monitoring and Impact Assessment is being undertaken.**
Neotis ludwigii (Ludwig's Bustard)	Otididae	EN, NEST (H, M)	
Afrotis afraoides (Northern Black Korhaan)	Otididae	LC	
Anthropoides paradiseus (Blue Crane)	Gruidae	NT	
Buteo rufofuscus Jackal Buzzard	Accipitridae	LC	
Circus maurus (Black Harrier)	Accipitridae	EN	
Ciconia Ciconia (White Stork)	Ciconiidae	LC	
Falco Naumanni (Lesser Kestrel)	Falconidae	LC	
Sagittarius serpentarius (Secretarybird)	Sagittariidae	VU, EN	
Aquila rapax (Tawny Eagle)	Accipitridae	EN, VU	
Torgos tracheliotos (Lappet-faced Vulture)	Accipitridae	EN	
Polemaetus Bellicosus (Martial Eagle)	Accipitridae	EN	
REPTILES			
Psammobates tentorius	Testudinidae	EN	Widespread and likely to occur sporadically throughout the site. May require taxa specialist

SCIENTIFIC NAME	FAMILY	STATUS	COMMENT/PRESENCE
(Tent Tortoise)			input but this species is expected to be found throughout the broader area. **Terrestrial Biodiversity (Ecological) Impact Assessment is being undertaken.**
AMPHIBIANS			
None of Concern			Further investigations will be required, but higher risk areas include riparian and watercourse areas which will be indicated as areas to avoid. **Terrestrial Biodiversity (Ecological) Impact Assessment and Freshwater Impact Assessment are being undertaken.**

5.14 Rivers, Watercourses, and Drainage Lines

5.14.1 NFEPA Wetlands and Rivers

After several years of development and testing, a National Wetland Classification System (NWCS) was completed in 2013. The South African National Biodiversity Institute (SANBI), through its National Wetland Inventory project, initiated a collaborative process to develop a classification by which wetland habitat types with shared natural attributes can be grouped together. The classification system is intended to be used throughout the country for a number of different applications, with a view to provide wetland specialists, academics, government and other role players with a common language when distinguishing different types of wetlands for management and conservation purposes. The National Wetland Inventory maps are provided by SANBI through National Freshwater Ecosystem Priority Area (NFEPA) wetland maps, which classify the major wetlands and water bodies in the country at a coarse spatial scale. The classification was applied to the wetlands included in the inventory's National Wetland Map after extensive field testing throughout the country and through the National Freshwater Ecosystem Priority Areas (NFEPA) project. Please refer to Figure 5-6 for a map illustrating the NFEPA Wetlands and Rivers.

5.14.2 Drainage and River Ecosystem Context

The proposed windfarm falls across the D61L quaternary catchment in the north west of the development area, the D61C quaternary catchment on the western edge and the D61B quaternary catchment in the south east of the development area. These are associated with the Graafwaterspruit, Ongers River and Lakenriver, respectively, all of which fall within the Orange River Water Management Area (WMA). A tributary of the Graafwaterspruit flows in a northerly directly out the north-western boundary of the WEF and two tributaries of the Lakenrivier cross, coalesce and run along the south-eastern boundary of the WEF. Numerous smaller drainage lines occur across the proposed development area.

According to the NBA (2018), the reaches of the Graafwaterspruit and Lakenrivier within the WEF boundary are mostly classified as Endangered. Endangered ecosystems are ecosystem types that are close to becoming Critically Endangered (Nel & Driver, 2012). Any further loss of natural habitat or deterioration of condition in these ecosystem types should be avoided, and the remaining healthy examples should be the focus of conservation action (Nel & Driver, 2012). The affected Graafwaterspruit River reach has a "Data Deficient" Present Ecological State (PES) allocation, as much of the Karoo was largely under-sampled during the NBA (2018) assessment. The condition of the affected Lakenrivier reaches are considered "C: Fair" in terms of their PES allocations. Four springs occur within the WEF boundary, with an additional four occurring approximately 1 km outside of its south-eastern edge (NBA, 2018). In terms of the National Freshwater Ecosystem Priority Areas (NFEPA) project (2014), the affected Graafwaterspruit and upstream tributaries of the Lakenrivier are categorised as an Upstream Management Area. These are sub-quaternary catchments in which human activities need to be managed to prevent degradation of downstream river FEPAs and Fish Support Areas. The Lakenrivier main channel is categorised as a river FEPA.

5.14.3 Wetland Ecosystem Context

According to the National Wetland Map Version 5 (2018), 12 wetlands fall within the WEF boundary, four of which are floodplains and the remaining of which are valley-bottom associated with rivers, with an additional two rivers within 500 m of the boundary. With the exception of the floodplains, of which three are Vulnerable and one is Critically Endangered, the remaining wetlands all lack a threat status classification. There are also 1 artificial wetlands within the WEF boundary and an additional seven within 500 m of the boundary, all of which are classified as dams. Although no NFEPA wetland clusters fall within 500 m of the WEF boundary, several occur more than 40 km to the north.

5.14.4 Assessment Units

Table 5-3 : Generalised categorisation of assessment units

CATEGORY	SUBCATEGORY	DESCRIPTION
Washes	Longitudinal (A01-22	Wash features derived from high order drainage, dominated by active transportation and deposition of sediment via sheet overland flow, i.e. without active channelling, or with only localised, discontinuous and weakly-defined channelling in their natural condition. Occurs along the valley floor. Evidence of longitudinal, down-valley sheet flow. May or may not include localised seepage areas, supporting limited hydric conditions. Common within the Soyuz 6 WEF and broader cluster study area. In their impacted state, these washes are characterised by networks of deeply-incised erosion gullies, resembling Badlands. According to a local farmer, much of this erosion occurred during the floods of 1988. More extensive gully networks have been targeted for erosion control, which includes a series of concrete weirs. Some of the longitudinal washes in Souyz 6 have become Badlands.
	Lateral (B01-08)	Wash features derived from lower order drainage, dominated by active transportation and deposition of sediment via sheet overland flow, i.e. without active channelling, or with only localised, discontinuous and weakly-defined channelling. Occurs along mesa foot slopes, often coalescing and joining longitudinal washes at or near the valley bottom, giving the appearance of fans. Evidence of lateral, down-slope sheet flow. May or may not include localised seepage areas, supporting limited hydric conditions. Few occurring along mesas within the Soyuz 6 WEF and broader cluster study area.
Flats	Lowland (C01-06) and Pans	Brackish flats, typically occurring within unchannelled lower order drainage areas. Bare or sparsely vegetated by salt tolerant species. Somewhat common within the Soyuz 6 WEF study area. Pans are a subtype of the lowland flats, sometimes occurring within the broader boundary of the flat. These are more-or less round flat basins, completely devoid of vegetation, typically fringed by sparse salt tolerant vegetation. No lowland pans were noted within the Soyuz 6 WEF, however one was noted in the nearby Soyuz 1 WEF study area.
	Mesa-top (D01-02)	Shallow soil flats occurring at the top of mesas, dominated by *Cyperus* sp. and short grass. Lacking hydric conditions. Notable disturbance of

CATEGORY	SUBCATEGORY	DESCRIPTION
		soils in some mesa-top flats, assumed to be caused by porcupines. Although none were encountered during the site survey of Soyuz 6, two features suspected to be mesa-top flats were delineated at the desktop level
Low-order drainage lines	Unchannelled (E01-04)	Gently-sloped, topographically-defined areas of ephemeral flow accumulation, rarely supporting any hydric conditions. Lacking a well-defined channel. Although none were encountered during the site survey of Soyuz 6, a number of features suspected to be unchannelled low order drainage were delineated at the desktop level
	Channelled (F01-11)	Steep- or moderately- sloped channelled ephemeral drainage lines, occasionally supporting localised hydric conditions. Occurs on steep upper slopes of mesas, characterised by cobble and boulder channel beds, or on more gradual mid-slopes where channels have become accentuated by livestock tracks. The more mesic conditions are associated with mesa runoff. These are also in the best condition, vegetated by *Heteropogon contortus* and *Themeda triandra.* Somewhat common within the Soyuz 6 WEF and broader cluster study area. Channelled drainage lines typically lose confinement near the base of the mesas. Depending on the shape of the receiving basin, sediment either converges or diverges, forming an alluvial fan of deposition. These alluvial fans often overlap with lateral washes.
Artificial wetlands	Dam	Dams, characterised by an earthen, typically vegetated, or concrete dam wall. Evidence of impounded water, including generally bare or sparsely vegetated areas, with either open water or cracked, moist or dry, clayey surfaces. Often accompanied by windmills, pumps and/or livestock water troughs. Some support hydric soils, as well as aquatic and/or wetland vegetation. Somewhat common within the Soyuz 6 WEF and broader cluster study area.
Perennial Rivers		Mixed alluvial and bedrock active perennial rivers, with gentle to moderate flow, seasonal pools and often algae, especially downstream of high grazing areas. The perennial rivers are presumably fed by natural springs. No perennial rivers were noted within the Soyuz 6 study area. However, a number of rivers were noted within the broader WEF cluster, particularly to the west.

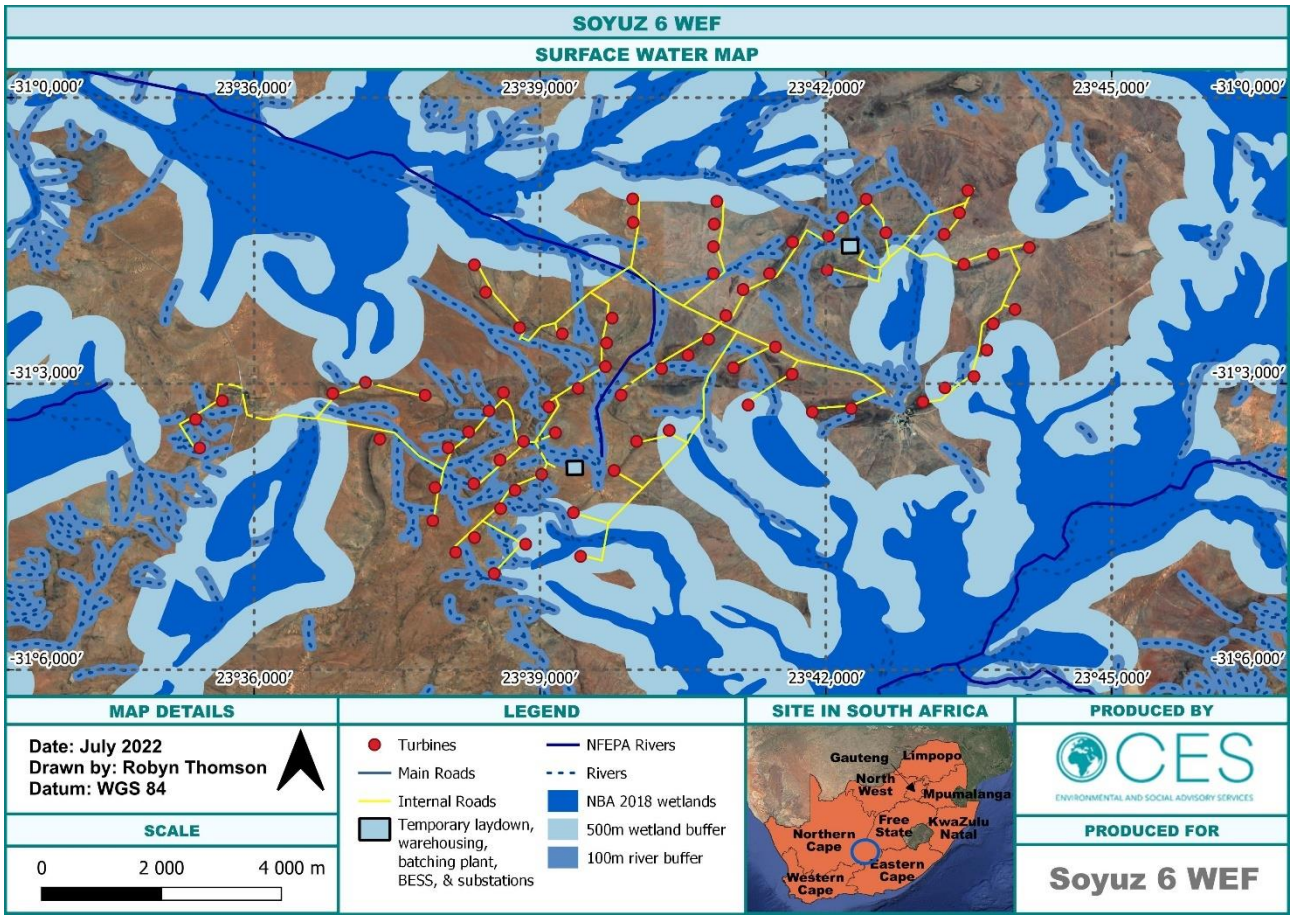


Figure 5-6: Surface Water Map of the Soyuz 6 WEF site and surrounding areas.

6 DESCRIPTION OF THE ENVIRONMENT: SOCIO-ECONOMIC

6.1 BACKGROUND INFORMATION: NORTHERN CAPE PROVINCE, UBUNTU LOCAL MUNICIPALITY, AND THE PROJECT SITE

The Northern Cape Province is the largest province in South Africa, covering approximately 372 889 m^2 and constituting about 30% of South Africa's land area. The province is also the most sparsely populated in the country, with its population constituting approximately 2.2% of South Africa's total population. It lies to the south of its most important asset, the Orange River, which provides the basis for a healthy agricultural industry. The province shares borders with four other provinces, namely the Free State, Northwest, Eastern Cape and Western Cape. It also shares borders with Namibia and Botswana to the north. The Atlantic Ocean forms the western boundary. The climate in the province is typically very warm in summer in most areas and very cold in winter. Unemployment has increased significantly between 1996 and 2011 (StatsSA, 2011 Provincial Profile – Northern Cape).

The key contributors to economic growth in the province are mining, construction, finance, utilities (including a growing renewable energy sector) and agriculture. The province contributes the least to the National GDP of all provinces (http://www.northern-cape.gov.za/).

The province is divided into five districts, namely Namakwa, Pixley ka Seme, Siyanda, Frances Baard, and John Taolo Gaetsewe. Ubuntu LM, the local municipality within which the project site falls, is one of eight local municipalities in Pixley ka Seme District, and comprises the towns of Britstown, De Aar and Hanover, with the administrative seat being in De Aar.

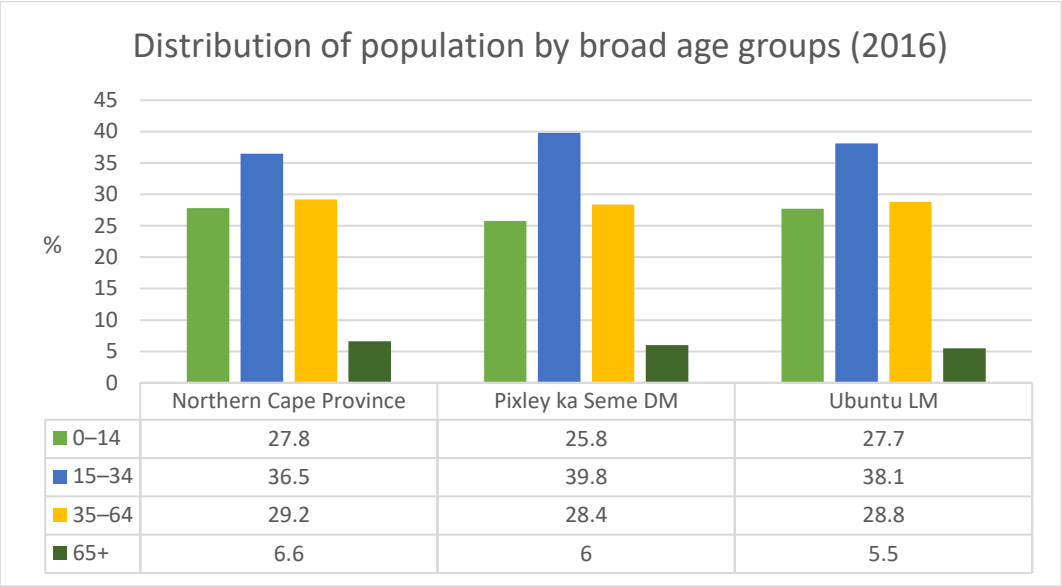
Ubuntu LM, the local municipality within which the project site falls, is one of eight local municipalities in Pixley ka Seme District. Ubuntu LM comprises Loxton, Richmond, Victoria West, Hex River, Three Sisters, and a number of smaller towns, with the administrative seat being in Victoria West. Ubuntu Local Municipality's 2022/2023 Draft IDP states that livestock and game are the main farming activities in the area. Livestock farming mainly consists of sheep, goat and cattle, and the main agricultural products are wool for the export market and meat for the local market. Biltong and hunting are the main products of game farming. Game largely consists of springbok, blesbok, gemsbok, reedbuck, blue wildebeest and black wildebeest. Other economic sectors include manufacturing, electricity generation, construction, wholesale trade, transport, communication, finance, commerce and personal services.

The project site is located south of Britstown and consist of various farms located outside the urban areas of the municipality. From aerial imagery it is not clear whether any homesteads will be affected by the proposed WEF; this will be determined during the field work in the EIA phase.

6.2 DEMOGRAPHICS

6.2.1 STRUCTURE OF THE POPULATION BY BROAD AGE GROUPS

The age profiles for Ubuntu LM is similar to that of Pixley ka Seme District and the Northern Cape Province, with the majority of residents falling in the age group 15–34 years, followed by 35–64 and 0–14 years. The smallest number of residents fall in the age group 65+ years.

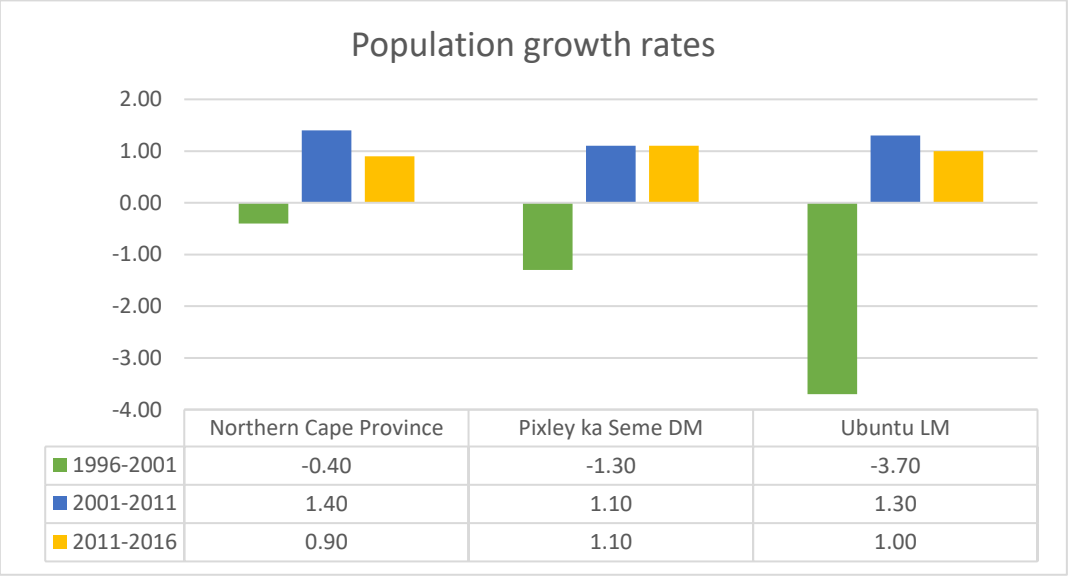


	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
0–14	27.8	25.8	27.7
15–34	36.5	39.8	38.1
35–64	29.2	28.4	28.8
65+	6.6	6	5.5

Figure 6-1: Population broad age groups.

6.2.2 POPULATION GROWTH RATES

The Northern Cape Province, Pixley ka Seme District and Ubuntu LM all had negative growth rates between the period 1996–2001. This changed after 2001, with positive growth rates being recorded for the province, district and local municipality for the periods 2001–2011 and 2011–2016.



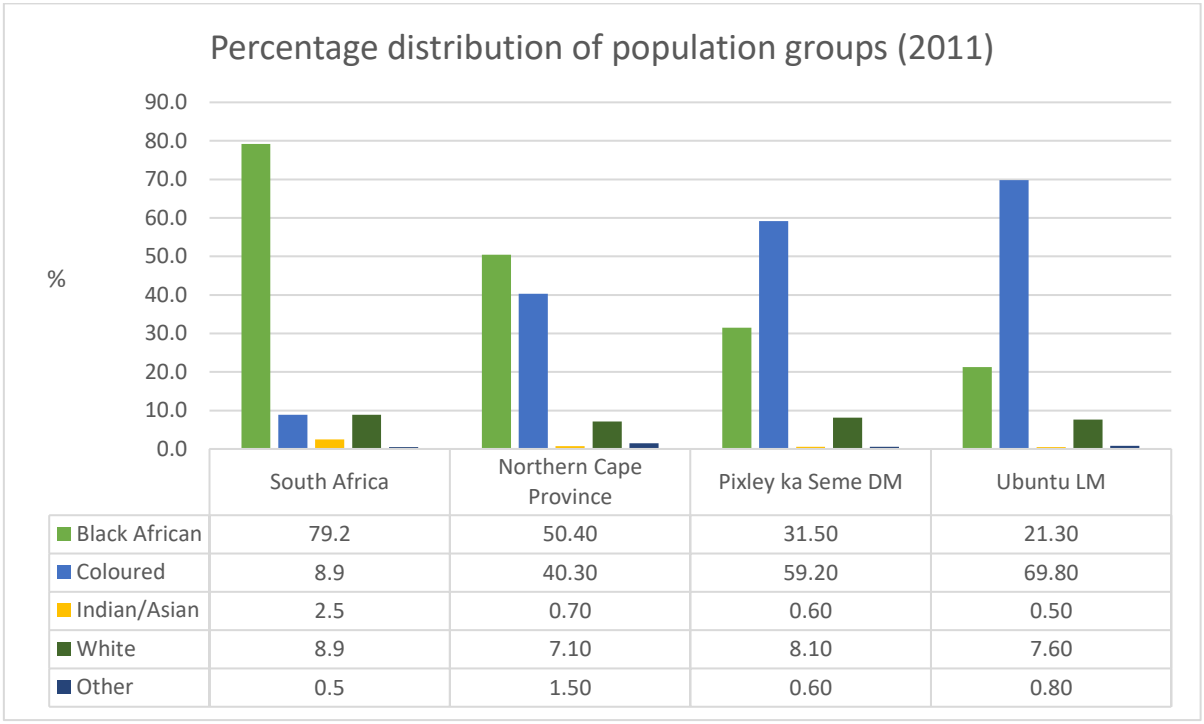
	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
1996-2001	-0.40	-1.30	-3.70
2001-2011	1.40	1.10	1.30
2011-2016	0.90	1.10	1.00

Figure 6-2: Population growth rates.

According to the StatsSA 2016 Community Survey, the Northern Cape also has the smallest percentage of residents who were born outside South Africa, namely 1.1%, compared to 50.8% in Gauteng and 12.2% (the second highest percentage in the country) in the Western Cape. Of the residents of Pixley ka Seme DM who were born outside South Africa, 50.5% were born in one of the SADC countries, 10.5% were born elsewhere in Africa, 6.3% were born in Europe, 31.5% were born in Asia, 1.3% were born in North America, and none were born in the remaining continents.

6.2.3 POPULATION GROUPS

The population distribution for the district and local municipality differs from that of the country and the province—in South Africa and the Northern Cape Province, the dominant population group is Black African, whereas in Pixley ka Seme DM and Ubuntu LM it is Coloured. The proportion Coloured residents in the province, however, does not reflect that of the country as a whole, with their distribution in the province being much higher in the province than in the country. On all levels (National, Provincial, District and Local), Whites are the third most prevalent, with the lowest number of residents on all levels being Indian/Asian.



	South Africa	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
Black African	79.2	50.40	31.50	21.30
Coloured	8.9	40.30	59.20	69.80
Indian/Asian	2.5	0.70	0.60	0.50
White	8.9	7.10	8.10	7.60
Other	0.5	1.50	0.60	0.80

Figure 6-3: Percentage distribution of population groups (2011).

6.2.4 RELIGIOUS AFFILIATION

In terms of religious affiliation, the majority of residents (96%) of the Northern Cape Province are Christian, followed by no religious affiliation/belief (2%), Traditional African Religion (1%) and Muslims (1%).

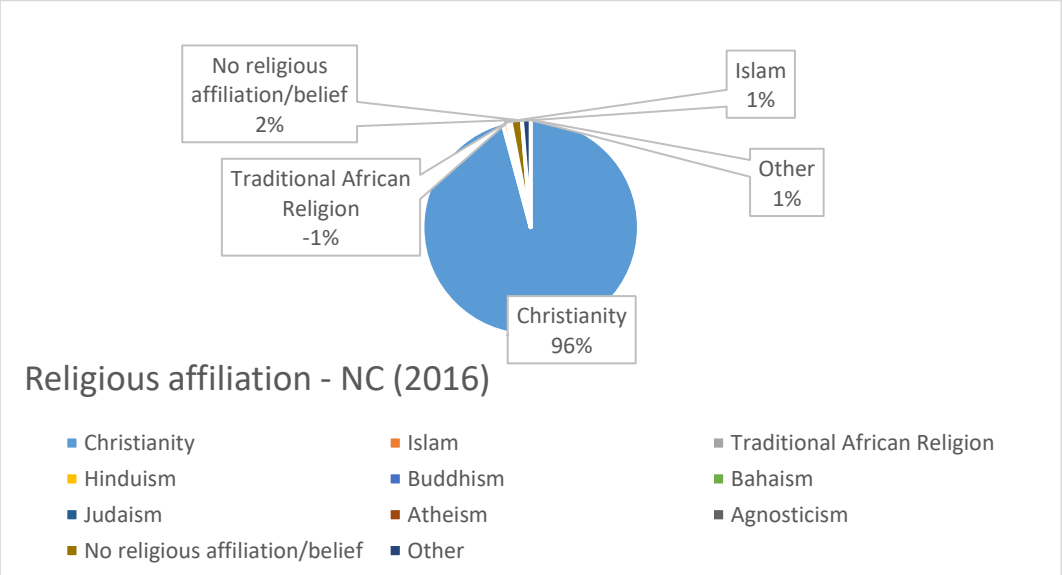


Figure 6-4: Percentage religious affiliation.

6.2.5 Occurrence of deaths in households

The occurrence of deaths in households was lower in Ubuntu LM than in the District or Province, in the 12 months preceding the Community Survey that took place in 2016. 3.4% of households in the Northern Cape had deaths in their households during the 12-month period, while 4.7% of households in the Pixley ka Seme District and 2.7% of households in Ubuntu LM had deaths in their households.

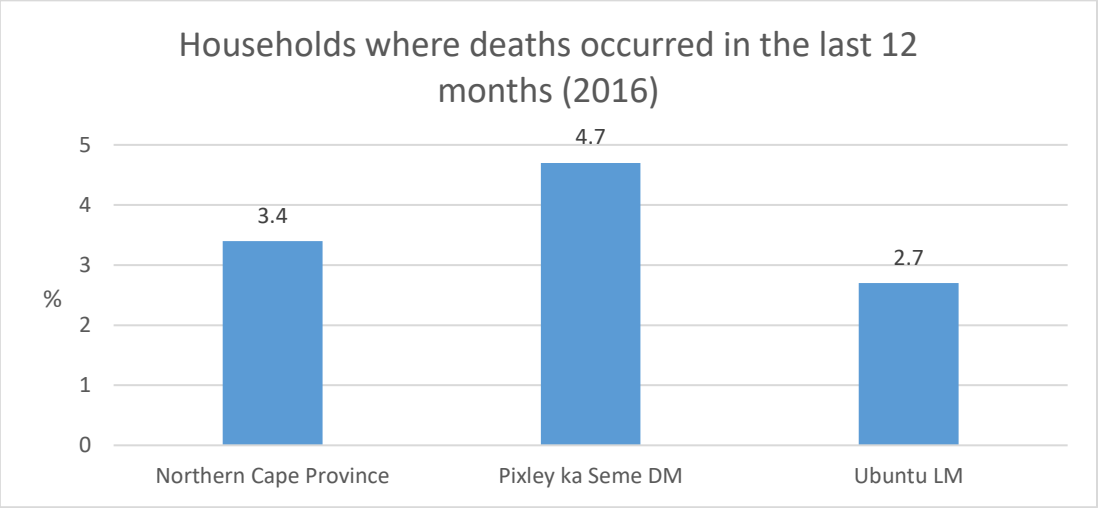
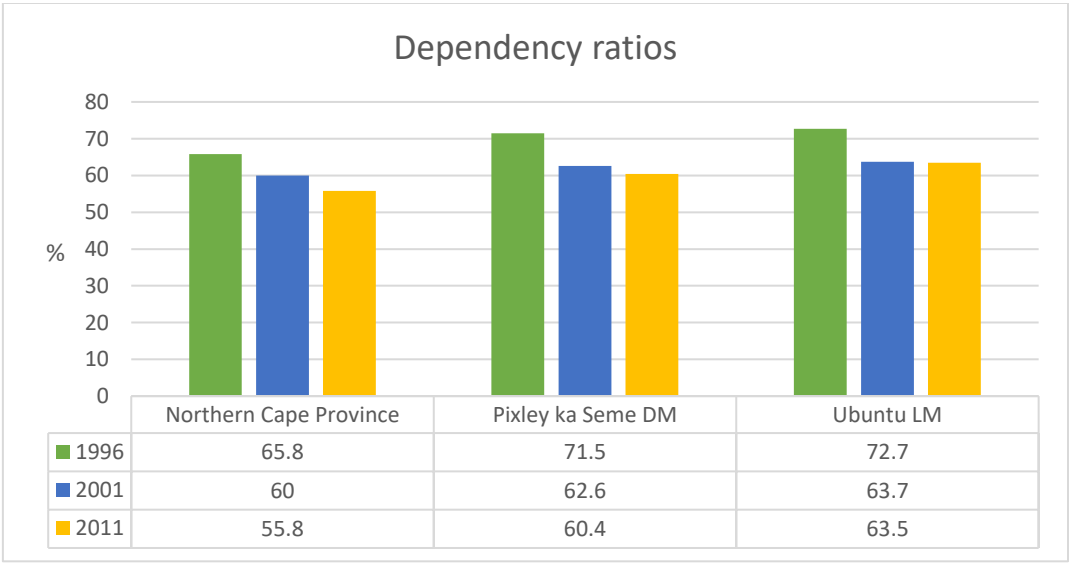


Figure 6-5: Household deaths over 12 months (2016).

6.2.6 Dependency ratios

Dependency ratios indicate to what extent the working age group (15–64 years) of a population has to support those aged 0–14 years and 65+ years. Ubuntu LM's dependency ratio decreased by only 0.2% between 2001 and 2011.



	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
1996	65.8	71.5	72.7
2001	60	62.6	63.7
2011	55.8	60.4	63.5

Figure 6-6: Dependency ratios.

6.2.7 Education

The highest percentage of residents older than 20 years residing in Ubuntu LM has completed some secondary education, followed by those who completed some primary, Grade 12/Std 10, some primary, no

schooling, completed primary, and higher. This is also similar to levels for the district and province, except that a larger percentage of residents in the province completed some primary education than those completing Grade 12/Std 10. There are only slight differences for highest level of education completed between males and females.

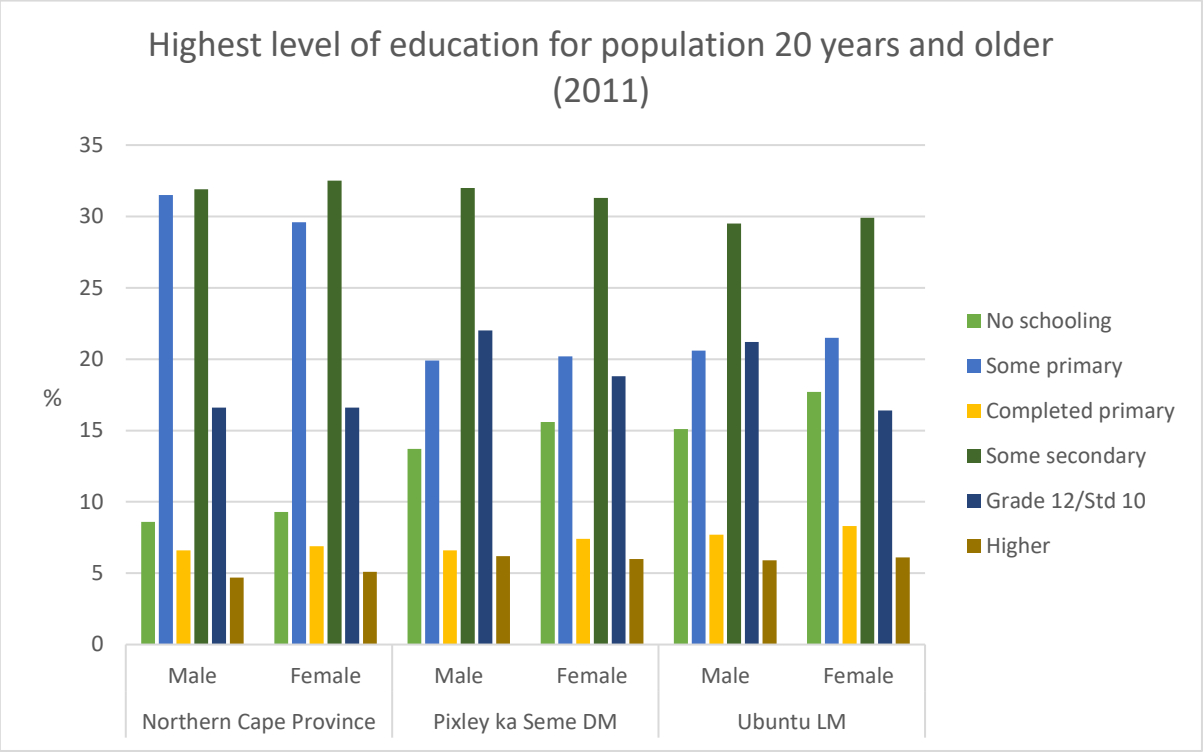
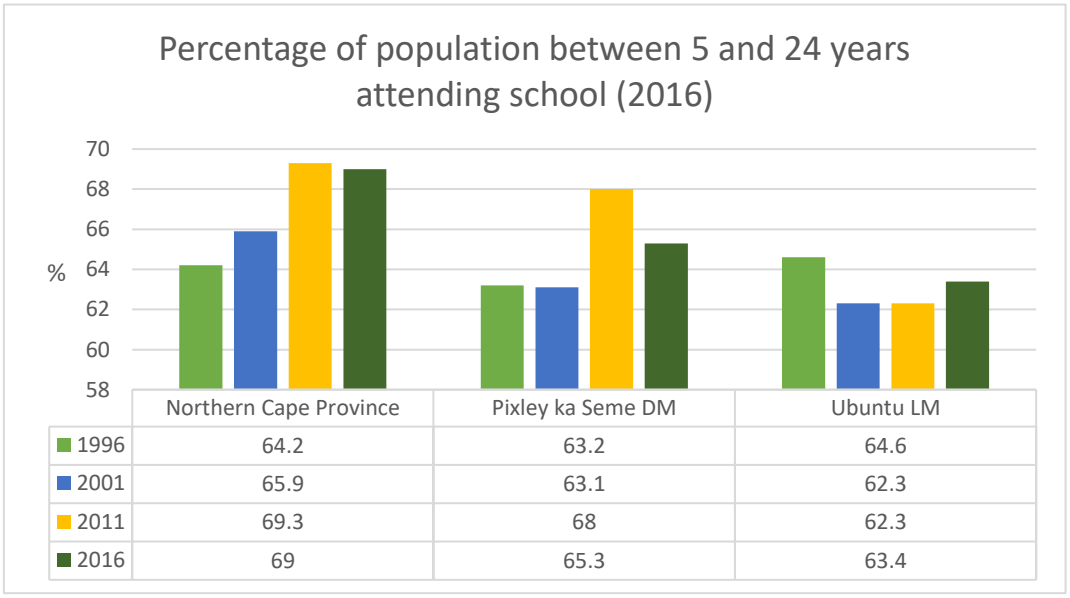


Figure 6-7: Highest level of education for population 20 years and older (2011).

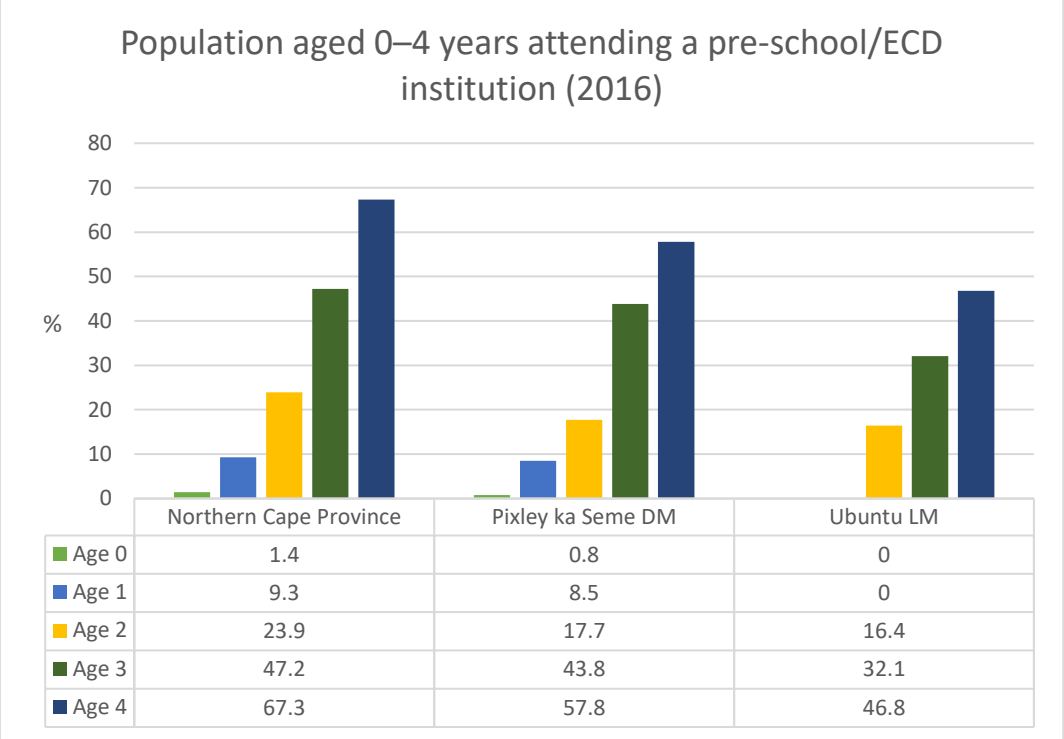
The percentage of the population between the ages of 5 and 24 years attending school has decreased between 2011 and 2016 in the province and district, after having shown an increase in the period 2001–2011. In Ubuntu LM, however, the percentages for 2001 and 2011 were the same, and there was a slight increase in school attendance in 2016.



	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
1996	64.2	63.2	64.6
2001	65.9	63.1	62.3
2011	69.3	68	62.3
2016	69	65.3	63.4

Figure 6-8: Percentage of population between 5 and 24 years attending school (2016).

Attendance of pre-school or Early Childhood Development (ECD) institutions increased with age in the province, district and local municipality, with almost half (46.8%) of children aged 4 attending in Ubuntu LM. Zero percent of children aged 0 and 1 attended pre-school or an ECD institution in Ubuntu LM.



	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
Age 0	1.4	0.8	0
Age 1	9.3	8.5	0
Age 2	23.9	17.7	16.4
Age 3	47.2	43.8	32.1
Age 4	67.3	57.8	46.8

Figure 6-9: Population aged 0–4 years attending a pre-school/ECD institution (2016).

6.2.8 LABOUR MARKET, INCOME, AND ABILITY TO BUY FOOD

The unemployment rate decreased in the province, district and local municipality between 2001 and 2011. However, these figures are dated and realistically speaking likely much higher, with a significant increase between 2011 and 2022 expected. The employment figures contained in the Ubuntu Local Municipality 2022/2023 Draft IDP are unfortunately also from the 2011 census. Figures in the province and municipality will likely follow the same trajectory as national figures, which increased significantly from around 24% in 2011 to 35.3% in the fourth quarter of 2021. The increase in the unemployment rate from 2020 to 2021 was steeper than between 2011 and 2020, likely due to the impact of Covid-19 and accompanying lockdowns which resulted in businesses closing and employees losing their jobs.

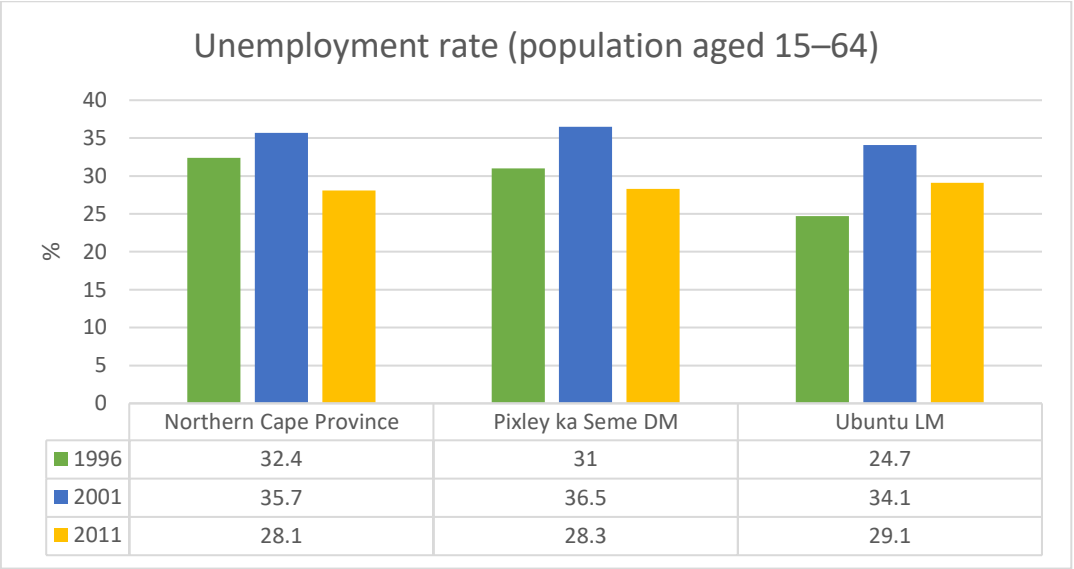


Figure 6-10: Unemployment rate (population aged 15–64).

The average yearly household income in Ubuntu LM was R71 986.00 (translating to R5 999.00 per month per household) in 2011—slightly lower than the district average and significantly lower than the provincial average, which was R86 158.00.

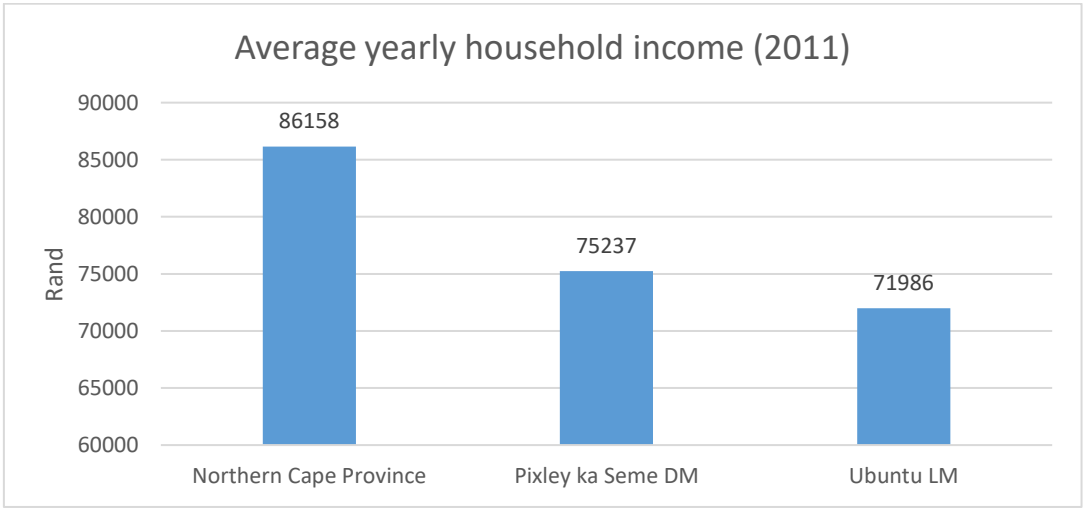


Figure 6-11: Average yearly household income (2011).

More than a third (33.7%) of households in Ubuntu LM ran out of money to buy food at some point during the 12 months preceding the Community Survey conducted by StatsSA in 2016. Ubuntu LM's figure is substantially higher than the provincial and district figures, that were 27.6% and 28.7% respectively.

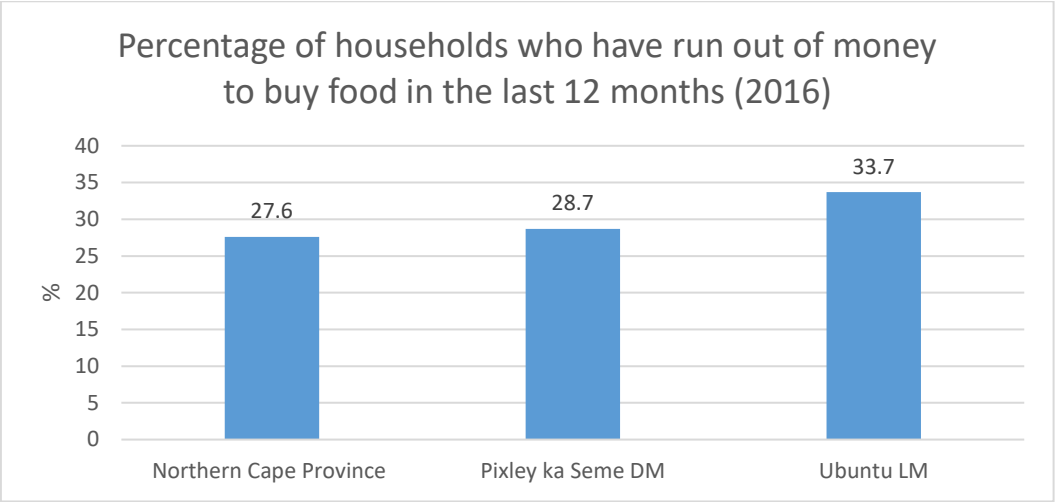


Figure 6-12: Average yearly household income (2011).

The percentage of households in the local municipality who skipped a meal in the 12 months preceding the 2016 Community Survey because they did not have enough food for the household, were lower (15.1%) than the figures for the province (17.5%) and district (17.2%).

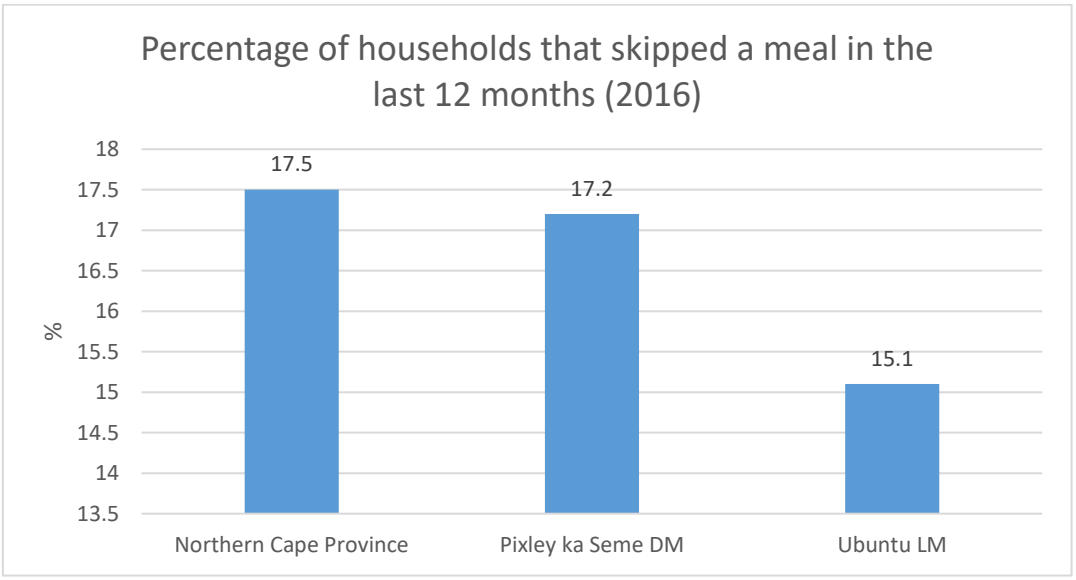
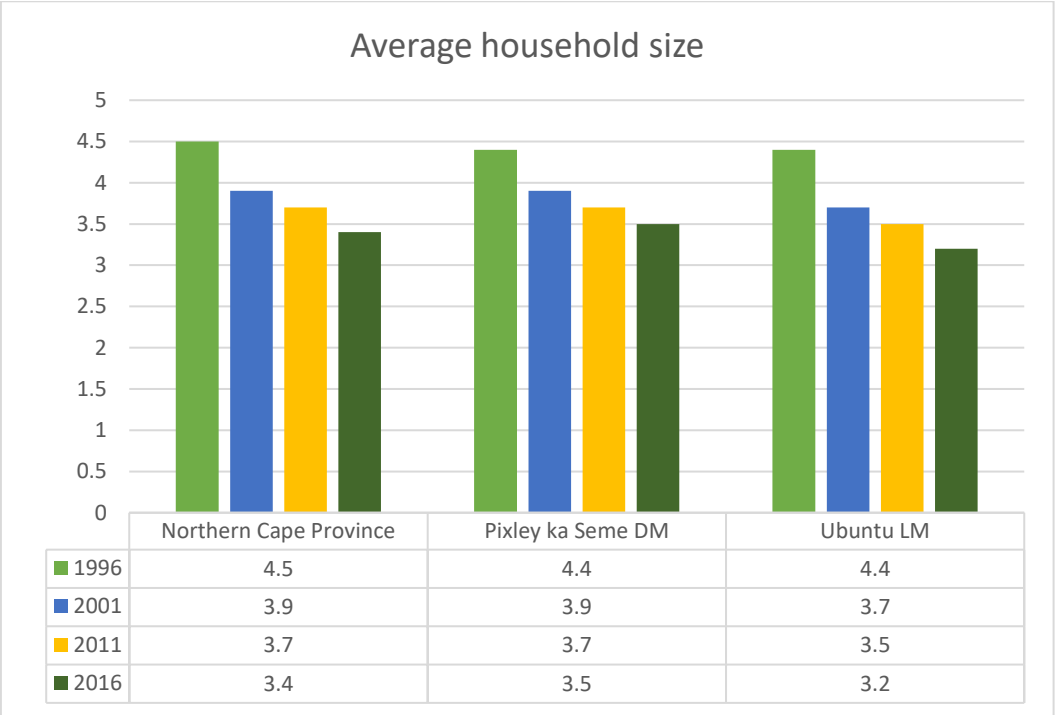


Figure 6-13: Percentage of households that skipped a meal in the last 12 months (2016).

6.2.9 HOUSING

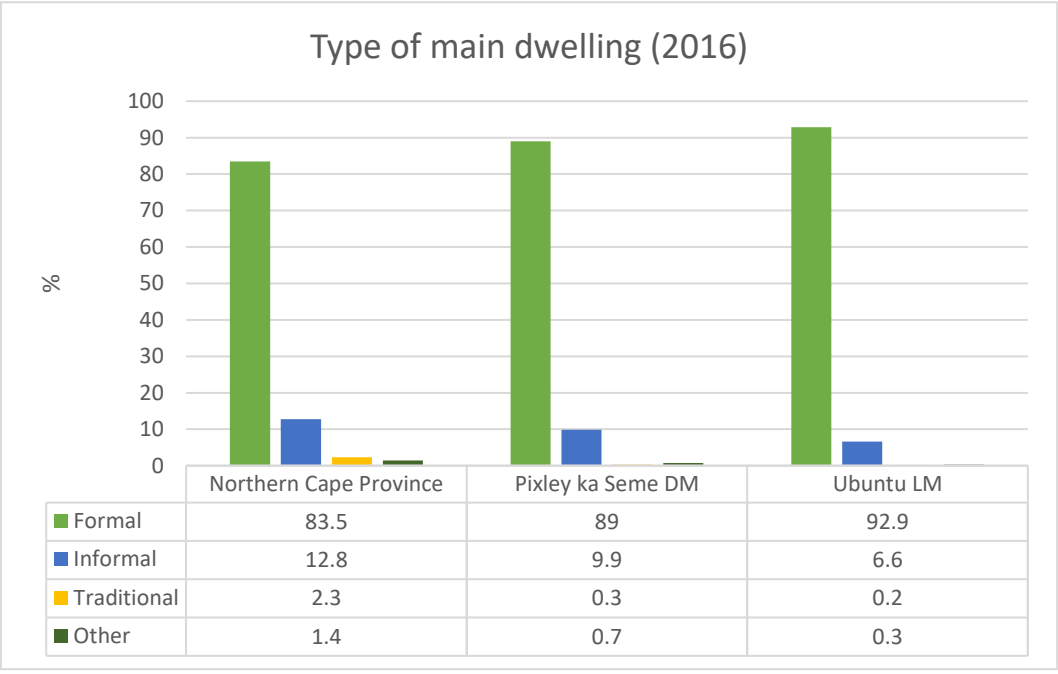
The average household size has decreased slightly across the provincial, district and local municipal levels from 1996 to 2011. The average household size in Ubuntu LM was 3.2 in 2016, whereas it was 3.4 in the province and 3.5 in the district.



	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
1996	4.5	4.4	4.4
2001	3.9	3.9	3.7
2011	3.7	3.7	3.5
2016	3.4	3.5	3.2

Figure 6-14: Average household size.

Most residents in the province, district and local municipality live in formal dwellings, with the percentage for Ubuntu LM being 92.9% in 2016, compared to 83.5% in the province and 89% in the district. The percentage of residents living in informal dwellings was highest in the province (12.8%), followed by the district (9.9%) and the local municipality (6.6%).



	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
Formal	83.5	89	92.9
Informal	12.8	9.9	6.6
Traditional	2.3	0.3	0.2
Other	1.4	0.7	0.3

Figure 6-15: Type of main dwelling (2016).

The majority of residents in the province, district and local municipality indicated that their dwellings were owned by them and fully paid off (55.6%, 53.8% and 73.9%, respectively). Figures for dwellings that were

occupied rent-free were not available for Ubuntu LM, but 20.4% and 23.6% of residents in the province and district, respectively, indicated that they were occupying their dwellings rent-free.

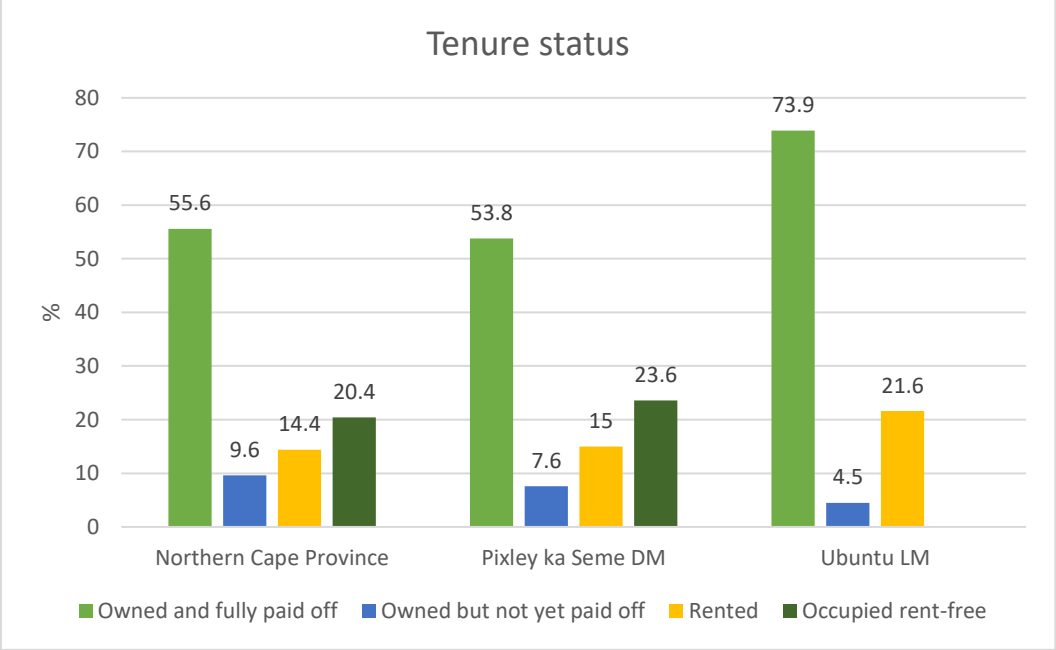


Figure 6-16: Tenure status.

According to the 2016 Community Survey, 46.7% of residents of Ubuntu LM were living in RDP houses or other government-subsidised dwellings, followed by 41.4% in the district and 30.1% in the province.

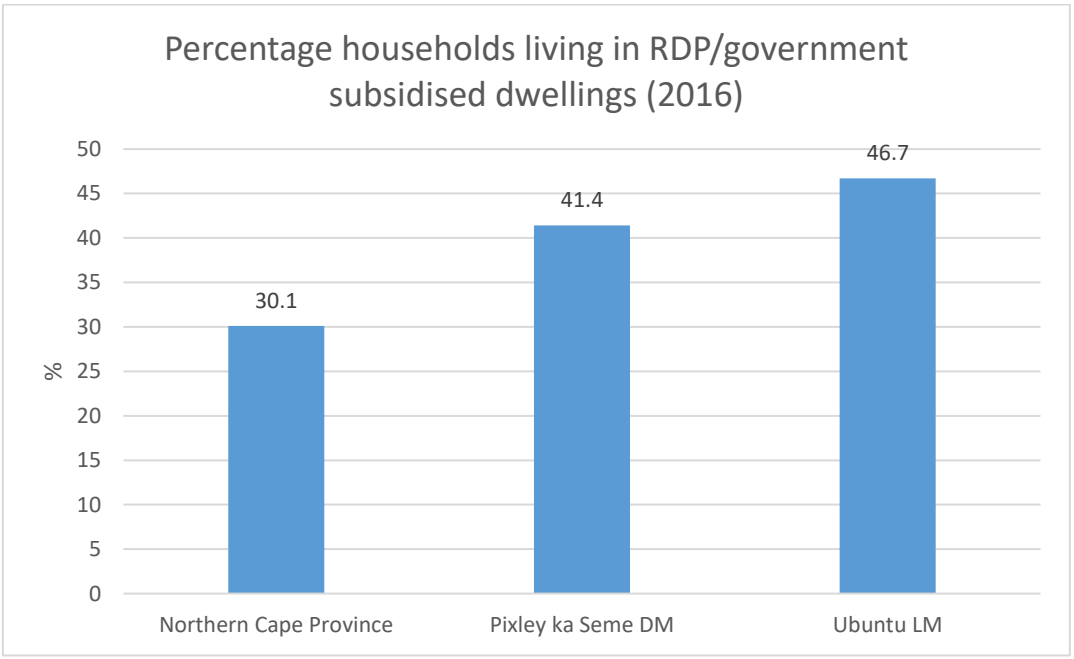


Figure 6-17: Percentage households living in RDP/government subsidised dwellings (2016).

6.2.10 Access to services

88.3% of residents of Ubuntu LM indicated in the 2016 Community Survey that they had access to safe drinking water, with 92.5% of residents of Pixley ka Seme District and 88.5% of residents of the Northern Cape indicating that they did.

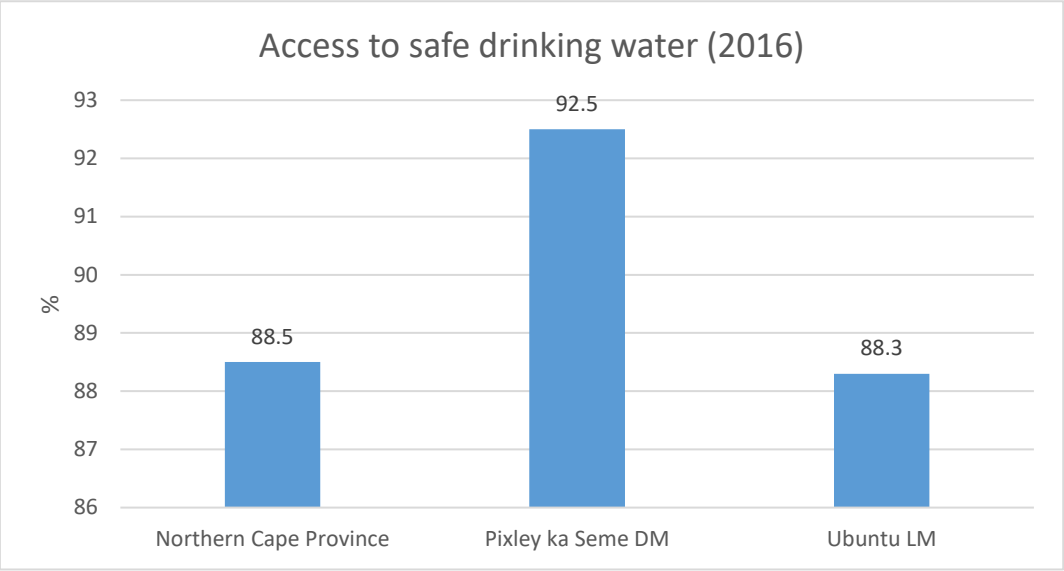


Figure 6-18: Access to safe drinking water (2016).

Almost all residents of Ubuntu LM (92.5%) indicated in 2011 that they had piped (tap) water inside their dwelling or yard. This was significantly higher than the provincial figure of 79.7% in 2011. Only 1% in Ubuntu LM indicated that they had no access to piped water.

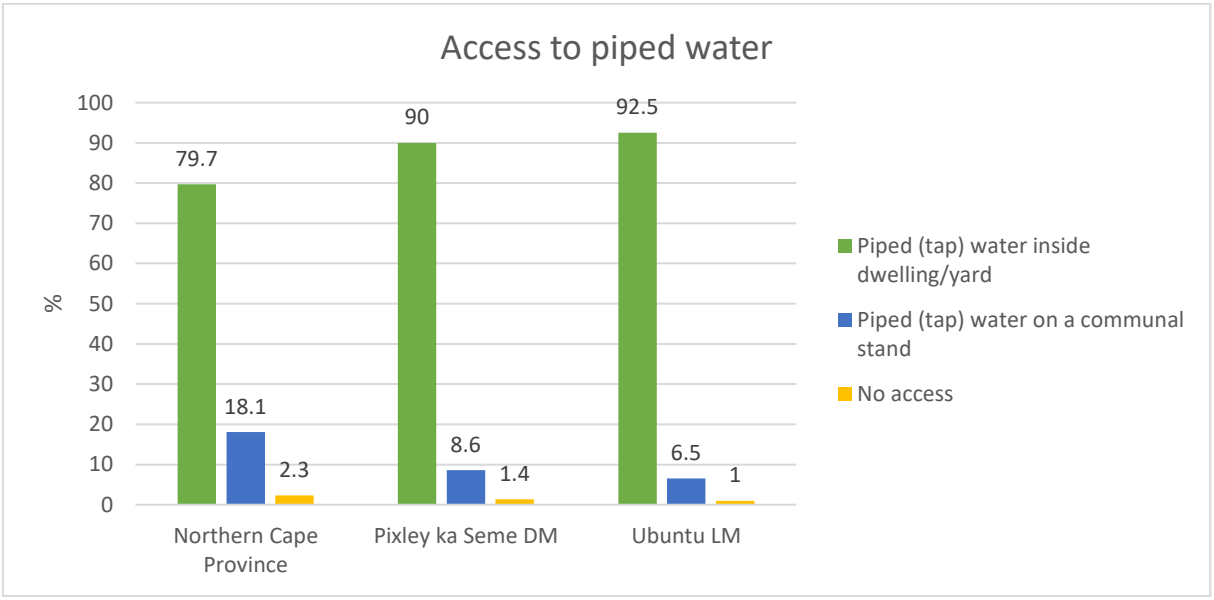


Figure 6-19: Access to piped water.

The majority of residents had access to flush/chemical toilet facilities (76.5% in Ubuntu LM and 74.3% in Pixley ka Seme District) in 2011. 5.8% used pit latrines and 8% used bucket toilets in Ubuntu LM, and 9.7% indicated that they had no access to any toilet facilities.

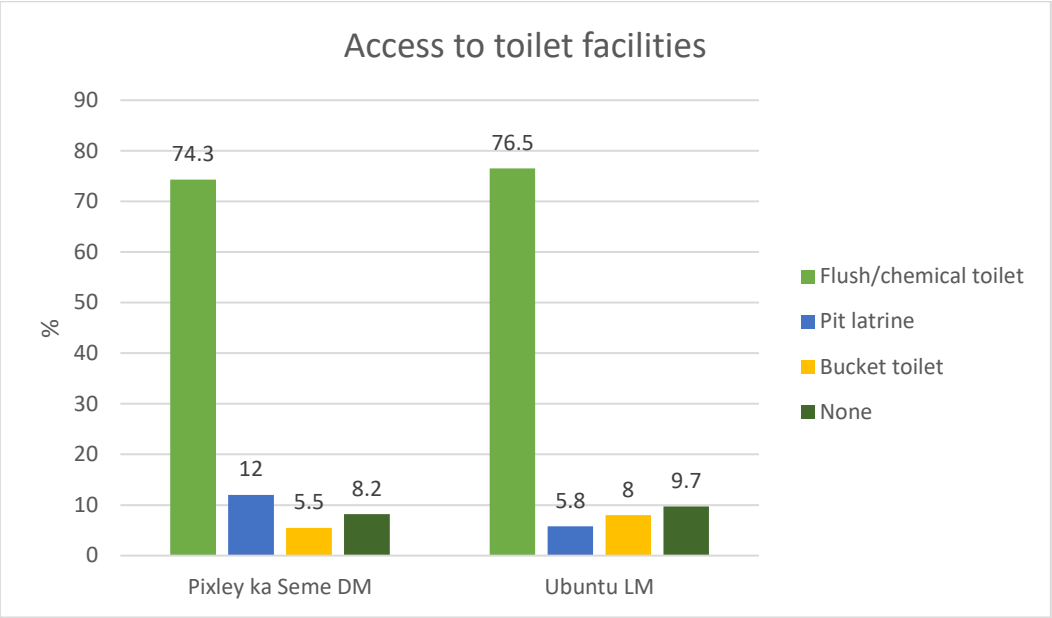


Figure 6-20: Access to toilet facilities.

The percentage of households that had no access to electricity in 2016 was lower in Pixley ka Seme DM (7.2%) than in Ubuntu LM (7.8%) and the province (8.5%).

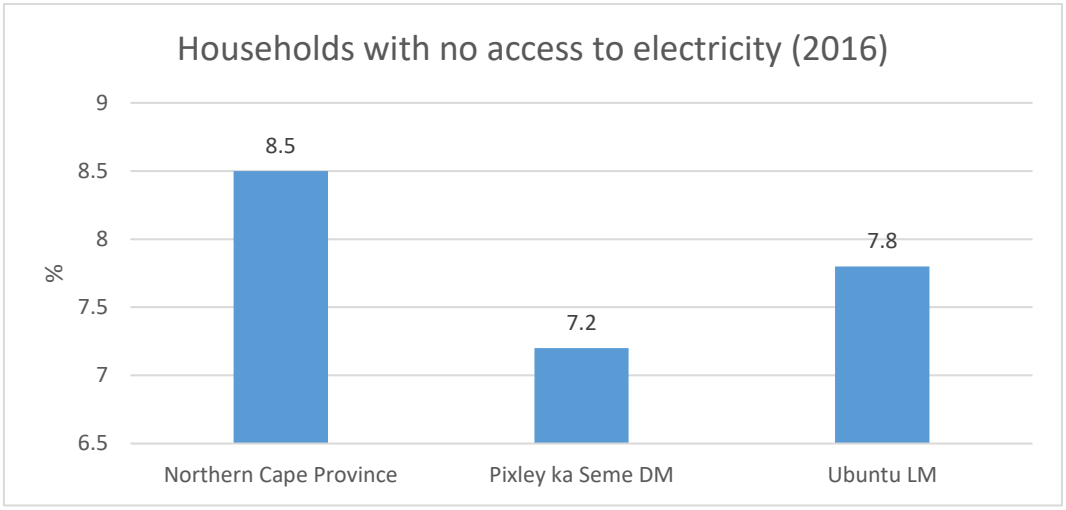
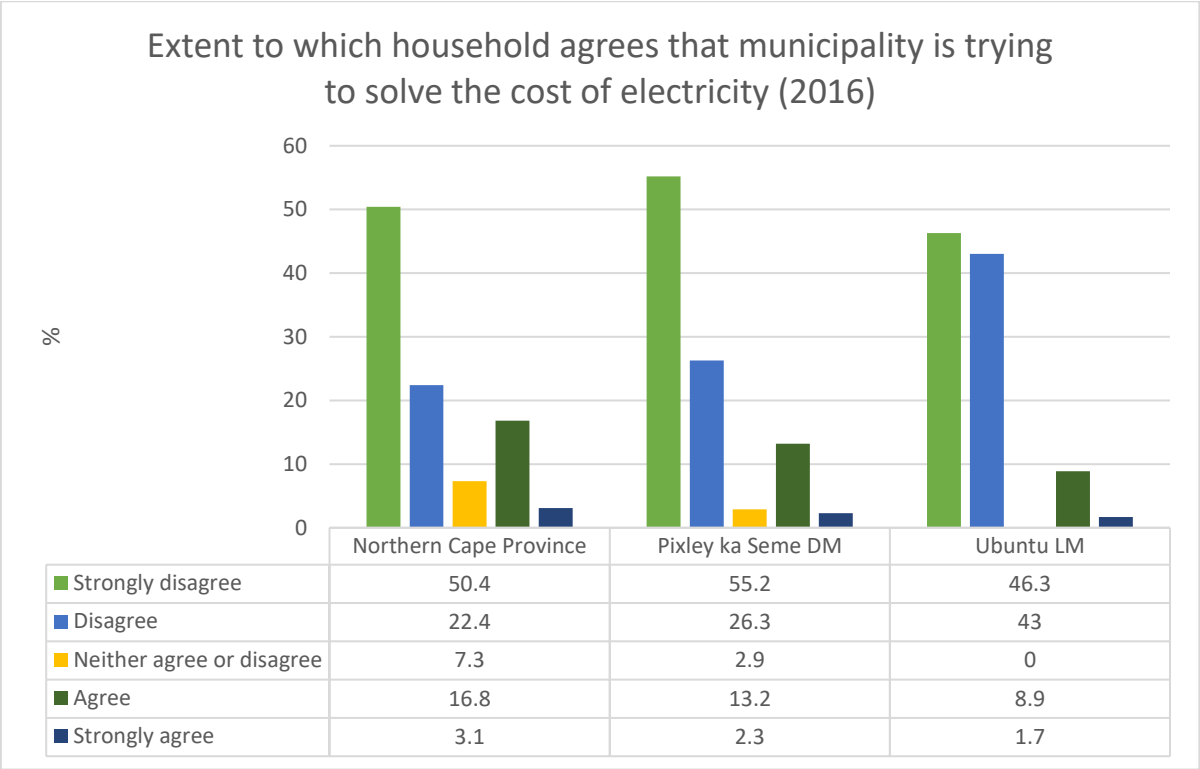


Figure 6-21: Households with no access to electricity (2016).

In terms of the extent to which households agreed that their municipalities were trying to mitigate high electricity costs, the largest percentage of residents who strongly disagreed were in the greater district (55.2%), followed by the province (50.4%) and Ubuntu LM (46.3%).



	Northern Cape Province	Pixley ka Seme DM	Ubuntu LM
Strongly disagree	50.4	55.2	46.3
Disagree	22.4	26.3	43
Neither agree or disagree	7.3	2.9	0
Agree	16.8	13.2	8.9
Strongly agree	3.1	2.3	1.7

Figure 6-22: Extent to which household agrees that municipality is trying to solve the cost of electricity (2016).

6.2.11 FEMALE-HEADED HOUSEHOLDS

The percentage of female-headed households increased from 1996 to 2011 across the province, district and local municipality. Data for 2016 was not available for the local municipality, but it showed a decrease in female-headed households from 2011 to 2016 in both the province and the district.

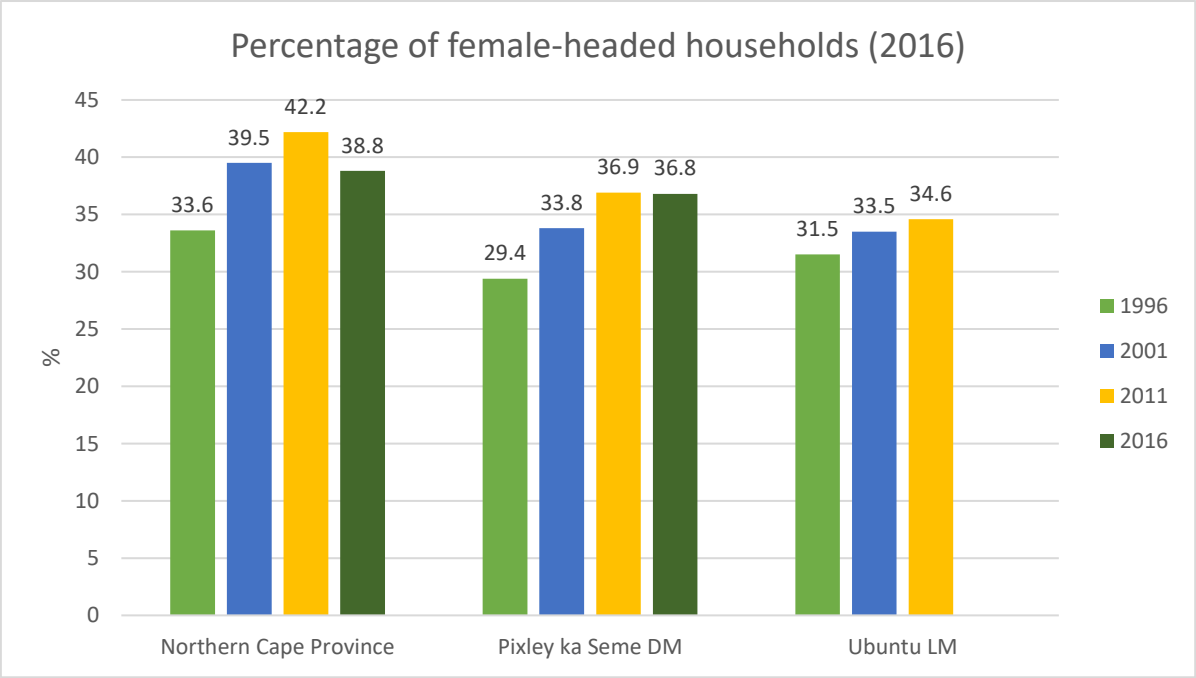


Figure 6-23: Percentage of female-headed households (2016)

6.2.12 CHILD-HEADED HOUSEHOLDS

The percentage of child-headed households decreased in the province, district and Ubuntu LM from 1996 to 2011.

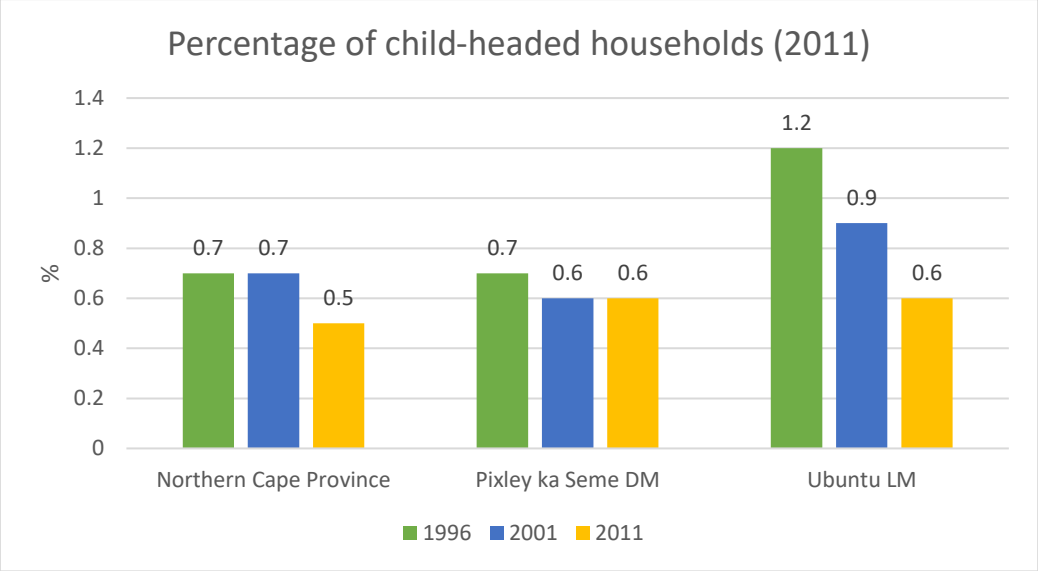


Figure 6-24: Percentage of child-headed households (2011).

6.2.13 CRIME AND PERCEPTIONS OF SAFETY

The same percentage of households (6.8%) experienced crime in the 12 months preceding the 2016 Community Survey in Ubuntu LM and the province as a whole. The percentage for the district was slightly lower at 5.2%.

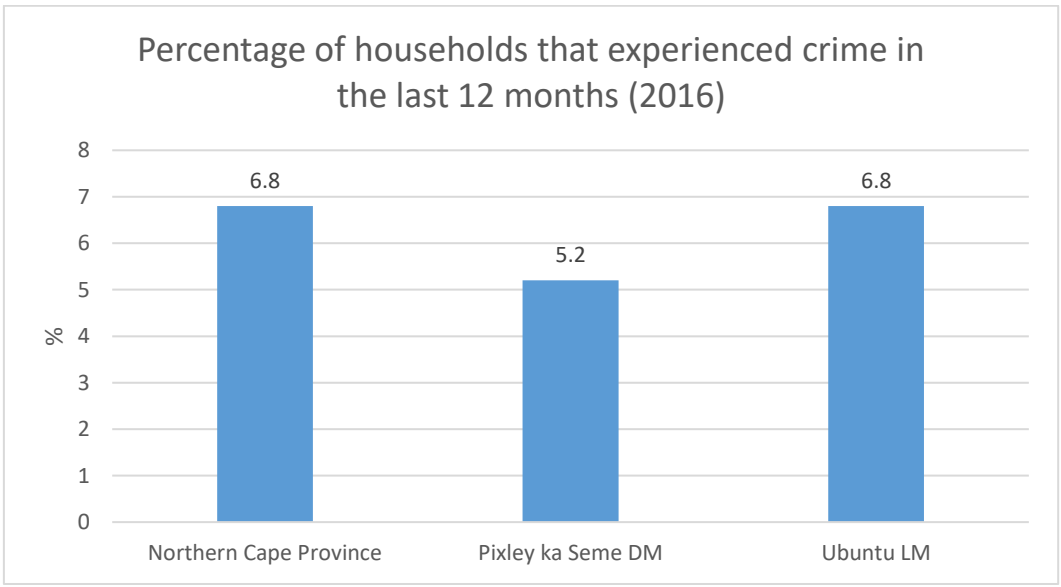


Figure 6-25: Percentage of households that experienced crime in the last 12 months (2016).

In the province, 12.9% of residents indicated that they felt unsafe when walking alone during the day, compared to 6.8% in Ubuntu LM. These percentages increased significantly when respondents were asked if they felt unsafe when walking alone during the night, with more than half (52.2%) of residents in the province and 40.1% of residents in Ubuntu LM indicating they felt unsafe walking alone during the night.

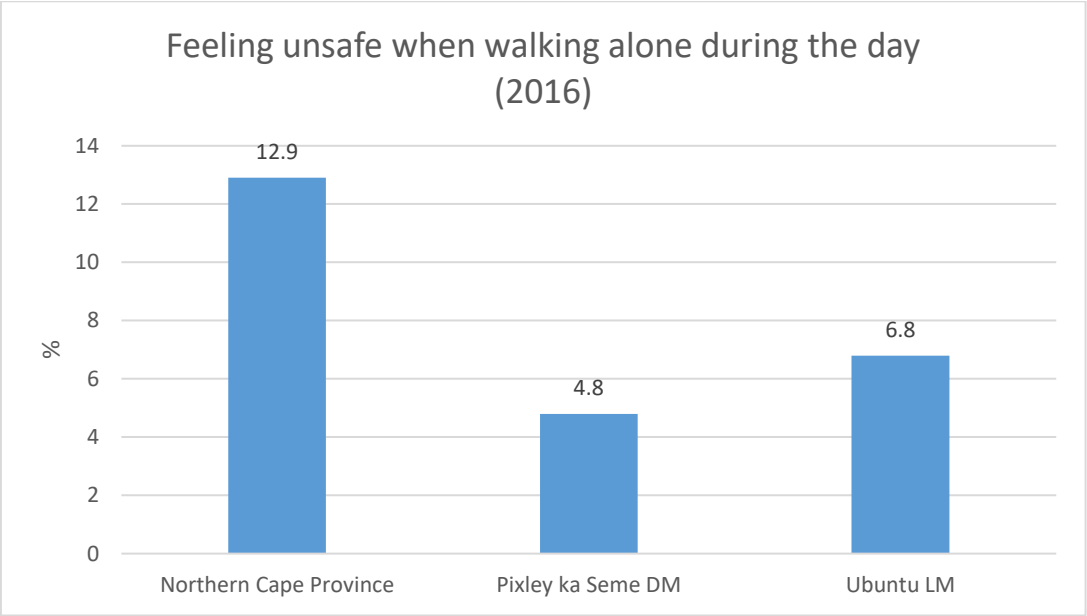


Figure 6-26: Percentage of households that experienced crime in the last 12 months (2016).

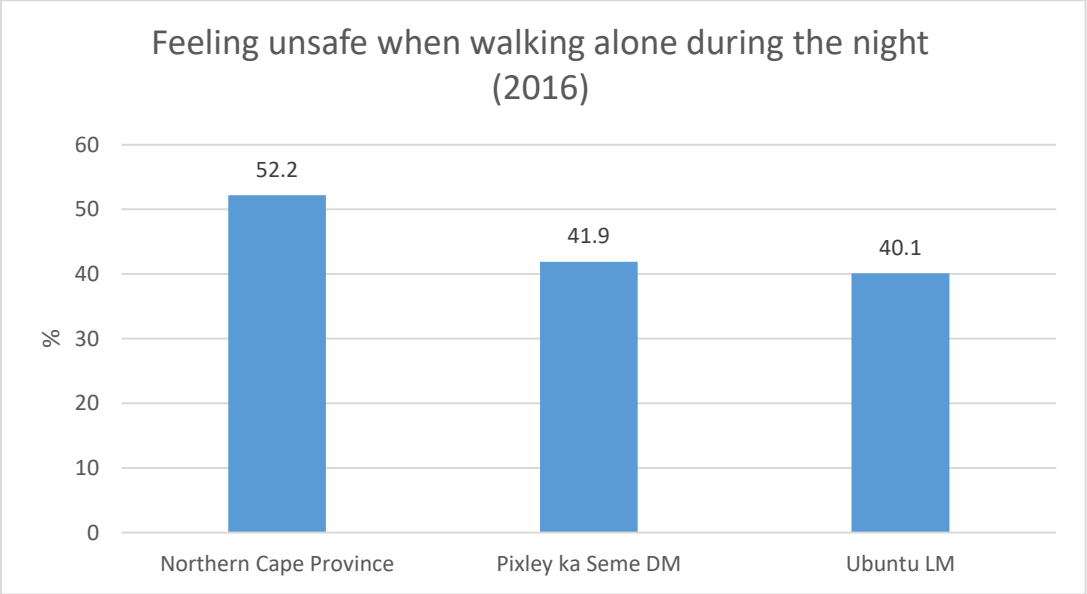


Figure 6-27: Feeling unsafe when walking alone during the night (2016)

7 SITE SENSITIVITY VERIFICATION

The Site Sensitivity Verification Report (this chapter) has been prepared in order to comply with the requirements as stipulated in GNR 648 (2019), which outlines the procedures to be followed for the assessment and minimum criteria for reporting of identified environmental themes in terms of section 24(5)(a) and (h) of NEMA when applying for environmental authorisation.

The initial site sensitivity verification must be undertaken by an environmental assessment practitioner or registered specialist with expertise in the relevant environmental theme being considered.

Site sensitivity was verified via a desk top analysis, including the use of satellite imagery as well as an on-site inspection. The objective of the on-site inspection is to ascertain whether the land use and environmental status quo versus the environmental sensitivity as identified on the national web based environmental screening tool are aligned or not. The current section is presented in line with the requirements of the Site Sensitivity Verification Requirements Where Specialist Assessment is Required but No Specific Protocol Has Been Prescribed (GN 320, March 2020).

7.1 DFFE SCREENING TOOL ASSESSMENT

According to the Department of Forestry, Fisheries, and the Environment (DFFE) Screening Tool Report, the specialist studies listed in the table below are required for the Environmental Impact Assessment (EIA) for the proposed Soyuz 6 WEF. The classification theme is as follows:

Utilities Infrastructure | Electricity | Generation | Renewable | Wind

Table 7-1 DFFE online screening tool recommended specialist assessments.

	Screening Tool Recommended Specialist Assessment	Screening Tool Themes	Sensitivity Classification of Theme	Specialist Input Obtained Y/N	Motivation
1.	Agricultural Impact Assessment	Relative Agriculture Theme	Very High	Y	An Agricultural Specialist has been appointed to undertake a full Agricultural Impact Assessment (AIA) for the Soyuz 6 WEF. Prior to undertaking the AIA, the specialist performed a scoping assessment to verify and identify agricultural sensitivities and preliminary impacts of the WEF on the site. The specialist verified that a full AIA needs to be undertaken as part of the Soyuz 6 WEF EIA. The Scoping Agricultural Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF.
2.	Landscape/Visual Impact Assessment	Relative Landscape (Wind) Theme	Very High	Y	A Visual Specialist has been appointed to undertake a full Visual Impact Assessment (VIA) for the Soyuz 6 WEF. Prior to undertaking the VIA, the specialist performed a scoping assessment to verify and identify visual sensitivities and preliminary impacts of the WEF on the site. The specialist verified that a full VIA needs to be undertaken as part of the Soyuz 6 WEF EIA. The Scoping Visual Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF.

	Screening Tool Recommended Specialist Assessment	Screening Tool Themes	Sensitivity Classification of Theme	Specialist Input Obtained Y/N	Motivation
		Relative Flicker Theme	Very High	Y	The relative flicker theme and preliminary potential flicker impacts from the WEF are included in the Visual Scoping Assessment.
3.	Archaeological and Cultural Heritage Impact Assessment	Relative Archaeological and Cultural Heritage Theme	Low	Y	Although the sensitivity classification is low for this theme, a Heritage Specialist has been appointed to undertake a full Heritage Impact Assessment (HIA) for the larger site area, for the Soyuz 6 WEF. Prior to undertaking the HIA, the specialist performed a scoping assessment to verify and identify heritage sensitivities and preliminary impacts of the WEF on the site. The specialist verified that a full HIA needs to be undertaken as part of the Soyuz 6 WEF EIA. The Scoping Visual Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the associated WEF.
4.	Palaeontology Impact Assessment	Relative Palaeontology Theme	Very High	Y	A Palaeontological Specialist has been appointed to undertake a full Palaeontological Impact Assessment (PIA) for the larger site area, for the Soyuz 6 WEF. Prior to undertaking the PIA, the specialist performed a scoping assessment to verify and identify palaeontological sensitivities and preliminary impacts of the WEF on the site. The specialist verified that a full PIA needs to be undertaken as part of the Soyuz 6 WEF EIA. The Scoping Palaeontological Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF.
5.	Terrestrial Biodiversity Impact Assessment	Relative Terrestrial Biodiversity Theme	Very High	Y	Faunal and Botanical Specialists have been appointed to undertake the faunal and botanical components of the Terrestrial Biodiversity Impact Assessment for the larger site area, for the Soyuz 6 WEF. Prior to undertaking the Terrestrial Biodiversity Impact Assessment, the specialists performed scoping assessments to verify and identify faunal and botanical sensitivities and preliminary impacts of the WEF on the site. The Terrestrial Biodiversity Scoping Assessment reports have been submitted as two separate reports, namely a Botanical Scoping Assessment and a Faunal Scoping Assessment. The specialists verified that a full Terrestrial Biodiversity Impact Assessment needs to be undertaken as part of the Soyuz 6 WEF EIA. The Terrestrial Biodiversity Impact Assessment will be submitted as two separate reports, namely a Botanical Impact Assessment and a Faunal Impact Assessment. The Scoping Terrestrial Biodiversity Assessment reports for the Soyuz 6 WEF

	Screening Tool Recommended Specialist Assessment	Screening Tool Themes	Sensitivity Classification of Theme	Specialist Input Obtained Y/N	Motivation
					should be read in conjunction with the Scoping Report for the WEF.
6.	Aquatic Biodiversity Impact Assessment	Relative Aquatic Biodiversity Theme	Very High	Y	An Aquatic (River and Westland Ecosystem) Specialist has been appointed to undertake a full Aquatic Impact Assessment for the larger site area for the Soyuz 6 WEF. Prior to undertaking the Aquatic Impact Assessment, the specialist performed a scoping assessment to verify and identify aquatic sensitivities and preliminary impacts of the WEF on the site. The specialist verified that a full Aquatic Impact Assessment needs to be undertaken as part of the Soyuz 6 WEF EIA. The Scoping Aquatic Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF.
8.	Socio-Economic Assessment		N/A	Y	A Social Specialist has been appointed to undertake a Socio-Economic Impact Assessment (SIA) for the larger site area for the Soyuz 6 WEF. Prior to undertaking the SIA, the specialist performed a scoping assessment to identify social sensitivities and preliminary impacts of the WEF. A full Socio-Economic Impact Assessment will be undertaken as part of the Soyuz 6 WEF EIA. The Scoping Socio-Economic Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF. The public participation process (PPP) will be undertaken in accordance with the NEMA EIA Regulations where potential concerns relating to the Socio-Economic impact of the proposed WEF can be raised by the registered Stakeholders and I&APs.
9.	Plant Species Assessment	Relative Plant Species Theme	Medium	Y	The assessment of the Plant Species forms part of the Terrestrial Biodiversity Impact Assessment, which was undertaken by a suitably qualified botanist. The Scoping Botanical Assessment report for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF.
10.	Animal Species Assessment	Relative Animal Species Theme	Medium	Y	The assessment of the Animal Species forms part of the Terrestrial Biodiversity Impact Assessment, which was undertaken by a suitably qualified faunal specialist. The Scoping Faunal Assessment report for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF.
11.		Relative Civil Aviation Theme	Medium	N	The Civil Aviation Authority will be registered as a stakeholder and provided with an opportunity to participate in the PPP for the WEF.

	Screening Tool Recommended Specialist Assessment	Screening Tool Themes	Sensitivity Classification of Theme	Specialist Input Obtained Y/N	Motivation
12.		Relative Defence Theme	Low	N	The defence theme for Soyuz 6 WEF is classified as having low sensitivity. SANDF will be registered as a stakeholder and provided with an opportunity to participate in the PPP for the WEF.
13.	Noise Impact Assessment	Relative Noise Theme	High	Y	A Noise Impact Assessment undertaken by a suitably qualified specialist, forms part of the EIA process. The potential air quality impacts will largely relate to dust and are unlikely to have a significant adverse impact. A Noise Specialist has been appointed to undertake a full Noise Impact Assessment (NIA) for the larger site area for the Soyuz 6 WEF. Prior to undertaking the NIA, the specialist performed a scoping assessment to identify noise sensitivities and preliminary impacts of the WEF. A full Noise Impact Assessment will be undertaken as part of the Soyuz 6 WEF EIA. The Scoping NIA for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF. The public participation process (PPP) will be undertaken in accordance with the NEMA EIA Regulations where potential concerns relating to the noise impact of the proposed WEF can be raised by the registered Stakeholders and I&APs.
17.	Avifaunal Impact Assessment	Relative Avian (Wind) Theme	Low	Y	An Avifaunal Specialist has been appointed to undertake the Avifaunal monitoring and Impact Assessment for the larger site area for the Soyuz 6 WEF. Prior to undertaking the Avifaunal Assessment, the specialist is undertaking a year's onsite monitoring. An avifaunal scoping assessment report has been compiled and provides **preliminary findings** of the avifaunal sensitivity of the site. The Scoping Avifaunal Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF. Avifaunal sensitivities and impacts will be finalised once all onsite monitoring and ground truthing has been completed. This report will be incorporated into the Soyuz 6 WEF EIR.
18.	Bat Impact Assessment	Relative Bat (Wind) Theme	High	Y	A Bat Specialist has been appointed to undertake the Bat monitoring and Impact Assessment for the larger site area for the Soyuz 6 WEF. Prior to undertaking the Bat Impact Assessment, the specialist is undertaking a year's onsite monitoring. A bat scoping assessment report has been compiled and provides **preliminary findings** of the bat sensitivity of the site. The Scoping

	Screening Tool Recommended Specialist Assessment	Screening Tool Themes	Sensitivity Classification of Theme	Specialist Input Obtained Y/N	Motivation
					Bat Assessment for the Soyuz 6 WEF should be read in conjunction with the Scoping Report for the WEF. Bat sensitivities and impacts will be finalised once all onsite monitoring and ground truthing has been completed. This report will be incorporated into the Soyuz 6 WEF EIR.
16.	RFI Assessment	Relative RFI (Wind) Theme	High	N	As agreed during the pre-application meeting with DFFE, SKA/SARAO will be registered as a stakeholders and will be invited to participate in the PPP. Should an RFI study be required, this can be commissioned during the EIR phase.

7.2 Sensitivity Assessments

The following specialist scoping studies have been undertaken to identify and verify the Soyuz 6 WEF site sensitivities:

- **Agricultural Impact Assessment**
- **Avifaunal Monitoring and Impact Assessment**
- **Bat Monitoring and Impact Assessment**
- **Botanical Impact Assessment**
- **Faunal Impact Assessment**
- **Freshwater Impact Assessment**
- **Heritage Impact Assessment**
- **Noise Impact Assessment**
- **Paleontological Impact Assessment**
- **Socio-economic Impact Assessment**
- **Visual Impact Assessment**

Based on the initial findings of specialist onsite and desktop studies, the sections that follow indicate the overall **preliminary** sensitivities that have been identified. The sensitivity maps were developed by identifying areas of very high, high, medium, and low sensitivity based on desktop analysis and spatial tools.

7.2.1 Agricultural Sensitivity

The site has been assigned a preliminary sensitivity rating. The assigned sensitivity rating is compared to the agricultural sensitivity as depicted in the screening tool report.

Almost the entire project site (99.7% of it), consists of land with Low agricultural sensitivity to the proposed development. The remaining 50 ha (or 0.3% of the project site) has either Medium agricultural sensitivity (33.8 ha) or Very high agricultural sensitivity (15.4 ha). The sensitivity rating was assigned using the land capability classification that indicates land with suitability for livestock farming only (Class 07 or lower) as well as the absence of crop fields, except for the small areas of crop fields. The area where crop field boundary data indicates a pivot irrigated field, has been assigned Very high sensitivity while the area where rainfed crops or pastures are cultivated, Medium sensitivity. The low grazing capacity of the area (20 to 26 ha/LSU) was also considered in the assignment of the agricultural sensitivity.

The sensitivity rating agrees only to some extent with the agricultural sensitivity rating in the screening tool report (see Figure 9). The screening tool report has assigned a larger area of land a Medium sensitivity rating intersperse with smaller areas of Low sensitivity. These areas have likely been assigned higher sensitivity as

a result of the land capability of Low-Moderate (Class 06) of these areas according to DALRRD (2016). The screening tool report has assigned High sensitivity to the three areas of crop fields.

However, the higher ratings of the agricultural sensitivity depicted in the screening tool report are considered an overestimate of the agricultural potential of the area. The larger area that includes the project site, has experienced periods of severe drought the past decade that has resulted in overgrazing and land degradation that forced farmers to reduce livestock numbers that affect the viability of their farming operations. The only area considered to have Very high sensitivity is the area indicated as a pivot irrigated field as the availability of irrigation water enable viable crop yields. The small area with rainfed crops is still at risk of crop failure during periods of drought.

During the detailed study for the EIA phase, the sensitivity rating of each facility's development area, will be refined based on the soil classification and verified land capability of the area.

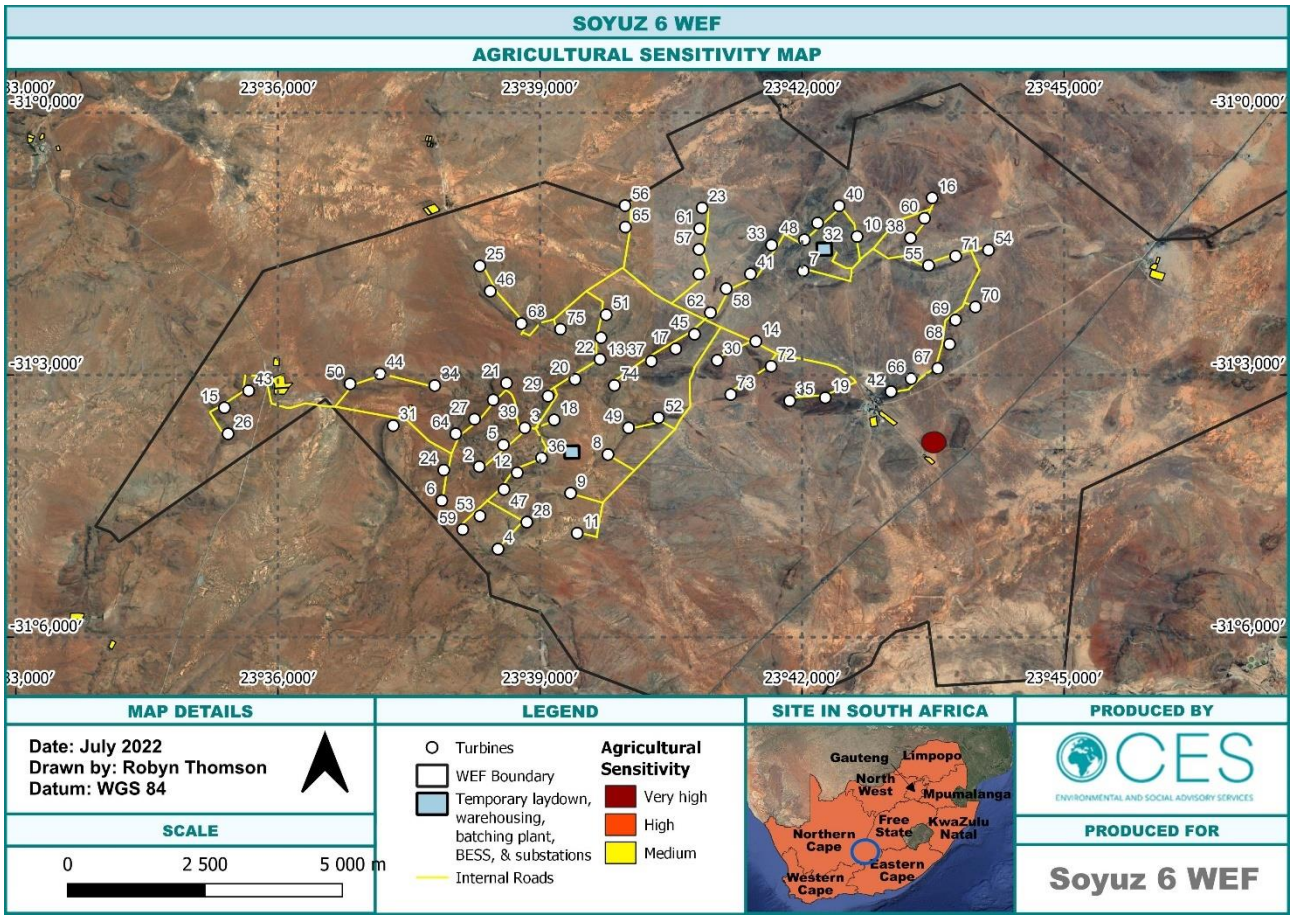


Figure 7-1: Agricultural sensitivity map.

7.2.2 AVIFAUNAL SENSITIVITY

Several impacts are already present across the proposed project area. These include road networks and areas used for various levels of livestock grazing. Stands of alien invasive Eucalyptus trees and man-made farm dams are scattered throughout but provide habitat for species attracted to these features.

Site ecological importance and additional/reduced avifaunal sensitivities may become apparent following the analysis of flight path and occurrence data from all seasons of avifaunal surveys. It is nevertheless possible to map areas of elevated avifaunal site ecological importance at this stage. The SEI has been calculated for each species through the combination of various attributes through the consideration of site-specific factors (e.g., land-use, habitat functionality etc.) in combination with the nature of the potential impacts associated with the proposed development. The highest SEI corresponding with each habitat/land-use category that represented the preferred habitats used by each species was mapped for the PAOI.

The site is generally of low to very low ecological importance for the majority of the species considered, however the site is of medium ecological importance for Ludwig's Bustard, Martial Eagle and Tawny Eagle as they are Endangered with relatively broad habitat availability across the proposed project site. Martial Eagle and Tawny Eagle are somewhat restricted in terms of available breeding locations in the karoo relying on transmission pylons and alien trees for nesting opportunities, however they do forage over a large area and mitigation measures are to be implemented. The locations of two Tawny Eagle nests were obtained, these are positioned on the Hydra-Kronos-1 400kV overhead power line beyond the northern boundary of the proposed development site.

An area with a radius of 3 km around these nests has been categorised as high sensitivity, however these buffers do not overlap with the proposed project boundary. The whole area is considered to be of elevated avifaunal sensitivity for Ludwig's Bustard with respect to overhead power lines and mitigation measures are to be implemented.

Verreaux's Eagle largely favour rocky cliffs and mountainous areas and are not expected to frequent areas outside of those identified by the VERA model. High and medium sensitivity areas for this species have been included in the sensitivity map. The site is positioned outside of the primary foraging habitat for Black Harrier, however migratory routes could occasionally result in this species traversing the site, albeit with a low frequency. Patches of preferred habitat across the project area have nevertheless been classified as medium sensitivity for this species along with Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs).

The avifaunal sensitivity map should at this stage be used to inform the site layout and suitability of the proposed development proceeding into the EIA phase from an avifaunal perspective. The sensitivity map is subject to alteration following analyses of the complete dataset obtained from the avifaunal monitoring programme to be conducted for the EIA phase.

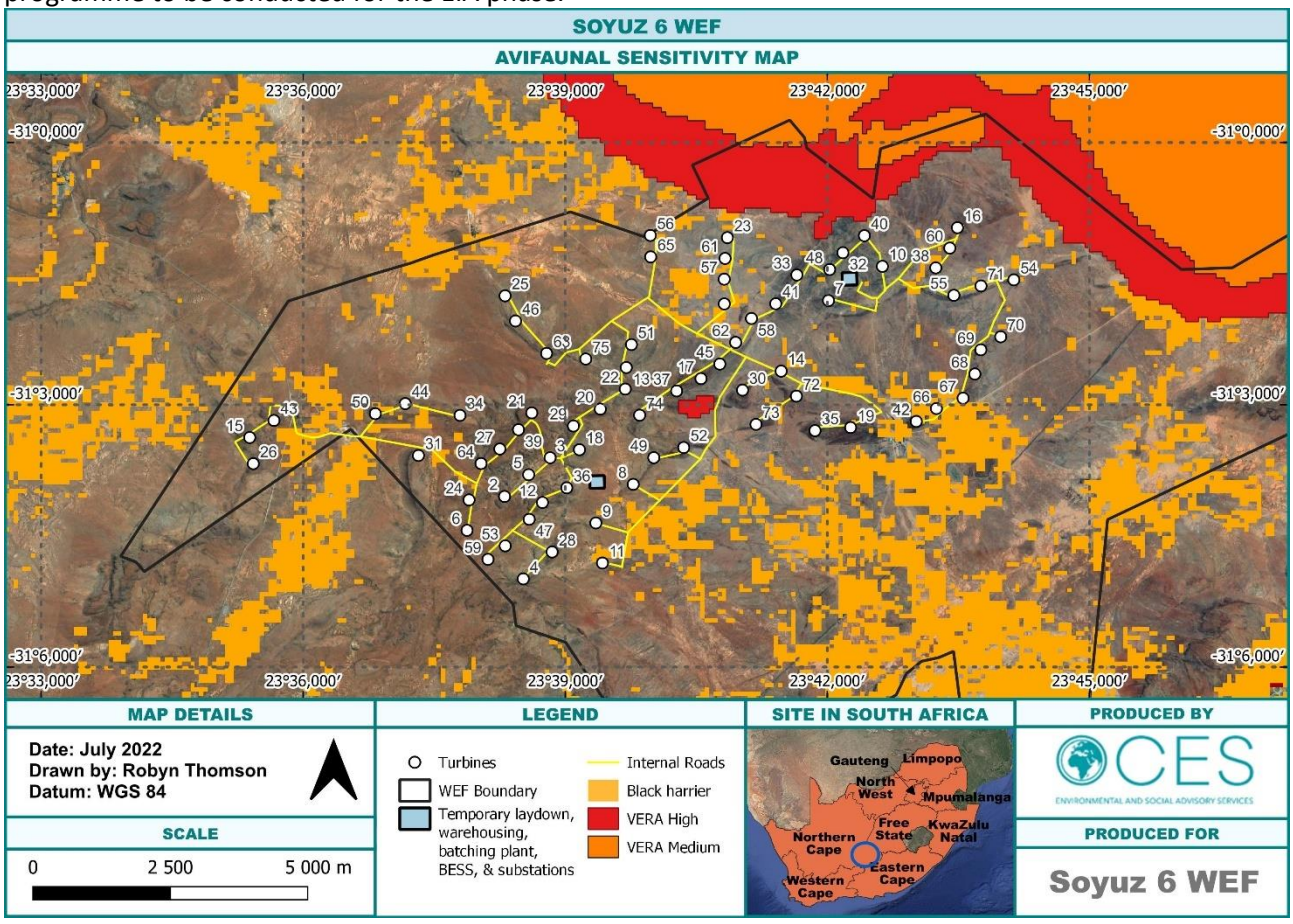


Figure 7-2: Avifaunal sensitivity map.

7.2.3 BAT SENSITIVITY

WEFs have the potential to impact bats directly through collisions and barotrauma resulting in mortality (Horn et al. 2008; Rollins et al. 2012), and indirectly through the modification of habitats (Kunz et al. 2007b). Direct impacts pose the greatest risk to bats and, in the context of the project, habitat loss and displacement should not pose a significant risk (unless a large roost is discovered on site and bats are reluctant to leave this roost if disturbed) because the development footprint (i.e., turbines, roads) is small compared to the size of the project study area.

Direct impacts to bats will be limited to species that make use of the airspace in the rotorswept zone of the wind turbines. Of the five species of bat that were recorded on site, three exhibit behaviour that may bring them into contact with wind turbine blades and they are potentially at risk of negative impacts if not properly mitigated, although the magnitude of these impacts is unknown at this stage.

Based on the preliminary 5 months of monitoring data, avoidance mitigation techniques have been incorporated by buffering key habitat features for bats. These include roosts (rocky crevices, trees and buildings), foraging resources (trees, drainage areas, and aquatic habitat) and commuting resources (drainage areas). The sensitivity of each buffer was determined relative to the different infrastructure elements incorporated into the project. Buildings, wetlands, farm dams and rocky crevices (including ridges) have all been buffered by 200 m, as per best practise guidelines. Drainage lines have been buffered by 100 m. All buffers are no-go for turbines to blade tip, **these may change as the monitoring continues and more ground truthing is conducted on site.** As it stands, there are nine turbines in highly sensitive areas in the current layout for Soyuz 6 WEF. Searches have been conducted in the accessible areas in the lower slopes and roosting potential ranged from negligible to moderate. No bat roosts have been found on site to date.

While these buffers may be effective in helping to avoid interactions between clutter-edge bats and wind turbines, the open-air bats, particularly the Egyptian free-tailed bat, were more active proportionately at rotor sweep height compared to ground level. An additional mitigation that could be used to avoid impacts to bats is the choice of wind turbine technology. Evidence of a relationship between turbine size and bat fatality is equivocal. Some evidence suggests that larger turbines kill more bats (Baerwald and Barclay 2009), or that as the distance between the blade tips and the ground increases, bat fatality decreases (Georgiakakis et al. 2012). However, other studies have found no evidence that turbine height or the number of turbines influences bat mortality (Berthinussen et al. 2014; Thompson et al. 2017). Some species in South Africa that are not adapted for flight at height have suffered mortality from wind turbines (e.g. the Cape serotine), suggesting that some bats may be killed in the lower edge of the rotor swept zone. The data presented in this report corroborates this as higher activity was seen at 12 m when compared to that recorded at height. However, overall activity at 50 m on site is also relatively high for the Nama Karoo ecoregion. Therefore, using taller towers and limiting the rotor diameter so that the minimum distance between the blades and the ground is maximised, and preferably higher than 50 m, could help to mitigate some impacts and reduce the likelihood of reaching threshold bat fatalities as turbines with a lower ground clearance run the risk of reaching the fatality thresholds sooner.

These findings are preliminary and subject to change, following further on-site assessments made during the projects' respective EIA phase. Such on-site assessments will be conducted to refine bat constraint recommendations for the WEF layout and included in the final Bat Impact Assessment Report. Once the full year of monitoring has been conducted, all data (inclusive of acoustic recording data and on-site field observations) will be analysed and included in the Environmental Impact Assessment.

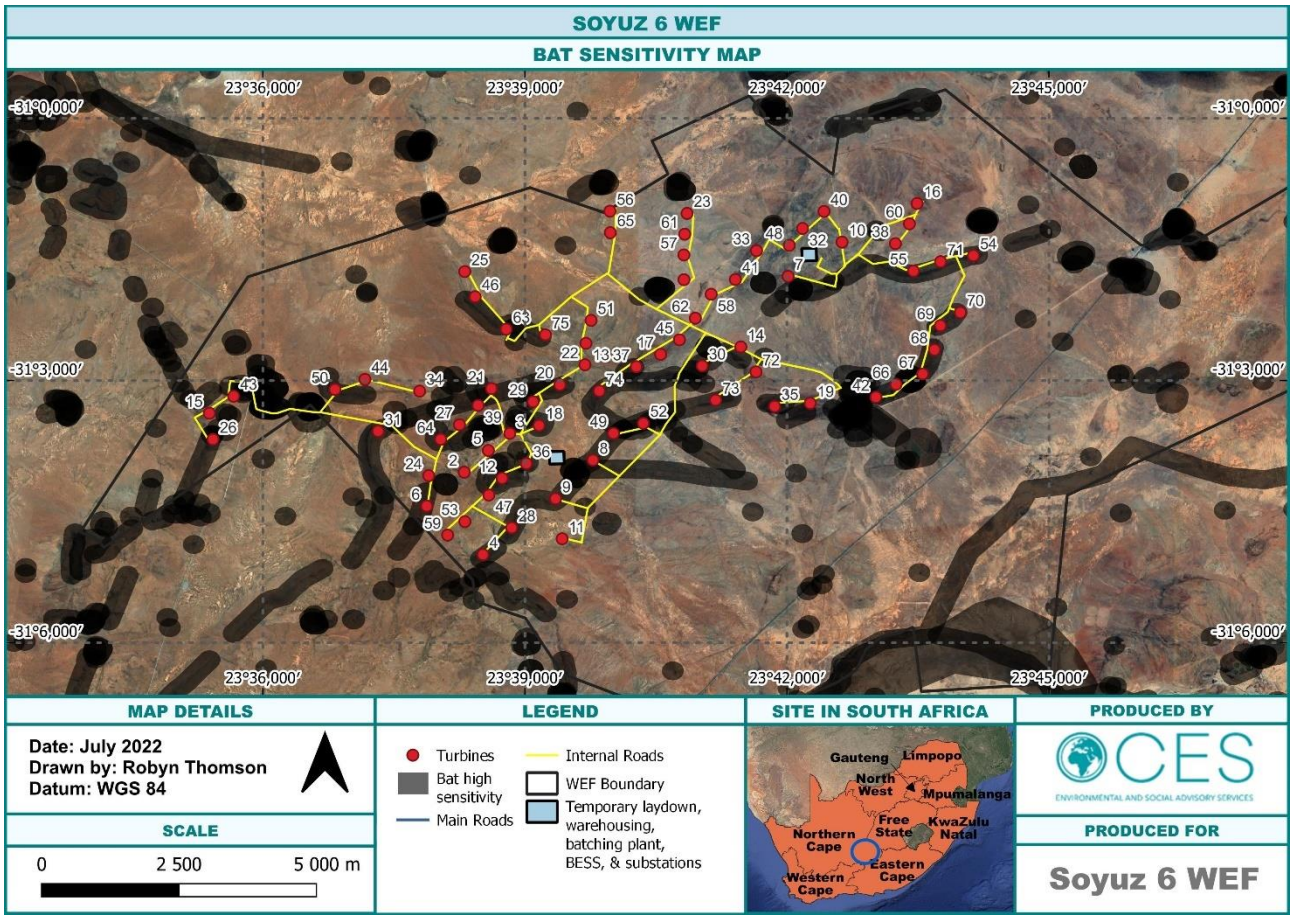


Figure 7-3: Bat sensitivity map.

7.2.4 FLORAL SENSITIVITY

The Species Environmental Assessment guideline (SANBI, 2021) was applied to assess the Site Ecological Importance (SEI) of the project area. The habitats and the species of conservation concern in the project area were assessed based on their conservation importance, functional integrity and receptor resilience. The combination of these resulted in a rating of SEI.

The Eastern Upper Karoo vegetation within the site shows evidence of disturbance from grazing pressure and although extensive has a low species diversity and low likelihood of SCC occurring within this unit. This vegetation type was found to have an SEI score of low.

The Upper Karoo Hardeveld has a high species diversity with niche habitats for species only found on the slopes of the mesas and buttes that make up this vegetation type. This vegetation type has a medium SEI score.

The Washes (a subset of the Eastern Upper Karoo) could possibly contain populations of the vulnerable species *Tridentia virescens* and, based on the disturbed sites recorded on site, will have a medium resilience to disturbance. The overall SEI for this vegetation type is high.

Infrastructure is located within the Eastern Upper Karoo (Low SEI) and the Karoo Hardeveld (Medium SEI). No infrastructure is located within the washes (High SEI).

Table 7-2: Vegetation type sensitivity

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	BI	Receptor Resilience	SEI
Eastern Upper Karoo	Low	High	Medium	High	**Low**
	No confirmed or highly likely populations of SCC or range restricted species	Good habitat connectivity of near-intact vegetation that shows some evidence of past and current disturbance		The Eastern Upper Karoo has a relatively low species diversity with a high grass cover and shows evidence of past and current disturbance in the form of grazing. It is therefore anticipated that the Eastern Upper Karoo that does not occur within a wash will recover to its current state relatively quickly (less than 10 years). **The Eastern Upper Karoo found within the washes has been assessed separately under "wash".	
Upper Karoo Hardeveld	Low	High	Medium	Medium	**Medium**
	No confirmed or highly likely populations of SCC or range restricted species	Good habitat connectivity of near-intact vegetation that shows some evidence of past and current disturbance		The Upper Karoo Hardeveld has a higher species diversity than the Eastern Upper Karoo with a number of species present in niche rocky outcrops that are not present on the flat and expansive Eastern Upper Karoo. These areas are also more susceptible to erosion. To rehabilitate these sites to 70% of their current species composition would take more than 10 years.	
Wash	High	High	High	Medium	**High**
	Highly likely occurrence of *Tridentea virescens*	Good habitat connectivity of near-intact vegetation that shows some evidence of past and current disturbance		The washes are characterised by the presence of dwarf karoo shrubs. In areas that have been disturbed, these have been replaced by ruderal and exotic species. To rehabilitate these sites to 70% of their current species composition would take more than 10 years.	

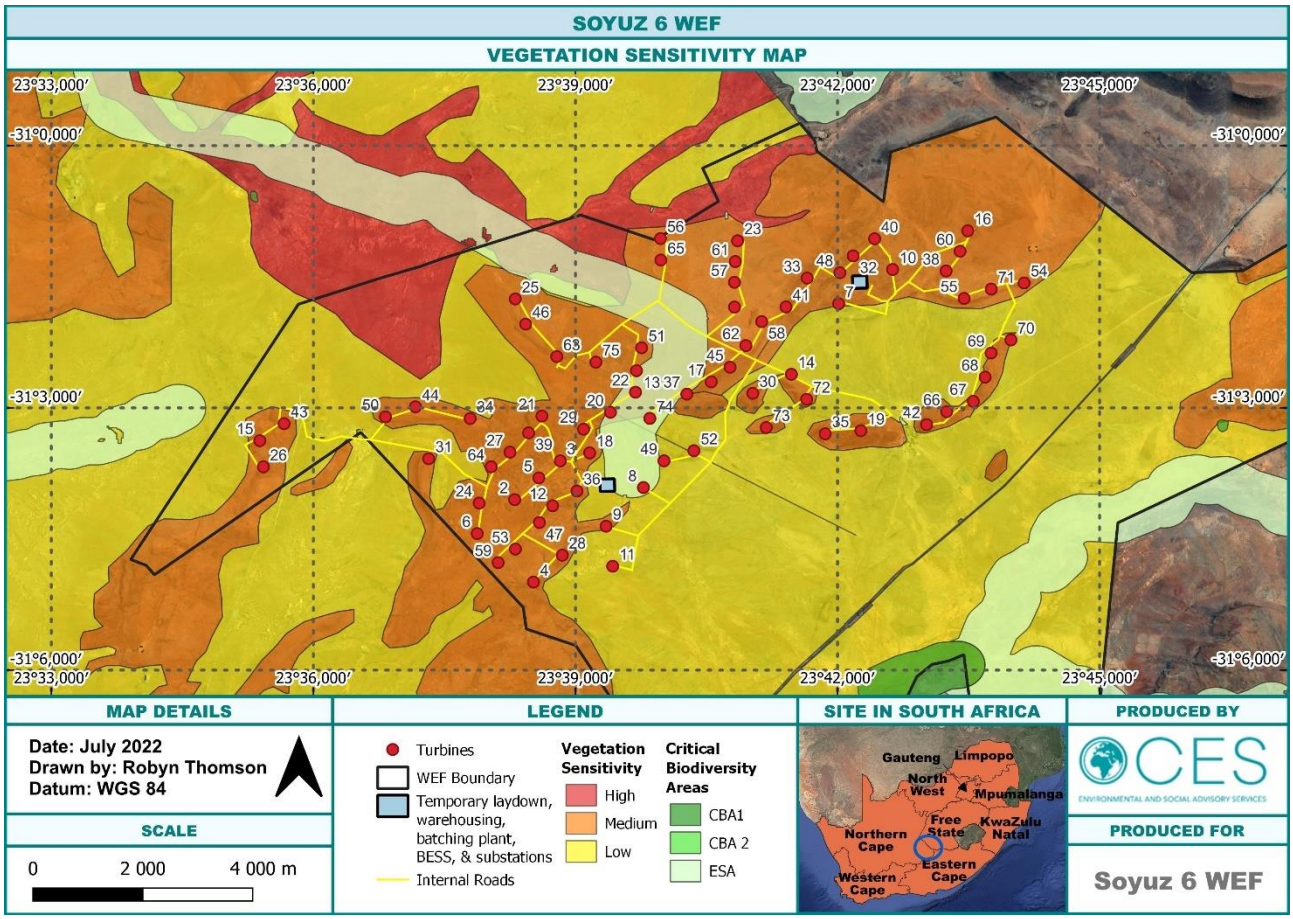


Figure 7-4: Vegetation sensitivity map.

7.2.5 FAUNAL SENSITIVITY

The Species Environmental Assessment guideline (SANBI, 2021) was applied to assess the faunal Site Ecological Importance (SEI) of the project area. The habitats and the species of conservation concern in the project area were assessed based on their conservation importance, functional integrity and receptor resilience, the combination of these resulted in a rating of SEI.

Table 7-3: Sensitivity assessment for each habitat type within the project site.

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	BI	Receptor Resilience	SEI
Grassland	High	Very High	Very High	Very High	**Medium**
	The VU Black-footed Cat inhabits grassland.	Grassland offers a very large (> 100 ha) intact area with high habitat connectivity and minimal current negative ecological impacts		Species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.	
	High	High	High	Low	

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	BI	Receptor Resilience	SEI
Washes and Rivers in Dwarf Succulent Karoo	Although outside its predicted range should the CR Riverine Rabbit occur within the study area it will likely occur in the Wash habitat given the Dwarf Succulent Karoo vegetation offers its preferred diet and have soft alluvial soils to construct burrows.	Large area of good habitat connectivity with minor current negative ecological impacts		Species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.	**Very High**
Dwarf Succulent Karoo	Medium Confirmed or highly likely occurrence of populations of NT Tent Tortoise	High Good habitat connectivity of near-intact vegetation that shows some evidence of past and current disturbance	Medium	High High likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.	**Low**
Rocky Slopes, Slabs and Plateaus within Southern Mountain Reedbuck Range	High The endangered Southern Mountain Reedbuck is likely to occur within this habitat type.	High Good habitat connectivity of near-intact vegetation that shows some evidence of past and current disturbance	High	High The Mountain Reedbuck is highly mobile and will most likely leave the site during construction due to increased noise and activity, however, it is likely to return to site within 5-10 years after the disturbance as sufficient habitat will remain on site for it to forage and breed.	**Medium**
Rocky Slopes, Slabs and Plateaus within Karoo Dwarf Tortoise Range	High The endangered Karoo Dwarf Tortoise is likely to occur within this habitat type.	High Good habitat connectivity of near-intact vegetation that shows some evidence of past and current disturbance	High	Medium The Mountain Reedbuck is highly mobile and will most likely leave the site during construction and has a moderate likelihood returning once construction has stopped. The less mobile Karoo Dwarf Tortoise may remain in the rocky areas within and adjacent to construction sites, which may leave them vulnerable to	**High**

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	BI	Receptor Resilience	SEI
				injury or death due to construction activities.	
Rivers, wetlands and incidental pools	Low No confirmed or highly likely populations of SCC	High Good habitat connectivity with potentially functional ecological corridors.	Medium	High Species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or	**Low**
Manmade & Agricultural	Low < 50% of receptor contains natural habitat with limited potential to support SCC	Very Low Small with minimal habitat connectivity	Very Low	Very High Given the faunal species that inhabit these areas are generalists and used to disturbance these species have a very high likelihood of remaining at a site	**Very Low**

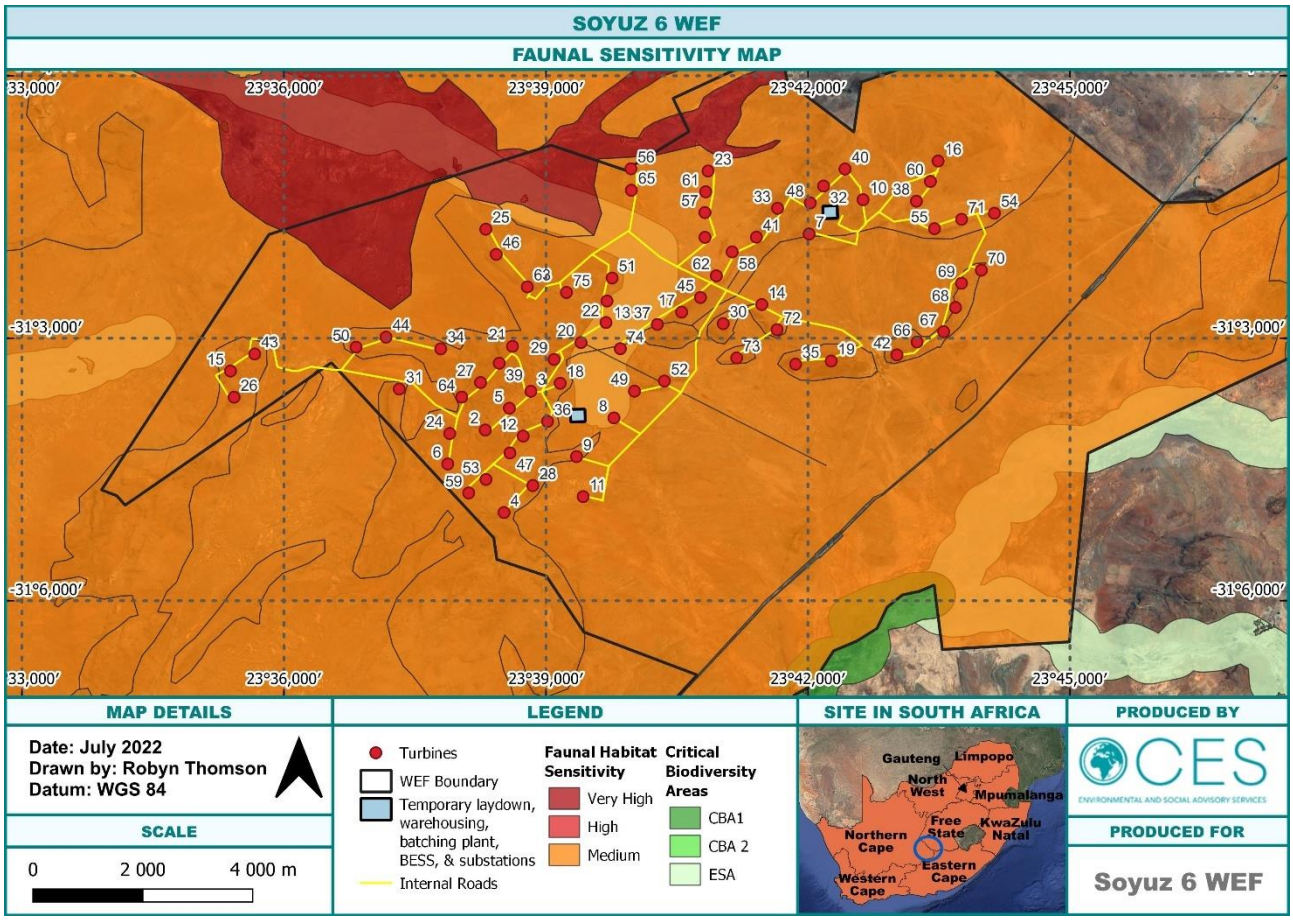


Figure 7-5: Faunal sensitivity map.

7.2.6 FRESHWATER SENSITIVITY

The River and Wetland EIS assessment results are summarised in Table 7.4 below. The washes and dams obtained moderate ratings, mainly due to the importance of the provisioning and regulating ecosystem services they offer. The lowland flats and the channelled low order drainage lines obtained moderately-low EIS scores, due to their ecological sensitivity and biodiversity maintenance scores, respectively. The mesa-top flats and unchannelled low order drainage line obtained low EIS ratings.

Table 7.4: Summary of EIS scores and ratings

UNITS	INTEGRATED EIS RATING
A01-19	Moderate
A20-22	Low
B01-08	Moderate
C01-06	Mod-low
D01-02	Low
E01-04	Low
F01-11	Mod-low
Dams	Moderate

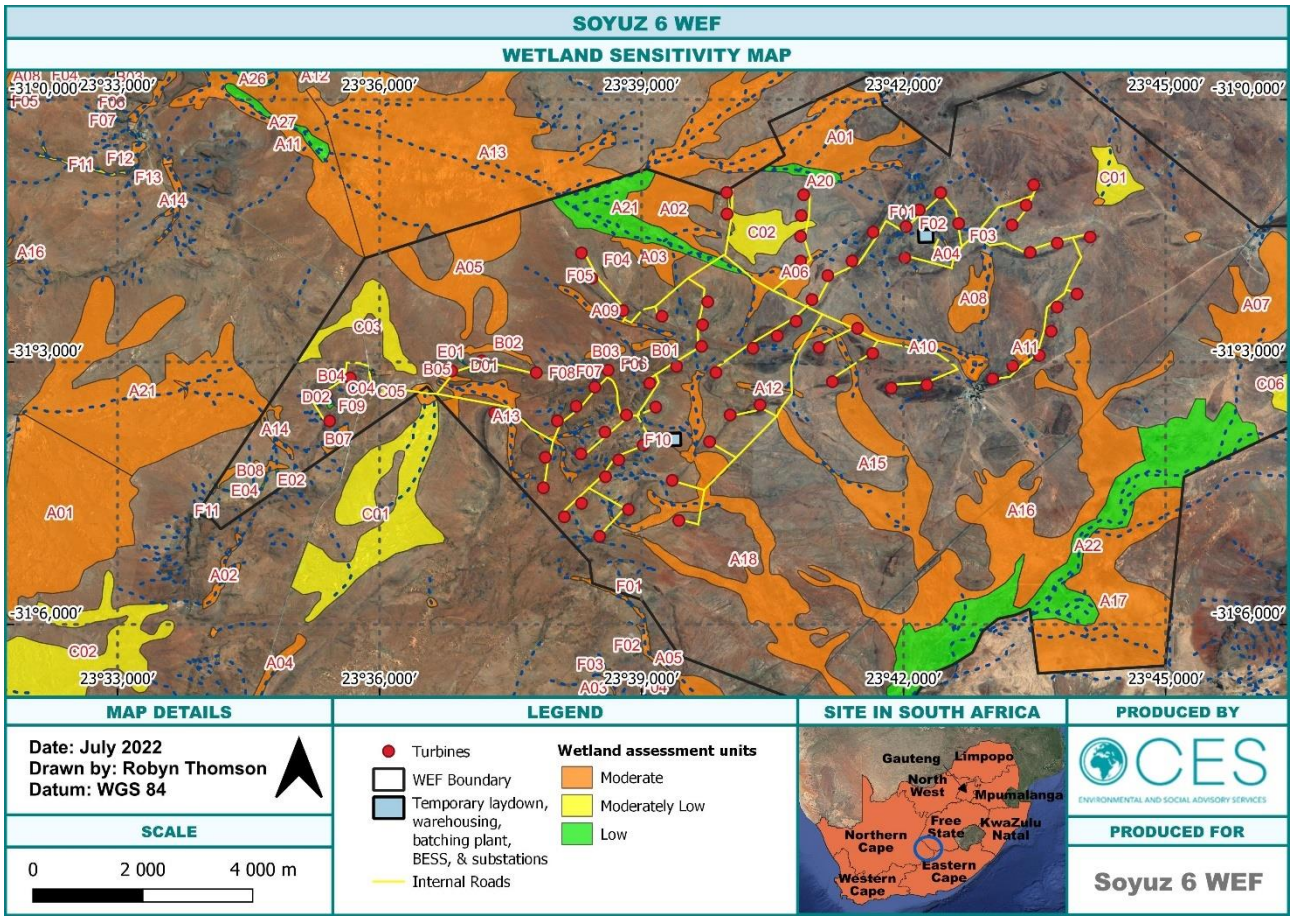


Figure 7-6: Wetland sensitivity map.

7.2.7 HERITAGE SENSITIVITY

Archaeology

In the project area, shallow soils cover a combination of calcrete, shale and dolerite substrates, and large sections in the landscape are exposed to sheet erosion, specifically along low lying areas and drainage lines. Dolerite and sandstone are present, while exotic rocks occur in the gravel of the Orange Riverbed and terraces. These provide suitable material for stone tool production during the Earlier, Middle and Later Stone Ages. MSA and LSA tool scatters are known to occur along water courses, pans and dry riverbeds and such material have been found in the project area. These tools might include formal tools such as blades, scrapers, adzes and points and microliths as well as debitage.

Mountain crests, small hills and foothills and rock outcrops occur in the project area, for example Perdepoortkop, Spitskoppie and Swartberg. Occupation sites dating to the Later Stone Age (LSA) associated with Hunter Gatherers and Herders are known to occur in such locales. Here, scatters of stone artefacts such as stone tools, ostrich eggshell, fragments of pottery and beads are common. Crudely built Herder stone wall enclosures might remain in these areas. In addition, Historical Period fortifications in the form of temporary stone barricades and defences are known to occur on low rises around Britstown and De Aar.

MSA and LSA tool scatters are also known to be found near outcrops and geomorphological exposures where source rock was exploited for the manufacturing of stone tools. Large boulders, frequently dolerite occurring throughout the project area, are commonly associated with Hunter Gatherer and Herder rock art in the form of engravings. In addition, stone “gongs” are often found in these areas on koppies and rocky outcrops.

All archaeological sites and artefacts are protected under the National Heritage Resource Act (NHRA 1999) and, depending on the range, extent and integrity of site and artefact contexts, the significance of archaeological remains in the project areas might range from low to high.

Colonial / Historical Period and Built Environment

In this landscape, farmsteads and werfs dating to the last centuries often hold historically significant buildings and features such as farm houses, corbelled huts, sheds, stone kraals, and “dorsvloers” (threshing floors). The old Rietpoort and Die Kalk farmsteads occur in the project area. An analysis of historical topographical maps and aerial photographs indicate the presence of the werfs from at least 1950 and the compounds are older than 60 years and generally protected under the National Heritage Resource Act (NHRA 1999). The sites might afford a better understanding of architectural, settlement and social developments in the Brittan landscape. Highly sensitive burial sites are also known to occur around farmstead complexes. Small-scale farming and agriculture are prevalent around farmsteads in the project areas. Here, potential historical farmscapes might be encountered.

Occasional remains of “veewagterhuise” or shepherds’ huts dating to the Colonial Period are scattered across farms in this landscape. These buildings are usually constructed out of undressed sandstone blocks and glass, rusted metal fragments, fragments of ceramics, earthenware and bone are often found in middens associated with these huts. Even though these occurrences are often poorly preserved, they might be protected under the National Heritage Resource Act (NHRA 1999) if older than 60 years.

The remains and remnants of Anglo-Boer War battlegrounds, field hospitals, concentration camps and cemeteries are found in this landscape and such sites are protected under the National Heritage Resource Act (NHRA 1999) where they are of Provincial heritage significance. Anglo-Boer War remnants might be present in the project area.

Digging and / or quarrying seem to have occurred at single localities in the project area. Here, one might encounter remnants of historical mining and quarrying but the significance of such sites is not always apparent.

Cultural Landscape

Generally, the proposed project area and its surrounds are characterized by rural Karoo farmlands, flatter grass plains and low mountain vegetation. Mountains and hills on the target properties for the project are indicated on topographic maps with unique names such as “Perdepoortkop”, “Spitskoppie” and “Swartberg” and other landscape features indicated, include “Perdepoort” and “Die Kalk”. Cognisance should be taken of the fact that these features might hold certain intangible heritage value or they might be regarded as sites of “Living Heritage” in the cultural landscape.

Cemeteries / Burial Sites

Burial sites frequently occur around farmstead complexes within family cemeteries, for example the Rietpoort and Die Kalk farmsteads but in some instances packed stones or rocks indicate the presence of informal pre-colonial burials in this landscape. In addition, human remains and burials are often found close to archaeological sites; they may be found in "lost" graveyards, or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is therefore important to remember that it is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface.

Cemeteries, burial places and graves are viewed to have a high significance and they are protected under the National Heritage Resource Act (NHRA 1999.

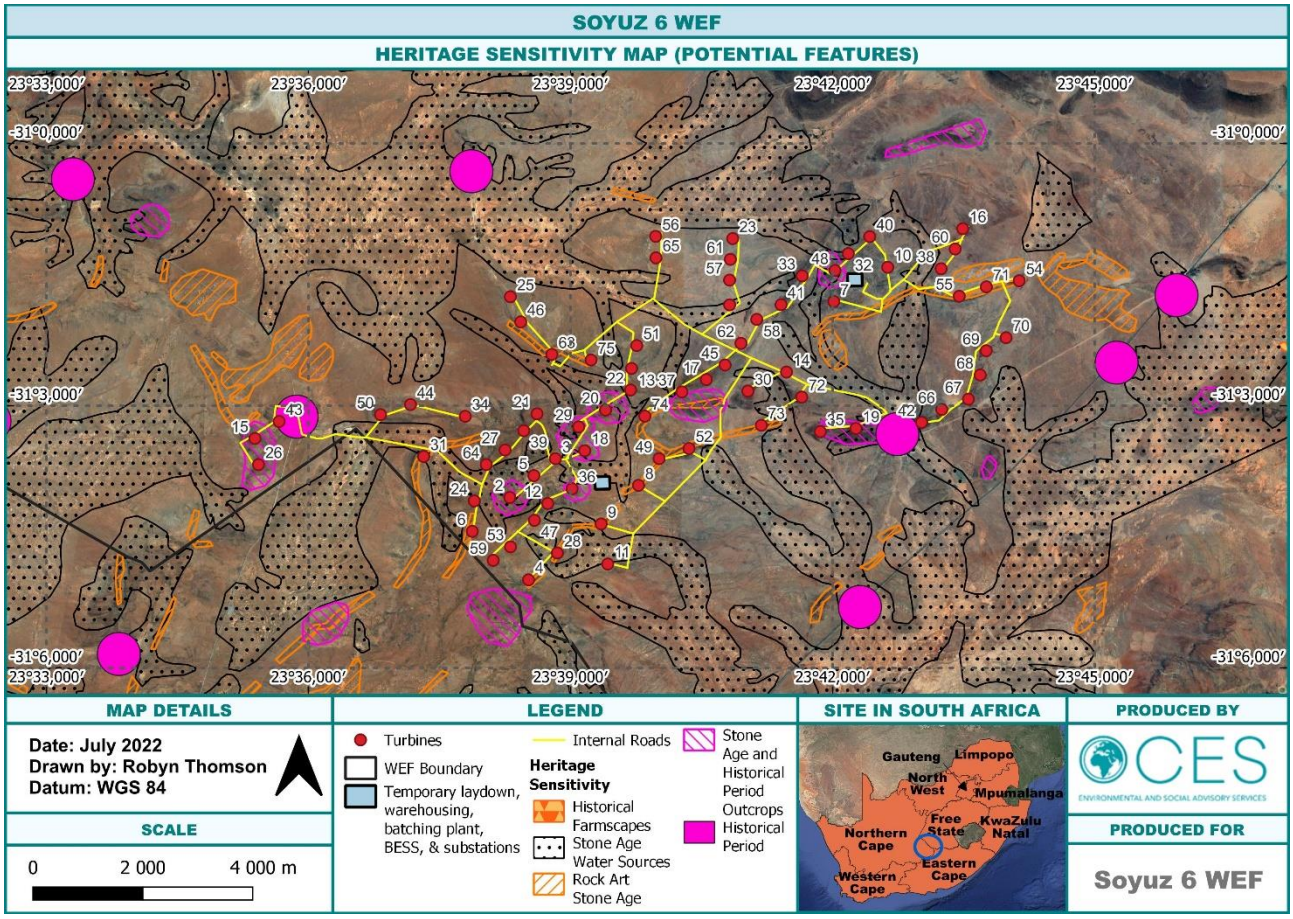


Figure 7-7: Heritage sensitivity map.

7.2.8 Noise Sensitivity

Noise from wind turbines can be described as follows:

- Could be significant within 500 m, with receptors staying within 500 m from operational wind turbines subject to noises at a potentially sufficient level to be considered disturbing;

- Are normally limited to a distance of approximately 1,000 m from operational wind turbines. Night-time ambient sound levels are elevated and the potential noise impact might be measurable. Cumulative noise from multiple wind turbines surrounding an NSR may be high and exceed 45 dBA;
- May be audible up to a distance of 2,000m at night; and
- Are generally of a low concern at distanced greater than 2,000m.

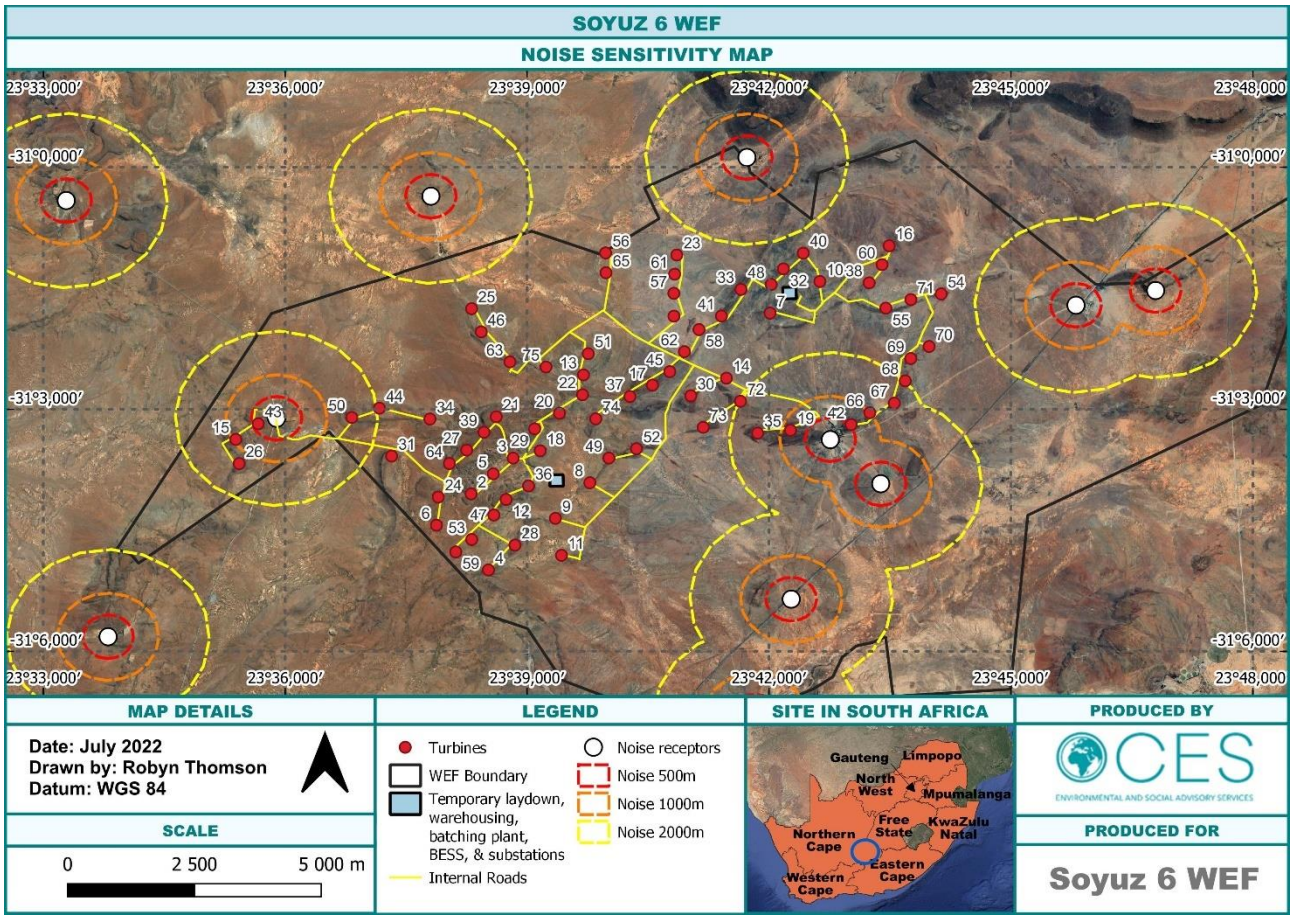


Figure 7-8: Noise sensitivity map.

7.2.9 PALEONTOLOGICAL SENSITIVITY

The Soyuz 6 WEF is underlain by Late Caenozoic alluvium, Jurassic Karoo dolerite, and the Middle Permian Abrahamskraal Formation of the Beaufort Group (Karoo Supergroup). This part of the basin is extensively intruded by dolerite dykes and sills and the surrounding Beaufort sediments have been baked, thus compromising the fossil heritage of the area through thermal metamorphism. According to the PalaeoMap of the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the alluvium is Moderate, while that of the Abrahamskraal Formation (Beaufort Group) is Very High. The Palaeontological Sensitivity of the Jurassic Karoo dolerite is Zero as it is igneous in origin (Almond and Pether, 2009; Almond et al., 2013).

7.2.10 SOCIO-ECONOMIC SENSITIVITY

Socio-economic sensitivity will be established during the Impact Assessment phase of the development.

7.2.11 VISUAL SENSITIVITY

The proposed facility will have a large core area of potential visual exposure on the project site itself, and within a 5km radius thereof. Screened areas will be minimal in this zone and are only expected beyond the escarpment of Kombuisfontein Mountains the elevated areas to the north east of the site.

Potential sensitive visual receptors within this visually exposed zone include observers travelling along the R398, various secondary roads and farm roads, as well as, users of the railway line. Additionally, residents of the following homestead / farmsteads are likely to be affected:

- Wonderboom
- Deefontein
- Mentoorskuilen
- Lekkervlei
- Gediertesfontein

Potential visual exposure remains high in the medium distance (i.e. between 5 and 10km), with visually screened areas predominantly associated with the lower river valleys to the north west, and beyond the escarpment of the elevated areas to the north east.

Sensitive visual receptors comprise users of the main road R398, various secondary roads in the area, the railway line, as well as, residents of various farm and homesteads. Residents of the following homestead / farmsteads are likely to be affected:

- Thomasgat
- Poortjiesdam
- Blaauwbank
- Avondal
- Die Vlei
- Droëfontein
- Modderfontein
- Voëlfontein
- Gordonsville

In the longer distance (i.e. between 10 and 20km offset), the extent of potential visual exposure is significantly reduced, especially in the north and north eastern portion of the study area, and to a lesser extent in the north west and east. Visually exposed areas tend to be concentrated in the west, south west, south and south east.

Sensitive visual receptors include users of stretches of the R398 in the north west and various secondary roads located to the west, south and east of the site. In addition, users of the railway line, as well as, residents of farm and homesteads, particularly within the southern portion of the study area, may be visually exposed. Residents of the following homestead / farmsteads and settlements are likely to be affected:

- Residents on the outskirts of the Merriman Settlement
- Good Hope
- Cypress Grove
- Potkraal
- Wilgenhof
- Verborgenfontein
- Orange Valley
- Erasmuskraal
- West Front
- Gemsbokdam
- Barnardsdam
- Altringham
- Leeukuil
- Nietgedacht
- Dombietersfontwin
- Woodstock

- Syferbult
- Weltevrede
- Vaakfontein
- Schramfontein

Beyond the 20km offset from the proposed site, potential sensitive visual receptors are not likely to be visually exposed to the proposed facility, despite lying within the viewshed.

In general, despite the scattered and lower population density of the study area, the proposed Soyuz 6 WEF may constitute a high visual prominence, potentially resulting in a high to very high visual impact.

However, it must be noted that some of the sensitive visual receptors of farm and homesteads listed above who could be affected visually by the proposed Soyuz 6 WEF are in fact located on properties involved in either this or the overall proposed Soyuz WEF Cluster development. It is therefore assumed that these sensitive receptors are in fact aware of and to a certain extent accepting of the visual intrusion associated with WEF's in general as a result of their involvement.

Sensitive receptors are considered to be affected where shadows are predicted to occur within 1 km of a turbine. Therefore, a 1km zone around each turbine has been identified as the zone within which there is a risk of shadow flicker occurring.

Three (3) turbines, 1 - 3, located on the western most portion of the Soyuz 6 WEF adjacent to the R398 are likely to have a shadow flicker impact on motorists using this portion of the R398. Other areas to potentially be impacted on by shadow flicker are loacted along the internal farm roads located in the designated development properties. These roads are likely to be affected by Turbines 4 – 10. It is, however, expected that the number of motorists travelling on these roads will be very limited and the level of exposure will be brief, thereby, not constituting a shadow flicker visual impact of concern for these receptors.

Additionally, the residents of the homestead Wonderboom and Lekkervlie are likely to experience shadow flicker from turbines 1, 4 and 5. When the sun is west, north west and north east of the turbines repectively. Even though the the residents of Lekkervlei are located to the north east of turbine 1, it is possible that they will be in turbine 1's shadow flicker zone when the sun is in the west, depending on the orientation of the rotor blades of the turbine.

Of note is that these homesteads are located on properties involved in this development. It is assumed that they are in fact aware of and to a certain extent accepting of the shadow flicker associated with these turbines, thereby not constituting a shadow flicker visual impact of concern for these receptors. However, as per the recommendations of the IFC Performance Standards, it is recommended that further consultation is undertaken as part of the EIA consultation process with these specific sensitive receptors of the above identified homesteads, in order to establish their understanding and concerns regarding this possible impact. Should it be found during the consultation process that these specific receptors are concerned with the impact associated with shadow flicker, it is then recommended that the positioning of these specific turbines be revised or removed.

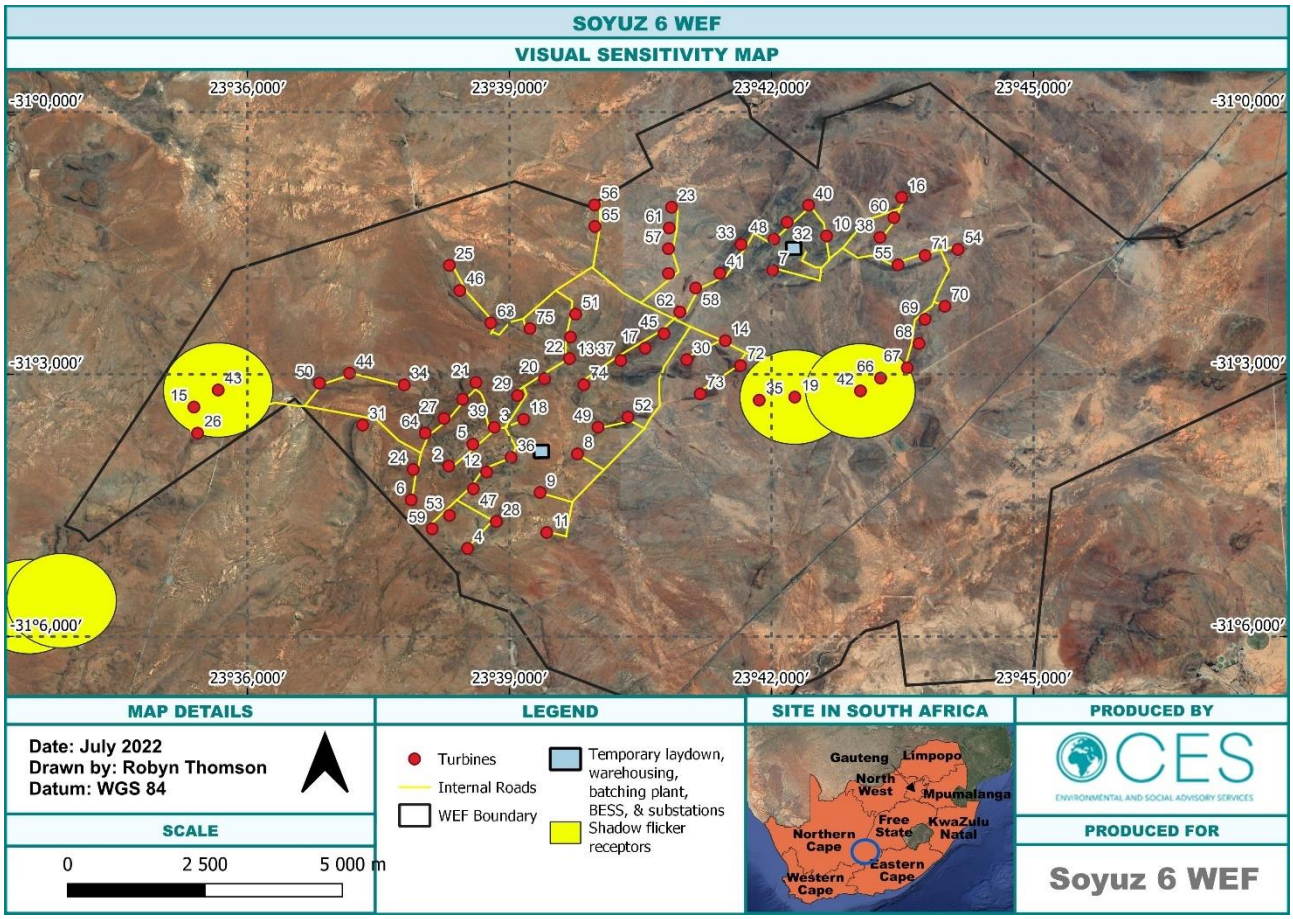


Figure 7-9: Visual (shadow flicker) sensitivity.

7.3 CONSOLIDATED OVERALL DESKTOP SENSITIVITY

The site sensitivity is predominantly rated as moderate owing mostly to the faunal habitat sensitivity rating. Rocky slopes, slabs, and plateau habitats are rated as high. The wash habitats are rated as very high sensitivity. Wash habitats will be avoided as far possible, and turbines will not be located in these areas. Potential bat habitat is also rated as very high sensitivity; however, these delineations are **preliminary** and are **subject to change during the bat habitat ground truthing exercise** which will form part of the EIA.

Some of the sensitivities indicated in the consolidated map in Figure 7-10 are dependent on further field assessment being undertaken. Therefore, this sensitivity map is **preliminary**. A final sensitivity map will be included in the EIR, and turbine and ancillary infrastructure layouts will be refined based on the final sensitivity delineations. **All no-go areas will therefore be finalised during the EIA phase and will be included in the EIR.**

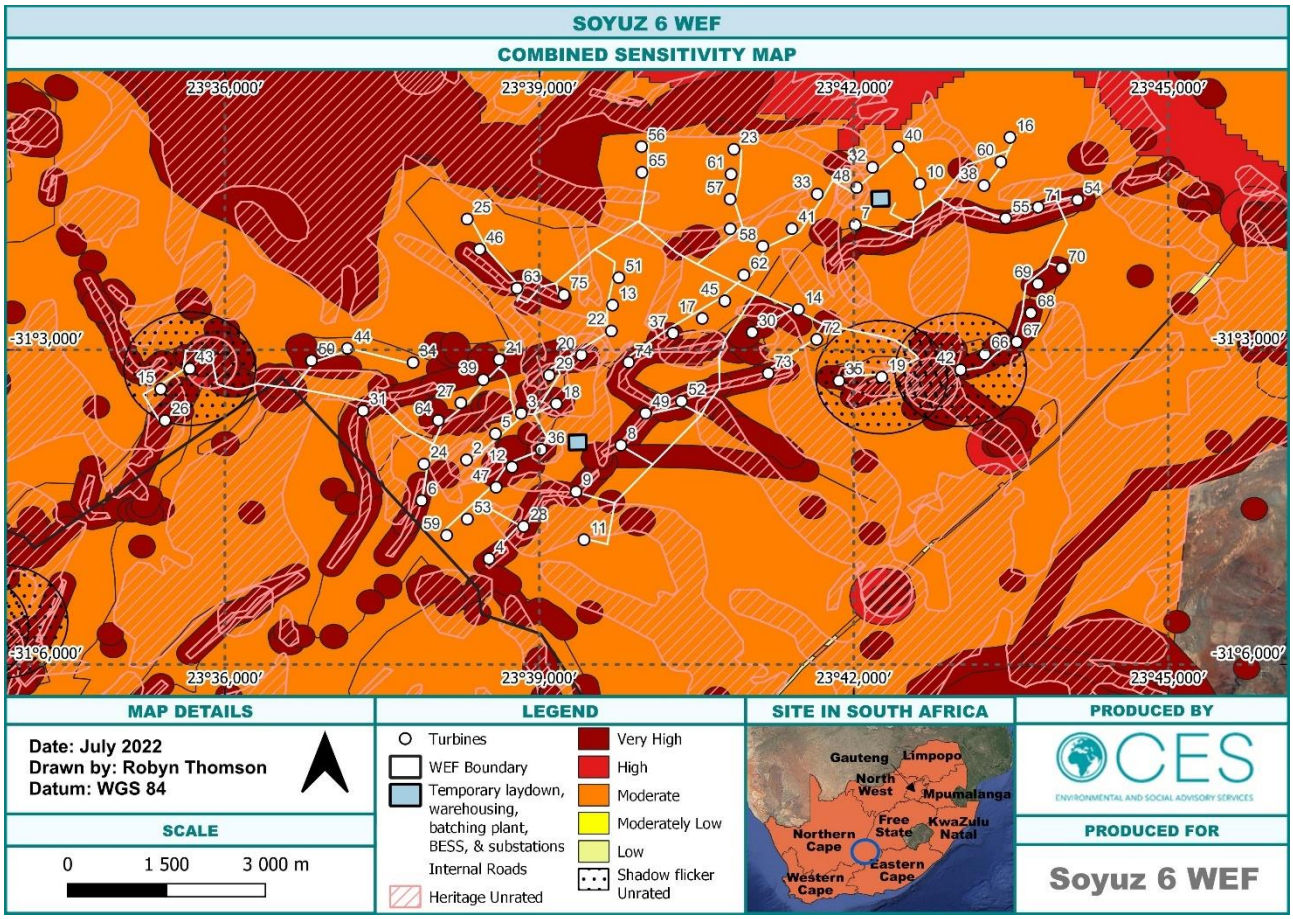


Figure 7-10: Consolidated sensitivity map.

8 ALTERNATIVES

8.1 REASONABLE AND FEASIBLE ALTERNATIVES

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. In all cases, the no-go alternative must be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

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

- the property on which or location where it is proposed to undertake the activity.
- the type of activity to be undertaken.
- the design or layout of the activity.
- the technology to be used in the activity.
- the operational aspects of the activity.
- the option of not implementing the activity.

8.2 FUNDAMENTAL, INCREMENTAL AND NO-GO ALTERNATIVES

8.2.1 FUNDAMENTAL ALTERNATIVES

Fundamental alternatives are developments that are totally different from the proposed project description and usually include the following:

- Alternative property or location where it is proposed to undertake the activity.
- Alternative type of activity to be undertaken.
- Alternative technology to be used in the activity.

8.2.2 INCREMENTAL ALTERNATIVES

Incremental alternatives relate to modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. There are several incremental alternatives that can be considered with respect to the current wind farm project, including:

- Alternative design or layout of the activity.
- Alternative operational aspects of the activity.

8.2.3 NO-GO ALTERNATIVE

It is mandatory to consider the "no-go" option in the EIA process. The "no-go" alternative refers to the current status quo and the risks and impacts associated with it. Some existing activities may carry risks and may be undesirable (e.g. an existing contaminated site earmarked for a development). The no-go is the continuation of the existing land use, i.e. maintain the status quo.

8.3 ANALYSIS OF ALTERNATIVES

Table 8-1 illustrates the methodology used to assess the identified alternatives. The table assesses the advantages and disadvantages and provides further comments on the selected alternatives.

The categories of alternatives that are assessed include:

- Location;
- Activity;
- Associated technology;
- Design and layout; and
- No-go alternative.

8.4 PREFERRED ALTERNATIVE

Based on the assessment of alternatives, the preferred alternative for the Soyuz 6 WEF consists of:

- **Alternative location 1** – Turbines located on the following farms portions which were selected on the basis of good wind resource potential, land availability and the sites proximity to available Eskom electricity grid capacity (the final layout of the turbines will only be confirmed following the EIA phase of the project).

SOYUZ 6 WEF		
SG DIGIT NUMBER	**FARM NUMBER/PORTION**	**AREA (HA)**
N071C06300000000141000000	141	2971
N071C06300000000013000010	1/13	194
N071C06300000000013000020	2/13	1074
N071C06300000000012000010	1/12	2787
N071C06300000000148000001	RE/148	1004
N071C06300000000156000000	156	1545
N071C06300000000157000000	157	1856
N071C06300000000016000040	4/16	810
N071C06300000000016000001	RE/16	481
N071C06300000000016000030	3/16	1924
	TOTAL	**16243**

- **Alternative energy technology 1** – Wind turbines as a preferred technology as a low carbon emitting and renewable energy resource.
- **Alternative layout 1:** Current proposed layout of up to 75 turbine WEF layout, access route, electrical switching stations and short connecting powerline.
- **Alternative design 1 –** The following turbine design specifications are proposed:
    - WEF Capacity - Up to 480 MW
    - Number of Turbines - Up to 75
    - Hub Height - Up to 160 m
    - Rotor Diameter - Up to 200 m
    - Blade length - Up to 100 m

Table 8-1: Proposed WEF Alternatives.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
Property or location This refers to the **fundamental location options**, and the environmental risks and impacts associated with such options.	**Alternative location 1** - Current proposed site (Preferred alternative). This site has been selected based on good wind resource potential, land availability and the sites proximity to available electricity grid.	▲ Suitable wind resource. ▲ Land availability (Soyuz 6 WEF and landowners have formally agreed to the proposed development on the site and are in full support of the use of this area).	▲ Land previously undeveloped. ▲ Potential visual intrusion to surrounding communities. ▲ Potential impacts on avifauna and bats.	**YES**	The main determining factors for selecting the proposed location were:- ▲ Proximity to a grid connection point. ▲ Available land. ▲ Available wind resource. ▲ Preliminary environmental screening, including an avifaunal nest survey, has been performed to identify/avoid potential issues. Preliminary investigations have identified that the proposed project site meets the above land specifications.
	Alternative location 2 - None identified as the rights to **sufficiently large enough contiguous parcels of** private land must be sought from local landowners. In addition to this land in the area is being signed up by competing developers at a rapid	***N/A***	***N/A***	***N/A***	Alternative locations for the current project are limited and where not deemed to be either reasonable or feasible due to the following: ▲ The available wind resource is the most critical aspect of a wind energy project since a feasible WEF must generate sufficient energy to be financially feasible in terms of REIPPPP.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	rate. Location 1 has been agreed to. Alternative sites in the area that are close to Eskom electrical infrastructure, do not yield the same wind resource potential.				▲ A feasible WEF must also be located close to a connection point into the Eskom grid and substation. This is a critical factor to the overall technical and financial feasibility of the WEF project. ▲ Therefore, alternative locations for the proposed Soyuz 6 WEF, were not assessed.
Type of technology This refers to the fundamental technology options, such as energy generation from wind vs. coal fired power plant, etc. and the environmental risks and impacts associated with such options.	**Alternative energy technology 1** – Wind turbines (Preferred alternative)	▲ Clean and renewable energy. ▲ Mitigate climate change ▲ Does not require large areas of land.	▲ Visually intrusive ▲ Avifaunal impacts ▲ Bat impacts	**YES**	The activity does not exclude all current land uses i.e. Wildlife and stock grazing can still take place between turbines.
	Alternative energy technology 2 – Solar PV	▲ Clean and renewable energy. ▲ Mitigate climate change.	▲ Visually intrusive (but less so than a WEF) ▲ Requires a large area of land ▲ Requires more water than wind does ▲ Generates less power per hectare than wind does	**NO**	Wind and solar are not mutually exclusive, i.e. both developments can take place in close proximity to one another. The topography of the land earmarked for the proposed Soyuz 6 WEF, as well as the presences of rivers and wetland features in the low lying flatter areas, present challenges for the development of large scale solar PV. The applicant intends on bidding the projects as part of the wind allocation under the REIPPPP.
	Alternative energy technology 3 –	▲ Clean and renewable energy	▲ Visually intrusive. ▲ Requires large area of land.	**NO**	Wind and solar are not mutually exclusive, i.e. both developments can take place in close

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	Concentrated Solar Power (CSP)	▲ Mitigate climate change.	▲ Water a significant limiting factor. ▲ Reflectivity of mirrors potentially a significant issue visually and in terms of avifauna.		proximity to one another. The topography of the land earmarked for the proposed WEF is not suitable for large scale solar CSP. This technology would not qualify for REIPPPP.
	Alternative energy technology 4 – Coal fired power plant	▲ None identified	▲ Air pollution from coal dust and smokestack emissions (SO_2). ▲ Contribution to climate change. ▲ Ground contamination from coal dust.	**NO**	Not environmentally desirable and would not qualify for REIPPPP.
	Alternative energy technology 5 – Biomass	▲ Clean and renewable energy. ▲ Mitigate climate change.	▲ Expensive source of energy, requiring large amounts of feedstock	**NO**	Sufficient suitable biomass may not be available in proximity to the site. Biomass energy is mutually exclusive.
	Alternative energy technology 6 – Nuclear Power	▲ Greater electricity generation with little raw material required	▲ Raw material highly radioactive ▲ Water availability a severe limitation. In South Africa, which is a water scarce country,	**NO**	The significant dependence of nuclear energy generation on high volumes of water preclude its development on the proposed site. Nuclear energy is mutually exclusive to wind energy.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			the most suitable sites for Nuclear Power are situated adjacent to the ocean.		
	Alternative battery storage 1: Solid-state (such as Li-ion (lithium ion)) Battery Technology	▲ High level of energy efficiency. ▲ Relatively high energy density. ▲ Fast response to unpredictable variations in demand and generation. ▲ Low maintenance. ▲ Relatively long lifecycle (approximately 10 to 15 years' service life). ▲ Ability to offset grid fluctuations. ▲ Currently the most widely used BESS technology.	▲ Fire risk due to thermal runaway. ▲ High cost due to limited abundance in lithium. ▲ Risk of annual degradation. ▲ Battery protection is required. ▲ Power and energy capacity directly coupled (expensive to scale).	YES	The technology alternatives which have been considered for the battery storage include solid-state technologies (such as Li-ion), Vanadium Redox Flow and Zinc-Hybrid technologies. Solid-state technology is the preferred alternative and the only technology assessed further in the EIA. Li-ion is currently the most widely used and assessed battery storage technology available.
	Alternative battery storage 2: Vanadium Redox Flow Battery Technology	▲ Fast response to unpredictable variations in demand and generation.	▲ Scarce and expensive components (vanadium pentoxide).	**NO**	

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
		➢ Long life cycle (approximately 20 years' service life). ➢ Almost unlimited energy capacity. ➢ No capacity degradation over time. ➢ Electrolyte is inherently safe and non-flammable. ➢ Independently tuneable power rating and energy capacity.	➢ Lower level of energy efficiency. ➢ Lower energy density than solid state batteries (such as li-ion). ➢ Require the storage of electrolyte chemicals in tanks for which a Major Hazards Risk Assessment may be required due to storage of hazardous goods. ➢ Requires a larger development footprint (unless the containers are stacked). ➢ Currently not market competitive.		
	Alternative technology 3: Zinc-hybrid Ion Battery Technology	➢ Relatively low cost. ➢ Among the latest advanced chemistries.	➢ Currently an emerging technology with limited deployment and a lack of available	**NO**	

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			technical information. • Currently not market competitive.		
Design or layout This relates mostly to alternative ways in which the proposed development or activity can be physically laid out on the ground to minimise or reduce environmental risks or impacts	**Alternative layout 1:** Preliminary WEF layout, access route, electrical switching stations and short connecting powerline	• The preliminary layout consists of up to 75 turbines.	• There may be impacts associated with turbine placement and upgrading and expanding road reserves in sensitive environments.	**YES**	Considering the WEF layout: A maximum of 75 turbine structures will be assessed. The preferred layout will be informed by the feasibility and EIA process and associated specialist assessments. Thus, the final proposed WEF layout will be included in the final EIA report as the optimal layout from an environmental perspective, where all NO-GO areas have been avoided.
Operational aspects This relates mostly to alternative ways in which the development or activity can operate in order to reduce environmental risks or impacts	**Alternative operational activities**	• Operational Management alternatives will be informed by specialist input (e.g. bird and bat monitoring) through on-going operational monitoring.	N/A	**YES**	Operational alternatives will be informed by the specialists. The most pertinent specialists who will inform operational alternatives are the bat and avifaunal specialists. Should these specialists find that certain turbines require curtailment due to their location then this will be included as part of the operational management of the WEF. Should management stipulations be required for the proposed WEF then they will form part of the Environmental Management Programme (EMPr) of the proposed WEF.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
No-go option This refers to the current status quo and the risks and impacts associated to it.	Small stock grazing and small-scale game farming.	▲ Will remain relatively undisturbed.	▲ No contribution towards the national renewable energy target. ▲ Potential for the alien vegetation on site to continue detrimentally affecting the local flora.	**YES**	Assessed in this report.

9 MANNER IN WHICH THE ENVIRONMENT COULD BE AFFECTED

9.1 INTRODUCTION

CES has developed a revised rating scale for the Scoping Phase in accordance with the requirement outlined in Appendix 2 of the amended EIA Regulations (2014 and amended in April 2017). This scale takes into consideration the following variables:

- Significance
- Consequence
- Extent
- Duration
- Probability
- Reversibility and Mitigation

It is however important to note that impacts are assessed and rated on a broader issue level and are regarded as preliminary. This is because, at the Scoping Phase, a limited amount of information on project related detail is available. This information requires input from a number of specialist assessments, which are only completed after the Scoping phase thus, a definitive assessment of project specific impacts cannot be completed at the Scoping phase, and our interpretation of the new requirements is that the environmental and social consequences of the project and alternatives needs to be discussed more broadly than what is required in the EIR. This we refer to as an issues level assessment.

9.1.1 ISSUES IDENTIFICATION MATRIX

Six factors are considered when assessing the significance of the identified issues, namely:

1. **Significance** - Each of the below criterion (points 2-6 below) are ranked with scores assigned, as presented in Table 9-1 to determine the overall significance of an activity. The total scores recorded for the effect (which includes scores for duration; extent; consequence and probability) and reversibility / mitigation are then read off the matrix presented in Table 9-1, to determine the overall significance of the issue. The overall significance is either negative or positive.
2. **Consequence** - the consequence scale is used in order to objectively evaluate how severe a number of negative impacts might be on the issue under consideration, or how beneficial a number of positive impacts might be on the issue under consideration.
3. **Extent** - the spatial scale defines the physical extent of the impact.
4. **Duration** - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
5. The **probability** of the impact occurring - the likelihood of impacts taking place as a result of project actions arising from the various alternatives. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development and alternatives. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.
6. **Reversibility / Mitigation** – The degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. The four categories used are listed and explained in Table 9-1 below. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

Table 9-1: Ranking of Evaluation Criteria.

Effect	**Duration**	
	Short term	Less than 5 years
	Medium term	Between 5-20 years
	Long term	More than 20 years
	Extent	
	Localized	The proposed site and its immediate environs
	Moderate	District / Municipal and Provincial level
	Extensive	National and International level
	Consequence	
	Slight	Slight impacts or benefits on the affected system(s) or party(ies)
	Moderate	Moderate impacts or benefits on the affected system(s) or party(ies)
	Severe/ Beneficial	Severe impacts or benefits on the affected system(s) or party(ies)
	Probability	
	Unlikely	The likelihood of these impacts occurring is slight (low probability)
	May Occur	The likelihood of these impacts occurring is possible (high probability)
	Definite	The likelihood is that this impact will definitely occur
Reversibility/ Mitigation	**Impact Reversibility / Mitigation**	
	Low	The impact can be easily, effectively and cost effectively mitigated/reversed
	Moderate	The impact can be effectively mitigated/reversed without much difficulty or cost
	High	The impact could be mitigated/reversed but there will be some difficultly in ensuring effectiveness and/or implementation, and significant costs
	Very High	The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly

9.2 IMPACTS MIND MAP

The impacts mind map (Table 9-2) provides at a high-level identification of the category/types of impacts that are expected by the proposed Soyuz 6 WEF, under various themes.

Table 9-2: Mind map of the impacts identified within the scoping phase of the proposed Soyuz 6 WEF

MIND MAP: IMPACTS - PROPOSED SOYUZ 6 WEF					
THEMES	**CATEGORIES**	**PLANNING & DESIGN PHASE**	**CONSTRUCTION PHASE**	**OPERATIONAL PHASE**	**DECOMMISSIONING PHASE**
Physical Environment	Topography, geology and soils *Turbines, various access and internal roads, and other infrastructure could cause erosion and loss of soils.*		**X**		
	Agricultural impacts *Turbines, various access and internal roads, and other infrastructure could result in the loss of animal grazing land.*	**X**	**X**	**X**	**X**
	Surface and groundwater resources *Turbines, various access and internal roads, and other infrastructure could impact on sensitive water courses and wetlands.*		**X**	**X**	**X**
Legislative Environment	Environmental, legal and policy compliance *The proposed WEF activity will require various permitting processing prior to construction. The developer will need to approach various state departments for permissions related to rezoning, water use, etc.*	**X**	**X**	**X**	**X**
Biological Environment	Terrestrial ecosystems (faunal and floral) *The proposed WEF will occur close to sensitive habitats. Stringent mitigation measures will be required. Turbines, various access and internal roads, and other infrastructure should, as far as possible, be located outside of ecosystems with HIGH threat status.*	**X**	**X**	**X**	**X**
	Avifaunal impacts *Turbines, various access and internal roads, and other infrastructure could result in mortality of important bird species.*	**X**	**X**	**X**	**X**
	Bat impacts *Turbines, various access and internal roads, and other infrastructure could result in mortality of important bat species.*	**X**		**X**	**X**
Socio-economic Environment	Economic and Tourism *The proposed WEF could have a negative and positive impacts on local economic development and the tourism industry in the area.*		**X**	**X**	**X**
	Archaeological, paleontological and cultural sites		**X**		

MIND MAP: IMPACTS - PROPOSED SOYUZ 6 WEF					
THEMES	**CATEGORIES**	**PLANNING & DESIGN PHASE**	**CONSTRUCTION PHASE**	**OPERATIONAL PHASE**	**DECOMMISSIONING PHASE**
	Turbines, various access and internal roads, and other infrastructure could result in damage to archaeological and paleontological resources.				
	Social benefits from the project *The proposed WEF could have a positive impact on local communities.*		**X**	**X**	**X**
	Social pressures from the project *The proposed WEF could have a negative impact on local communities.*		**X**	**X**	**X**
	Provision of electricity *The proposed WEF would have a positive impact on the provision and stability of energy resources in South Africa.*			**X**	**X**
Cross Cutting Impacts	Noise *The proposed WEF could generate noise that could have a negative impact on human and animal wellbeing.*		**X**	**X**	**X**
	Traffic *The proposed WEF could have an impact on traffic flow and road quality in the area.*		**X**	**X**	**X**
	Visual *The proposed WEF could have a significant negative visual impact on the landscape and on cultural resources and on local economic development and the tourism industry in the area.*		**X**	**X**	**X**

9.3 POSSIBLE ENVIRONMENTAL ISSUES AND IMPACTS

Table 9-3 to Table 9-6 provides more detailed environmental issues and resulting impacts that have been identified for the following phases of the project development: planning and design, construction and operation. The identification of these impacts has resulted in the recommendation of specialist assessments, which include:

- Agricultural Impact Assessment;
- Avifaunal Monitoring and Impact Assessment;
- Bat Monitoring and Impact Assessment;
- Botanical Impact Assessment;
- Faunal Impact Assessment;
- Freshwater Impact Assessment;
- Socio-economic Impact Assessment;
- Archaeological (Heritage) Impact Assessment;
- Paleontological Impact Assessment;
- Noise Impact Assessment; and
- Visual Impact Assessment.
- Traffic and Transportation Assessment

These impacts have been identified for the various options proposed, and hence as clarification of these options is gained, some of these impacts may become redundant.

All impacts have been split into "general impacts" and "specialist impacts". For the purposes of the Scoping and EIA process for the proposed WEF the following distinction can be made between the impacts:

- *GENERAL IMPACTS: Impacts which have been identified by the EAP. Examples of key issues identified by the EAP, which will be unpacked as general impacts include:*
  - Climate change;
  - Waste;
  - Site management;
  - Environmental and legal compliance;
  - Construction scheduling; etc.
- *SPECIALIST IMPACTS: Impacts which have been identified by the specialist or impacts which have been identified by the EAP but require input from specialists. Examples of key issues identified as requiring specialist input, which will be unpacked as specialist impacts include:*
  - Socio-economic impacts associated with the development
  - Avifaunal impacts associated with turbine construction and operation;
  - Bat impacts associated with turbine construction and operation;
  - Loss of indigenous flora; etc.

All impacts identified in the following tables will require further investigation either by the EAP or by the identified specialist. It is likely that additional impacts will be added based on the results of the site assessments of the EAP and of each specialist.

Table 9-3: Issues and impacts identified in the planning and design phase of the proposed development

PLANNING AND DESIGN PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
Traffic & Transport	During the planning and design phase, the inadequate planning for the transportation of turbine parts and specialist construction equipment to the site by long and/or slow-moving vehicles could cause traffic congestion, especially if temporary road closures are required. *Nature: Direct* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: Definitely* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• Further assessment will be undertaken during the EIA Phase and mitigation will be provided in the EIR and the EMPr in an effort to reduce this impact. • A Traffic Management Plan must be compiled by a suitably qualified specialist during the Planning and Design Phase/prior to the commencement of the Construction Phase. • Project planning must include a plan for traffic control that will be implemented, especially during the construction phase of the development. Consultation with the local Road Traffic Unit in this regard should be done early in the planning phase. The necessary road traffic permits should be obtained for transporting parts, containers, materials and construction equipment to the site.
	During the planning and design the integrity of existing highway infrastructure such as bridges and barriers must be taken into account to ensure that they are not compromised by the heavy vehicle traffic delivering components to the site. *Nature: Indirect* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: Unlikely* *Reversibility/Mitigation: Difficult*	**LOW (-)**	
	The inappropriate planning for road construction can increase the risk of surface water run-off, loss of biodiversity, soil erosion, etc. *Nature: Indirect* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**HIGH (-)**	
	The planning and design of road modifications, which may be necessary to allow for the delivery of components to site via heavy vehicles, could have long lasting traffic benefits. *Nature: Direct* *Consequence: Beneficial* *Extent: Moderate* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*	**LOW (+)**	• The Socio-Economic Specialist will also assess the benefits associated with the road modifications and upgrades.
Storage of hazardous substances	The inappropriate planning for the storage of hazardous substances such as diesel, paint, pesticides, etc., tools and equipment used on site could lead to surface and ground water pollution e.g. due to oil leaks, spillage of diesel etc. In addition, these hazardous substances could be	**MODERATE (-)**	• Further assessment will be undertaken during the EIA Phase and mitigation will be provided in the EIR and the EMPr to inform

PLANNING AND DESIGN PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	washed off into nearby drainage lines. This impact may also be relevant to the proposed Battery Energy Storage System (BESS) The mixing of cement on site could result in ground water contamination from compounds in the cement. In addition, a large number of cement mixing stations on site could increase the presence of impermeable areas which in turn could increase rates of run-off and thereby increase the risk of localized flooding, soil erosion, silting, gully formation, etc. *Nature: Direct and Indirect* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*		suitable methods of hazardous waste storage. • All hazardous substances such as paints, diesel and cement must be stored in a bunded area with an impermeable surface beneath them. • Cement mixing must be conducted at a single location which should be centrally located, where practical. This mixing must take place on an impermeable surface, and dried waste cement must be disposed of with building rubble.
Environmental Legal and Policy Compliance	During planning and design, the failure to adhere to existing policies and legal obligations, could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment. *Nature: Direct* *Consequence: Severe* *Extent: Moderate* *Duration: Long Term* *Probability: Unlikely* *Reversibility/Mitigation: Easy*	**HIGH (-)**	• All necessary permitting and authorisations must be obtained prior to the commencement of any construction activities; and • A suitably qualified Environmental Control Officer (ECO) must be appointed prior to the commencement of the Construction Phase.
Stormwater Management and Erosion	During planning and design, the inappropriate design of roads and impermeable areas could increase rates of run-off and therefore the risk of localised flooding. *Nature: Indirect* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• Structures must be located at least 32 m away from identified drainage lines. • A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of water flow. • The plan must also include management mitigation measures for water pollution, wastewater management and the management of surface erosion e.g. by
	During planning and design, the inappropriate design of stormwater management could lead to damage, pollution and potential flooding of the site. *Nature: Direct* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur*	**HIGH (-)**	

PLANNING AND DESIGN PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Reversibility/Mitigation: Easy		considering the applicability of contouring, etc.
Management of general waste	During planning and design, the inappropriate planning for management and disposal of waste, e.g. storage disposal, could result in surface and ground water contamination. *Nature: Direct,Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**HIGH (-)**	• Develop and implement a Waste Management Plan for handling on site waste. • Designate an appropriate area where waste can be stored before disposal.
Electromagnetic Interference (EMI)	During planning and design, the failure to account for WEF interference to television, radio and microwave signal may negatively impact on surrounding users. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• Accurate siting of wind turbines in the planning and design phase has reduced these effects. This includes approval from CELL C, SAWS, TELKOM, SENTECH, MTN and VODACOM. • If complaints are received from surrounding landowners regarding this issue, the developer must investigate and mitigate these issues to the best of their abilities.
Shadow Flicker	During planning and design the failure to take shadow flicker into account may have negative health impacts on surrounding landowners. The movement of the turbine blades across the direction of sunlight causes a phenomenon called shadow flicker, which can result in health problems if people are regularly exposed to it. *Nature: Direct and Indirect* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• The appointed Visual Specialist should assess the possible impact of shadow flicker on the individuals residing in proximity to the proposed WEF site.
Changes to Fluvial Geomorphology	During the planning and design, phase the incorrect placement and/or design of bridge pilings or culverts may result in scouring of the river bed in the areas immediately surrounding the pilings or culverts. *Nature: Indirect and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term*	**MODERATE (-)**	• The potential impacts associated with the watercourse crossings must be assessed further in the EIR and suitable mitigation must be included in the EMPr.

PLANNING AND DESIGN PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Probability: May Occur *Reversibility/Mitigation: Easy*		• The EMPr must include suitable preventative measures to limit erosion and sedimentation of watercourses and the associated banks. • Ensure that scour countermeasures are incorporated into the design of all bridge structures. • Adequate bank stabilization measures must be incorporated into the design of the crossing structure.
	During planning and design, the insufficient planning for erosion prevention along the banks of the streams alongside the water crossing structures will result in erosion that may eventually impair the safety of the structure. *Nature: Indirect* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	
Scheduling of Construction	During planning and design, incorrect construction scheduling that does not take into account the seasonal requirements of the aquatic environment, e.g. allowing for unimpeded flood events, could lead to short-term (and potentially long-term) impacts such as excessive sediment mobilization, etc. *Nature: Indirect* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	
Loss of indigenous vegetation	The occurrence of *Tridentea virescens* is highly likely in the washes, which are characterised by the presence of dwarf karoo shrubs. During planning and design the inappropriate siting location for the installation of turbine platforms and ancillary infrastructure can cause unnecessary clearance of natural vegetation. *Nature: Direct and Cumulative* *Consequence: High* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**HIGH (-)**	• The Ecological Specialist should assess the proposed locations of the turbine footprints and provide suitable mitigation measures to ensure that the minimum amount of vegetation is cleared. • The Faunal Specialist should assess the proposed locations of the turbines (inclusive of ancillary infrastructure) to provide suitable buffers and mitigation measures for the minimal disturbance to the species. • A suitably qualified ECO should be appointed to monitor the vegetation clearance.
Disturbance of indigenous fauna	Washes and rivers in Dwarf Succulent Karoo habitat are highly sensitive. During planning and design the inappropriate siting location for the installation of turbine platforms can cause unnecessary disturbance to local faunal species, such as the Karoo dwarf and tent tortoises. *Nature: Direct and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur*	**VERY HIGH (-)**	

PLANNING AND DESIGN PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Reversibility/Mitigation: Easy		
Disturbance of sensitive areas	During planning and design the inappropriate siting of turbines can result in unnecessary disturbance of sensitive areas and their sensitivity buffers. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**VERY HIGH (-)**	
Damaging of heritage artefacts due to incorrect placement of turbines	During planning and design the failure to avoid heritage feature / artefacts could results in damage or the permanent loss of these features. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• The appointed Heritage Specialist must locate existing, and identify potential, sensitive heritage resources and provide suitable buffers to mitigate impacts on these resources during the Construction Phase.
Change in scenery in the WEF area	During planning and design, incorrect placement of turbines in visually sensitive areas may negatively impact individuals' perceptions in terms of sense of place. *Nature: Direct and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• The Visual Specialist should identify sensitive visual receptors and inform the WEF layout based on the visual sensitivity. This impact will be difficult to mitigate as individuals' perceptions of the Soyuz 6 WEF will vary.
Noise generated by turbines close to sensitive receptors	During planning and design, the incorrect placement of turbines could impact on local people's health. The noise generated by turbines can impact people living within 500m of an individual turbine. *Nature: Direct and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**VERY HIGH (-)**	• The Noise Specialist should identify residences within proximity to the proposed Soyuz 6 WEF site and provide suitable buffers to ensure that individuals residing in proximity to the site are not adversely impacted by the noise associated with the turbines.

Table 9-4: Issues and impacts identified in the construction phase of the proposed development

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
Nuisance dust	During construction, dust generated by certain equipment is likely to be a potential nuisance. *Nature: Direct* *Consequence: Slight* *Extent: Localised* *Duration: Short Term* *Probability: Definite* *Reversibility/Mitigation: Easy*	**LOW (-)**	• The Contractor will be responsible for the continued control of dust arising from construction activities. • Areas in which topsoil will be stripped for construction purposes must be limited and only stripped when work is about to take place. • The appropriate health and safety equipment (e.g. dust masks) should be worn by workers during the phases of dust-producing construction activity. • Further assessment and mitigation should be provided in the EIR and EMPR.
Construction camp	During construction, campsite sprawl can cause unnecessary disturbance of vegetation and loss of biodiversity. *Nature: Direct* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**MODERATE (-)**	• The location, layout and method of establishment of the construction camp must be clearly indicated and demarcated prior to the commencement of construction. • The Botanical Specialist and Faunal Specialist should provide suitable mitigation measures based in the floral and faunal sensitivity of the site, including any no-go areas.
Access roads	During construction, the unnecessary disturbance of habitats during road construction could cause loss of biodiversity. *Nature: Indirect* *Consequence: Slight* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**MODERATE (-)**	• The Botanical and Faunal Specialists should provide suitable mitigation measures based in the floral and faunal sensitivity of the site, including any no-go areas.

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
Fire	During construction, the runaway fires from cooking on the construction camp might lead to the burning of surrounding vegetation. *Nature: Indirect and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**VERY HIGH (-)**	• The EIR and the EMPr must include suitable mitigation measures to reduce the likelihood of runaway fires occurring. • The EMPr should include the contact details of the relevant emergency services in the area.
Stormwater management	During construction, sediment is likely to be created, this could be washed off into the nearby drainage line e.g. during the excavation of foundations, the laying of access roads within the site, digging of cable runs and soil stripping and stockpiling to create foundations and temporary areas of hard-standing, such as the construction camp. *Nature: Direct and Indirect* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• A Stormwater Management Plan must be implemented throughout the duration of the Construction Phase.
Degradation of drainage lines from earthworks	During construction, unplanned activities or earthworks that occur close to onsite drainage lines could cause adverse impacts such as soil erosion, siltation, and blockage of the drainage line. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• A Stormwater Management Plan and an Erosion Management Plan must be implemented throughout the duration of the Construction Phase.
Soil erosion	During construction, soil could wash out of bare slopes before natural re-vegetation has established. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• An Erosion Management Plan and a Rehabilitation Management Plan must be implemented during the Construction Phase.
Management of general waste	During construction, littering by construction workers could cause surface and ground water pollution. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur*	**MODERATE (-)**	• The EIR and accompanying EMPr must provide suitable guidelines for the management of general waste.

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Reversibility/Mitigation: Easy		
Hazardous substances	During construction, the onsite maintenance of construction vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants and cement during construction activities. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• Further assessment will be undertaken during the EIA Phase and mitigation will be provided in the EIR and the EMPr to inform suitable methods of hazardous waste storage and management of the BESS.
Management of construction waste	During construction, waste e.g. excess concrete and cement mixture, empty paint containers, oil containers, etc., could cause pollution of ground and surface water when they come into contact with run-off water. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• Further assessment will be undertaken during the EIA Phase and mitigation will be provided in the EIR and the EMPr to inform the management of construction waste. • The appointed ECO must monitor the management of construction waste during the Construction Phase.
Water Quality	During construction, wet concrete could spill into surrounding watercourses. Wet concrete is highly alkaline. This could result in flash kills of macro-invertebrates and fish species in the vicinity. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• An Erosion Management Plan and Stormwater Management Plan must be implemented during the Construction Phase. • The Contractor must take all reasonable measures to limit erosion and sedimentation due to construction activities and must comply with such detailed measures as may be required by the EMPr. • Disturbed areas should be rehabilitated as soon as possible.
	During construction, soil erosion may occur which will decrease the quality of the aquatic habitat downstream of the construction activities by silting over exposed rocks, decreasing the clarity and oxygen saturation of the water. *Nature: Direct and Indirect* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	
Hydrology	During construction the use of coffer dams have the potential to permanently change the flow dynamics	**HIGH (-)**	

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	in a river, exacerbating scour and enhancing sedimentation. Both of these changes can impact negatively on the aquatic ecosystem. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*		• Water Use Authorisation is required from the Department of Water and Sanitation (DWS) for development within 100 m of any watercourses and within 500 m of any wetlands. • The Freshwater and Ecological Specialists must inform the layout and ensure that sensitive areas are avoided and/or adequately managed and mitigated. • All conditions and mitigations measures provided by the DWS and specified by the Ecological Specialist and the EMPr must be implemented. • A Stormwater Management Plan and Erosion Management Plan must be implemented during the Construction Phase. • The appointed ECO must monitor construction activities near the watercourses and the wetlands.
Riparian Vegetation	Wash habitats are highly sensitive with a high likelihood of *Tridentea virescens.* During construction the indiscriminate removal of riparian vegetation at the site may lead to disturbance of the aquatic ecosystem. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**VERY HIGH (-)**	
Infilling/ Excavation in a Watercourse	During construction activities, excavated material stockpiles may increase sediment loads in watercourses during rainfall events which could affect water quality. *Nature: Indirect and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**LOW (-)**	
	During construction, materials used for the infilling of watercourses in order to construct water crossings may not be compatible with the surrounding bed/banks, etc., which could change the characteristics of the watercourse. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**LOW (-)**	
Disposal of Spoil Material	During construction, the incorrect disposal of subsoil/spoil material could result in significant loss of a useful resource. *Nature: Direct and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**MODERATE (-)**	• Subsoil must not be disposed of onsite without the appropriate Waste License in terms of the NEMA: Waste Act. • Spoil could be used to rehabilitate open borrow pits or erosion features.

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
			• Disposal of spoil material to a registered landfill should be the last option. • No spoil stockpiles will be allowed to remain onsite once construction activities have ceased.
Management of hazardous chemicals	During construction, soil contamination and a loss of fertile soils as a result of hazardous chemical spills. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• Machinery must be properly maintained to keep oil leaks in check. • If a spill occurs on a permeable surface (e.g. Soil), a spill kit must be used to immediately reduce the potential spread of the spill. • If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials. • Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of hazardous chemicals to the environment and stored in adequate containers until appropriate disposal in a licenced landfill site.
Increased risk of fires from construction activities	During construction site personnel could start fires which could result in the loss of crops, grazing and livestock. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**HIGH (-)**	• Ensure that all personnel are aware of the fire risk and the need to extinguish cigarettes before disposal, in appropriate waste disposal containers. • Smoking must only be allowed in demarcated areas with easy access to fire-fighting equipment. • Welding and other construction activities requiring open flames shall be done in a

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
			designated area containing fire-fighting equipment. • The Agriculture & Soils Specialist should assess the potential impact resulting from the loss of crops, grazing and livestock as a result of fires.
Soil stockpiling management	During construction, the incorrect stockpiling methods of soil will result in a decrease of agricultural viability/potential of these soils and may even cause sterilization of these soils due to a decrease in viable seed bank. *Nature: Direct and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• Develop and implement a Rehabilitation Management Plan to monitor rehabilitated areas. • Implement measures such as wind-breaks, swales and watering to aid the initial grown of primary vegetation. • Fertile topsoil must not be stockpiled for periods exceeding 12 months or exceeding 2 m in height. • Topsoil may be supplemented with an indigenous seed mix.
Soil profile disturbance and resultant decrease in soil agricultural capability	During construction the excavations for the turbines and associated infrastructure will disturb the soil profile. If topsoil becomes buried, or subsoil and rock that is less suitable for root growth, remains at the surface, the agricultural suitability of the soil, that will become available for agriculture again after decommissioning of the WEF, will be reduced. *Nature: Direct and Cumulative* *Consequence: Low* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**LOW (-)**	• The upper 15-20 cm of top soil must be stripped and stockpiled as topsoil. It should be retained for re-spreading over disturbed surfaces during rehabilitation. • All other soil excavated will be stockpiled separately from topsoil as subsoil. • Ensure that topsoil does not get buried by subsoil during backfilling. Failure to comply will result in topsoil sterilisation. • The appointed ECO must monitor all excavations to ensure backfilling with subsoil followed by topsoil takes place.

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
			• The appointed ECO must monitor depth and cover of topsoil spreading during rehabilitation to ensure a 30cm depth. • Topsoil allocated for rehabilitation must not be mixed with other materials, such as building rubble, rock, subsoil, etc. • Topsoil stockpiles are to be handled only twice – once during clearing and stockpiling and once during rehabilitation/backfilling.
Loss of vegetation during construction	Washes and rivers in Dwarf Succulent Karoo habitat are highly sensitive. During construction, loss of natural vegetation due to vegetation clearing and sprawl beyond the development footprint. This could include the loss of plant Species of Conservation Concern (SCC). *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Moderate* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**HIGH (-)**	• Existing farm tracks or access roads must be used as far as possible during construction. • Construction activities must be demarcated and vegetation clearing and top soil removal limited to these areas. • The layout must be surveyed in peak flowering season, prior to construction and protected plant species transplanted into the neighbouring environment; • Permits to remove species found on the NEM:BA and PNCO list will be required prior to construction. • In the event that a protected tree species needs to be removed, a permit to do so must be obtained from DAFF.
Disturbance to surrounding wildlife and fauna	During construction, vehicular movement, noise and habitat destruction will disturb animals in the area. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term*	**HIGH (-)**	• Restrict construction activities to post-dawn and pre-dusk where possible. A list of activities permitted to occur outside of working hours

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Probability: Definite *Reversibility/Mitigation: Difficult*		is incorporated into the EMPr. These activities may occur once permission has been granted by the landowner. • Construction must be undertaken in the shortest time practical. • Enforce speed limits within the construction site (40km per hour is recommended).
	During construction, the potential loss of specialised faunal habitat due to clearing beyond the development footprint (wetlands, and riparian zones) may reduce faunal populations. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Moderate* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**HIGH (-)**	
Disturbance of sensitive areas	During construction activities erosion and degradation of watercourses and associated riparian habitats may occur due to irresponsible construction of access roads. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**HIGH (-)**	• The Ecological Specialists, Avifaunal Specialist, Bat Specialist and Freshwater Specialist should inform the layout to ensure that the impact on sensitive watercourses and riparian vegetation is kept to a minimum. • Construction through water courses, only where necessary, must occur within the smallest possible construction footprint, preferably during the dry season, and must be immediately followed by erosion stabilisation and re-vegetation.
Destruction of bird habitat during construction of the facility	During construction avifaunal habitat loss is likely to occur. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• The Avifaunal Specialist must inform the layout to ensure that sensitive avifaunal areas and their associated buffers are avoided. • Ongoing avifaunal monitoring must be conducted during the operation of the WEF according to the recommendations of the Avifaunal Specialist.
Disturbance of birds, particularly whilst breeding	During construction activities the disturbance of birds is likely to occur. This is of particular relevance to those species which are breeding at the time. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur*	**HIGH (-)**	

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Reversibility/Mitigation: Moderate		
Destruction of bat roosts due to earthworks and blasting	During construction, the earthworks and especially blasting can damage bat roosts in rock crevices. Intense blasting close to a rock crevice roost can cause mortality to the inhabitants of the roost. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• The Bat Specialist must inform the turbine layout to ensure that sensitive bat areas and their associated buffers are avoided. • Ongoing bat monitoring must be conducted during the operation of the WEF according to the recommendations of the Bat Specialist.
Artificial lighting	During construction strong artificial lights used at the work environment during night time will attract insects and thereby also bats. However only certain species of bats will readily forage around strong lights, whereas others avoid such lights even if there is insect prey available. This can draw insect prey away from other natural areas and thereby artificially favour certain species, affecting bat diversity in the area. *Nature: Direct and Cumulative* *Consequence: Slight to Beneficial* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*	**LOW (-)**	• Utilise lights with wavelengths that attract fewer insects (low thermal/infrared signature), such lights generally have a colour temperature of 5000K (Kelvin) or more. If not required for safety or security purposes, lights should be switched off when not in use.
Loss of bat foraging habitat	During construction of turbines and access roads some bat foraging habitat will be permanently lost. Temporary foraging habitat loss will occur during construction due to storage areas and movement of heavy vehicles. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• The Bat Specialist must inform the turbine layout to ensure that sensitive bat areas and their associated buffers are avoided. • Keep to designated areas when storing building materials, resources, turbine components and/or construction vehicles and keep to designated roads with all construction vehicles.
Fossil heritage resources	During construction the disturbance, damage, destruction or sealing-in of fossil remains preserved at or beneath the ground surface within the development area may occur. *Nature: Direct* *Consequence: Severe* *Extent: Localised*	**MODERATE (-)**	• Monitoring of all substantial bedrock excavations for fossil remains by the appointed ECO, with reporting of new paleontological finds to ECPHRA.

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Duration: Long Term *Probability: May Occur* *Reversibility/Mitigation: Difficult*		
Houses and farm walls	During construction damage to built-structures older than 60 years in age may occur. All built structures older than 60 years are protected by SAHRA. *Nature: Direct and Indirect* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• All houses and walling within 50 m of the turbine footprints must be demarcated before any construction activities takes place in the area. • No infrastructure may occur within 20 m of walling. • The final layout must be assessed at a desktop level to determine whether or not onsite monitoring will be necessary during the construction phase. • Access roads must be rerouted away from farm buildings. • All mitigation measures which are recommended by the Heritage Specialist must be implemented.
Stone Age / Historical Period settlements	During construction late Iron Age and Historical Period settlements and walling may be lost or damaged. These sites are protected by the SAHRA. *Nature: Direct and Indirect* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	
Influx of jobseekers and the impact of temporary construction workers	During construction there may be an influx of temporary workers and jobseekers which may have a negative impact on the area. These impacts include pressure on essential services and conflict between local people and outsiders. *Nature: Indirect and Cumulative* *Consequence: Severe* *Extent: Moderate* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• The Socio-Economic Specialist must provide recommendations and mitigation measures to ensure that the municipality and the Developers work together to reduce or alleviate possible negative impacts.
Population changes	During construction there may be an increase in population in the Ubuntu LM. These population impacts refer to the degree to which the construction period could impact on the population size, gender, racial and age compositions of the local municipal areas and would thus be affected by the magnitude of 'outsiders' moving into the area and the length of the period that they remain. *Nature: Indirect and Cumulative* *Consequence: Severe* *Extent: Moderate* *Duration: Short Term*	**LOW (-)**	• It is recommended that Sub-Contractors only employ construction workers through a labour desk.

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	Probability: May Occur *Reversibility/Mitigation: Difficult*		
Employment opportunities and employment equity	The construction period of the wind energy facility is labour intensive with positive socio-economic consequences. Although not certain at this stage, approximately 500 employment opportunities would become available over the short-term (24-month construction period). Employment is not constant and will start slow, reach a peak and then slow down again towards the end of the construction period. *Nature: Direct and Cumulative* *Consequence: Beneficial* *Extent: Moderate* *Duration: Short Term* *Probability: Definite* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	• The Socio-Economic Specialist must provide recommendations and mitigation measures to enhance the benefits relating to employment opportunities for the local communities. • Suitable semi and skilled employees should be identified. Tap into existing skills databases of the affected Municipalities and do a skills audit of the available workforce. • Involve the Local and District Municipalities in the ED's and SED's from the onset of the project through open engagement. • The Municipal structures, Ward Councillors and Ward Committees are responsible to transfer information to their constituencies, create task teams and/or PSC's that would ensure compliance with tender procedures. • Municipal structures should train SMMEs and PDIs and assist them in registering and preparing for tender.
Skills development and capacity building of workers	During construction, skills development and capacity building for workers, whether through training or hands-on experience would be a positive outcome of the construction phase. However, due to the relative short length of the construction phase it is doubtful that comprehensive skills training programmes could be undertaken over the short-term. *Nature: Direct and Cumulative* *Consequence: Slightly Beneficial* *Extent: Moderate* *Duration: Short Term* *Probability: Unlikely* *Reversibility/Mitigation: N/A*	**LOW (+)**	
Skills development of supporting industries / local SMMEs	During construction, supporting industriesmay benefit from the influx of people. Supporting industries refer to small business enterprises and services that would be required to fulfil needs or requirements that develop as a result of the construction activities and would thus fall under the 'Enterprise Development' (ED) and 'Socio-economic Development' (SED) component of the project. This could include catering, laundry services, accommodation, suppliers of protective clothing, transport and so forth. *Nature: Indirect and Cumulative* *Consequence: Slightly Beneficial* *Extent: Moderate* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*	**LOW (+)**	
Local procurement	During the construction period local businesses could benefit through the use of local resources.	**MODERATE (+)**	• The Developer should implement local

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	The DoE prescribes a minimum of 40% local content (labour, material and goods), aiming for 65%. This would have positive impacts on the country's local economy. Aside from the most complex turbine parts (which will likely be imported and transported from Coega harbour, Port Elizabeth), infrastructure elements and the wind farm components will be sourced in South Africa, and where possible from within the local region. General construction materials and goods could be sourced from Britstown and the wider region. *Nature: Direct, Indirect, and Cumulative* *Consequence: Beneficial* *Extent: Moderate* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*		procurement policies that would enhance local and regional economic benefits.
Impacts on the Local Economy	During the construction period the local economy of Britstown may be positively impacted. The DoE requires a local content between 40 and 65% which would ensure that a significant portion of the project benefits are reserved for the local economy (South Africa). However, it is uncertain what portion of the local content would be reserved for the 'local economy' at this point. However, definite positive impacts for the local economy associated with the construction phase are foreseen and would include: • Employment of locals and an increase in salary earners; • Contracts with SMME's and local service providers (catering, transport, etc.) where possible; • Local procurement of material and goods, where possible; • Positive impacts for the retail market (groceries, goods and services, food suppliers, etc.) for local merchants, shops and informal traders; and • Accommodation of foreigners in local establishments and its associated spin-offs. *Nature: Direct, Indirect, and Cumulative* *Consequence: Beneficial* *Extent: Moderate* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	• The Developer must formulate a local procurement strategy to increase the local content of the project. This must form part of the Socio-economic Impact Assessment.
Disruption in daily living and	During construction disruptions in daily living and movement patterns for surrounding communities	**MODERATE (-)**	• Announce disruptions, road closures and so forth

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
movement patterns	and road users could manifest in the form of traffic and intrusion impacts resulting in short-term disruptions and safety hazards, particularly during the site preparation phase (construction of access roads on site), laying of foundations and the erection phases. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*		by using the local media, road sign boards and other Municipal structures and collaborate with SANRAL and the various Local Municipalities and Disaster Management entities in the affected towns. • Erect signboards indicating accesses to the construction site. • The Socio-Economic Specialist should provide additional mitigation measures and recommendations to reduce the significance of disruptions to daily living and movement patterns.
Attitude formation, interest group activity, community mobilisation	No interest group activity or community mobilisation for, or against, the proposed project has been observed. However, the following should be noted: • A lack in communication, unrealistic expectations and other employment issues has the potential to result in labour tensions during the construction phase. • In addition to this, the DoE defines the beneficiary community as those communities located within a 50 km radius of the project. This requirement has the potential to create conflict, as portions of the affected Municipalities would be excluded from receiving socio-economic benefits. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**LOW (-)**	• Involve the Ubuntu LM from the onset of the project through open engagement. Set up a PSC represented by the various role-players and define the "beneficiary community" in clear terms. • Make the contact details of the PSC available to the local communities should they wish to lodge complaints. • The Ubuntu LM to set up appropriate structures (task teams, PSC, etc.) that would deal with the ED and SED components of the project (employment, community projects, etc.) in partnership with the developer. • Municipal structures communicate with the various Municipal / Ward constituencies to ensure
Impacts on the Ubuntu Local Municipality	During construction of the Soyuz 6 WEF specific impacts on the Ubuntu LM could include: • An increase in responsibilities to do a skills analysis, compile a database of an available local workforce, identify local service providers and provide relevant training; • Issuing of zoning permits timeously;	**MODERATE (-)**	

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	• Representation on the Environmental Monitoring Committee (EMC), representation on a Project Steering Committee (PSC) and any other structures, which requires extra time and capacity; and • Legal responsibilities in terms of actions against land owners, the developer or any other parties that contravene Municipal bylaws. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*		transparency and avoid those unrealistic expectations are created. • Emphasis is once again placed on employment of locals, as locals may perceive those outsiders are "stealing" jobs. • The Developer should timeously apply for the relevant zonings and permits.
Accommodation for workers	During construction the local workers will commute from their homes on a daily basis. The only employees overnighting on-site would be limited to security personnel. Expatriates and other skilled employees are usually set up in Guesthouses and B&B's and other accommodation facilities in the project vicinity. An opportunity exists for local establishments to profit from this opportunity with a positive impact on the local economy. *Nature: Direct, Indirect, and Cumulative* *Consequence: Slightly Beneficial* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	• Inform the Chamber of Business and local community structures about accommodation requirements in order for accommodation establishments to be prepared for the influx of people to the Britstown area.
Impacts on infrastructure and services	During construction electricity and water may be interrupted. It is not anticipated that any major water and electricity services would be disrupted at this stage, however; electricity might be disrupted for a short period in time should the existing Eskom power lines be rerouted and when the WEF / switching station is connected into the grid. The Municipality would be notified in time should this take place. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: Unlikely* *Reversibility/Mitigation: Difficult*	**LOW (-)**	• This impact is unlikely, but should this impact occur, the Socio-Economic Specialist should provide recommendations to reduce the significance of this impact.
Health and safety risks for workers	During the construction phase the inadequate management of the construction process and	**LOW (-)**	• Construction workers to wear protective clothing (e.g. masks that minimize

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	general construction related activities could result in health and safety risks for workers. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*		dust inhalation and clothing that protects against sunburn). • Lock away dangerous plant, equipment and material when not supervised or in use. • Dispose of the various types of waste generated in the appropriate manner at the closest registered waste fill sites at regular intervals. • Identify the waste types that are likely to be produced and aim to reduce the amount of waste as much as possible, through identifying routes to reuse or recycle materials. Label all waste storage and skips, detailing the type of waste. • Provide safe and clean drinking water and instil regular water breaks to keep workers hydrated. • Provide sufficient chemical /portable toilets at strategic locations that are cleaned regularly. • Keep the local fire, police and ambulance services informed of construction times and progress.
Security impacts	During construction the security of the Soyuz 6 WEF site may be compromised. The perception exists that criminal activities increase in areas where construction projects take place. The appointment of local construction workers often aids to mitigate potential security issues. General security on site should also receive attention as cables and other valuable material could attract criminals with negative economic consequences for the developer. Electric fencing, CCTV cameras, 24-hour security guards, random security checks throughout the site and access control to the site are some of the safety measures that could be	**LOW (-)**	• The local SAPS and Ward Councillors should be informed about the construction progress and timelines to ensure that they are able to adequately deal with any type of disruptive behaviour which could occur due to the project.

CONSTRUCTION PHASE			
Issue	**Impact**	**Significance (Pre-assessment estimate)**	**Mitigation & Further Assessment**
	implemented to eradicate potential crime on site and in the area. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*		
Visual intrusion of construction equipment	During the construction phase the equipment needed to erect the wind turbines may affect the 'sense of place' of local residents. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: Definitely* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• Construction must be limited to normal working hours, between 07:00 and 18:00, to ensure that construction lighting on-site is limited, where possible. A list of activities permitted to occur outside of working hours must be incorporated into the EMPr during the EIA phase and approved by all relevant specialists.
Noise generated during the construction period	The construction phase could generate noise during different activities such as: • Site preparation and earthworks to gain access using bulldozers, trucks etc. • Foundation construction using mobile equipment, cranes, concrete mixing and pile driving equipment (if needed). • Heavy vehicle use to deliver construction material and the turbines. *Nature: Direct and Indirect* *Consequence: Slight* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**LOW (-)**	• It is likely that the construction noise will have little impact on the surrounding community as construction will most likely occur during the day when the ambient noise is louder and there are unstable atmospheric conditions. The site is also situated in a rural farmland area and no communities are within immediate proximity of the site.

Table 9-5: Issues and impacts identified in the operational phase of the proposed development

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
Air Quality: Climate change	During operations the electricity generated by the development will displace some of that produced by fossil fuel-based forms of electricity generation. The scheme, over its lifetime, will therefore avoid the production of a significant amount of CO_2, SO_2 and NO_2 that would otherwise be emitted to the atmosphere.	**VERY HIGH (+)**	• This beneficial nature of this impact should be enhanced by promoting the use of renewable energy locally.

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
	Nature: Direct and Cumulative *Consequence: Beneficial* *Extent: Extensive* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: N/A*		
Lighting	During operations the facility may be lit at night which could have adverse impacts on the landscape character and sense of place due to long-term visibility of land. *Nature: Direct* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: Difficult*	**HIGH (-)**	• Night lighting impacts could be reduced by using shaded lighting and using lights at low levels. • If complaints are received from the surrounding landowners, relating to shadow flicker, these must be investigated and mitigated to the best of the Developers' ability.
Architecture of ancillary infrastructure	During operations the control buildings, toilet facilities and other ancillary infrastructure could cause negative visual intrusion if allowed to fall into disrepair and not maintained properly. *Nature: Direct and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Easy*	**MODERATE (-)**	• All project structures and buildings, which are visible to the public, must be maintained to reduce the visual impact.
Hazardous chemical storage	During operations the inappropriate storage of chemical, herbicides, diesel and other hazardous substances on site could result in soil and water contamination and also pose a high accident danger risk. *Nature: Direct, Indirect and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• All hazardous substances must be stored in appropriately bunded locations. • The EMPr should recommend suitable mitigation measures to reduce the risk of hazardous contamination to the site and surrounds.
Operating equipment	During the operational phase noise could be generated by transformers from the process of power conversion. The operation of auxiliary equipment needed to cool the transformers, including cooling fans and oil pumps could also generate some noise. This may cause negative health impacts on people living within the vicinity of the WEF. *Nature: Direct and Indirect* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur*	**MODERATE (-)**	• During the Operational Phase of the proposed WEF, lower noise emission levels from inverters and transformers can be achieved by housing them in enclosed structures.

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
	Reversibility/Mitigation: Difficult		
Increased stormwater run-off	During operations the failure to maintain the storm water system could increase the risk of surface water damage to the landscape and vegetation from increased rates of run-off and therefore the risk of localised flooding and increased sheet erosion downstream due to the presence of roads and impermeable areas of hard standing. *Nature: Indirect* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• The Stormwater Management Plan should be implemented during both the Construction and the Operational Phases of the proposed WEF.
Waste management	During operations there could be littering by maintenance workers and security personnel on site which may impact both flora and fauna in the area. *Nature: Indirect and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• The Waste Management Plan should be implemented during both the Construction and the Operational Phases of the proposed WEF.
Increase in erosion potential	During operations an increase in hard surfaces (concrete foundations and roads) will increase run-off and potentially lead to soil erosion. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**HIGH (-)**	• Anti-erosion features must be installed where required. • Ensure that all cleared and impacted land is rehabilitated and revegetated.
Establishment of renewable energy infrastructure on agricultural land	During operation of WEFs within the greater Northern Cape area the gradual reduction of available agricultural land may have negative economic impacts on the availability of profitable agricultural land. The main agricultural land use in the area is livestock grazing and it is not deemed mutually exclusive to wind energy developments. *Nature: Direct and Cumulative* *Consequence: Low* *Extent: Extensive* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: Difficult*	**LOW (-)**	• Avoid developing on high potential agricultural land. If unavoidable, ensure that all development footprints are kept to a minimum.
Alien Species	During operation the failure to monitor exposed land may lead to the invasion of alien plant species in disturbed areas which would detrimentally impact the local flora. *Nature: Direct,Indirect, and Cumulative* *Consequence: Severe*	**HIGH (-)**	• An Alien Vegetation Management Plan must be implemented during the Operational Phase.

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
	Extent: Localised *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Easy-Moderate*		• Alien vegetation should be removed from the site as it is observed.
Disturbance of birds, particularly whilst breeding	During operations the disturbance of birds by the turbines may occur. This is particularly relevant to the first season of operations and to those bird species which are nesting in the area, such as Verreaux Eagles and Martial Eagles. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term – Long Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**HIGH (-)**	• The Avifaunal Specialist should inform the layout of the proposed WEF and recommend suitable buffers for sensitive areas to reduce the impacts on bird species.
Displacement of birds from the site and barrier effects	During operations the displacement of birds from the site due to this disturbance is likely. This may negatively impact on the avifaunal species composition of the site until the local avifaunal acclimatises to the change to the landscape. *Nature: Direct and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	
Collision of birds with turbine blades	During operations the collision of birds with turbines may occur resulting in the loss individual birds. This impact may be exasperated by the loss of protected / threatened bird species. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur-Definite* *Reversibility/Mitigation: Difficult*	**HIGH (-)**	
Barotrauma	During operations bat mortalities may occur due to direct blade impact or barotrauma during foraging activities. Mortalities of bats due to wind turbines during foraging and migration can have significant ecological consequences as the bat species at risk are insectivorous and thereby contribute significantly to the control of flying insects at night. On a project specific level, insect numbers in a certain habitat can increase if significant numbers of bats are killed off. But if such an impact is present on multiple projects in close vicinity of each other, insect numbers can increase regionally and possibly cause outbreaks of colonies of certain insect species.	**HIGH (-)**	• The Bat Specialist should inform the layout of the proposed WEF and recommend suitable buffers for sensitive areas to reduce the impacts on bats.

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
	Nature: Direct and Cumulative *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur-Definite* *Reversibility/Mitigation: Difficult*		
Job creation	During operations a few permanent employment positions (unskilled, semi- and highly skilled) would emerge. Employment positions could include: • Technicians, electricians, IT specialists, engineers, administrators (highly skilled); • Security (semi-skilled); and • Civil works and site maintenance – grass cutting, road maintenance and so forth (lower skilled). *Nature: Direct and Cumulative* *Consequence: Beneficial* *Extent: Localised* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	• No mitigation is required.
Skills development and capacity building	During operations there is the potential for training which would have a positive impact on those involved. Two (2) types of training are envisaged: • Training of workers on the plant; and • Training through the SED component of the project. Although limited, skills development and capacity building would result as on-site training is likely. An important outcome of skills development and training is that employees would be in a position to source work on similar plants once their contracts expire. A skilled labour force is more likely to find employment, resulting in economic advantages for the local economy over the long-term. Once community and other income-generating projects have been identified training would take place to enable the community members to perform their duties and maximise the project benefits. The MOU between the developer and affected Municipalities should address skills development and training responsibilities during the operational phase and compliance with the MOU guidelines is essential. *Nature: Direct , Indirect, and Cumulative* *Consequence: Slightly Beneficial* *Extent: Localised* *Duration: Short Term-Medium Term* *Probability: Definite* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	• Maximize the number of local permanent and temporary employees (from the Local and District Municipality), where possible.

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
Impacts on the local economy	During the operational phase it is expected that the local economy would benefit in the following ways: • The families of employees would benefit economically with an increase in incomes and spending power; • A possible increase in municipal rates and taxes, as the land would be rezoned from "Agriculture" to "Special Use for Agriculture and Renewable Energy Infrastructure", resulting in higher levels of rateable income; • Local communities would benefit economically through shareholding and community upliftment and Social Development projects; and • The establishment of local downstream industries and services that would support the WEF's operations (to a lesser extent). *Nature: Direct, Indirect, and Cumulative* *Consequence: Beneficial* *Extent: Localised* *Duration: Short Term-Long Term* *Probability: Definite* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	
Impacts on the local community due to community projects, ED and SED contributions	During the operational phase as part of social responsibility and local economic development, the developer would, in consultation with the Ubuntu LM: • Establish a community based BBEEE holding company that holds equity in the WEF project. The Trust would identify community-based projects and manage the funds derived through profit sharing to ensure that socio-economic benefits reach the intended beneficiaries (local community). • The developer could in the initial phases of the project, allocate funds towards community-based projects. Beneficiary communities are defined as those within a 50 km radius from the project site, i.e. Britstown. It is recommended that the project proponent embarks on a holistic, strategic approach for the Enterprise Development and (ED) and Socio-economic Development (SED) components of the project to avoid fragmented community projects in the region. *Nature: Direct, Indirect, and Cumulative* *Consequence: Beneficial* *Extent: Localised* *Duration: Short Term-Long Term* *Probability: May Occur Definite* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	• Establish a PSC, forum or similar structure consisting of representatives of the local and district Municipalities and their relevant Directorates for Economic Development, with the objective to: ○ The PSC/forum will identify major "renewable energy development nodes" where wind energy projects are taking place and co-ordinate projects in a holistic manner; ○ PSC / forum prioritizes projects identified in the IDP's and LED programmes; and ○ Formulate a strategy to achieve long-term sustainable goals that would include large economic development projects in the major

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
			"renewable energy development nodes" that would contribute to the region's economic growth.
Impacts on land / market values of farm portions included in the project	The operational WEF and associated infrastructure would in all likelihood add value to land that is included in the project for the duration of the project, as rental incomes would be secured for a 20 year period, with the possibility to extend. *Nature: Direct, Indirect, and Cumulative* *Consequence: Slight-Slightly Beneficial* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*	**LOW (+)**	• No mitigation required.
Potential impact on rental incomes	For the duration of the operational phase (20 years +), the landowners would benefit financially, as long-term lease agreements are concluded. *Nature: Direct and Cumulative* *Consequence: Beneficial* *Extent: Localised* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	
Electricity supply and the environment	During the operational phase the proposed Soyuz 6 WEF would have a positive impact on a regional and national level: • Wind energy is renewable and sustainable and cannot be depleted, as is the case with fossil fuels; • Wind energy facilities generally require less maintenance with lower operational costs; • Renewable energy has minimal impact on the environment and produces little or no waste products, such as carbon dioxide and other chemical pollutants; and • Renewable energy projects can bring economic benefits for the country, e.g. in the form of new 'green' jobs. *Nature: Direct, Indirect, and Cumulative* *Consequence: Beneficial* *Extent: Extensive* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: N/A*	**HIGH (+)**	
The effect of the WEF of the local sense of place	During operations the visibility of the WEF from Britstown, surrounding game farms, surrounding farms and informal settlement influencing the local people's sense of place. *Nature: Direct, Indirect, and Cumulative*	**MODERATE (-)**	• Mitigation of the visual impact of wind turbines could include relocating

OPERATIONAL PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
	Consequence: Moderate *Extent: Localised* *Duration: Long Term* *Probability: Definite* *Reversibility/Mitigation: Difficult*		
Low frequency noise due to turbine rotation	During operations the effects of low frequency noise include sleep disturbance, nausea, vertigo etc. could have negative health impacts. These effects are unlikely to impact upon residents due to the distance between the turbines and the nearest communities. Sources of low frequency noise also include wind and vehicular traffic, which are all sources that also impact on the receptors. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: Unlikely* *Reversibility/Mitigation: Moderate*	**LOW (-)**	• The Noise Specialist should inform the final layout of the proposed WEF to ensure that no turbines occur within 500 m of any residences.

Table 9-6: Issues and impacts identified in the decommissioning phase of the proposed development

DECOMISSIONING PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
Pollution	During decommissioning of the WEF littering by construction workers could cause surface and ground water pollution. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• Littering must be avoided, and litter bins should be made available at various strategic points on site. • Refuse from the construction (decommissioning) site should be collected on a regular basis and deposited at an appropriate landfill.
	During decommissioning onsite maintenance of construction vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants and cement during construction activities. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• No storage of fuels and hazardous materials should be permitted near sensitive water resources. All hazardous substances (e.g. diesel, oil drums, etc.) must be stored in a bunded area. • Vehicles should be serviced regularly to reduce the likelihood of oil spills.

DECOMISSIONING PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
Dust	During decommissioning dust is likely to be a potential nuisance. *Nature: Direct, Indirect, and Cumulative* *Consequence: Slight* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**LOW (-)**	• Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.
Traffic & Transport	During decommissioning a high number of heavy vehicle movements will occur. This may have a detrimental effect on sensitive receptors, especially on existing vegetation. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• Construction vehicles and machinery should make use of existing infrastructure such as roads as far as possible to minimise disturbance on the receiving environment. • There must be no unnecessary vegetation disturbance.
Soil erosion	During decommissioning and after the removal of all wind turbine related structures, the disturbed soils could become exposed, unstable and prone to erosion. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• After the removal of all wind turbine-related structures, the disturbed soils must be re-vegetated to avoid soil erosion. • Remedial measures should be implemented at the first sign of an increase in erosion.
Land-use	Decommissioning will result in the land which was previously unavailable for certain other land-use becoming available for those uses. *Nature: Direct, Indirect, and Cumulative* *Consequence: Slightly Beneficial* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: N/A*	**LOW (+)**	• No mitigation required.
Long-term damage due to poor rehabilitation	During the decommissioning phase poor rehabilitation could result in limited re-vegetation and long-term ecological damage. *Nature: Direct and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Long Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• A percentage of operational earnings should be set aside for the Decommissioning Phase, which must include costs for landscaping and revegetation of the whole development footprint • The Rehabilitation Management Plan must be implemented and

DECOMISSIONING PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
			should include the primary objectives of rehabilitation and the latest acceptable methods for implementation.
Disturbance to surrounding wildlife and fauna	During decommissioning, vehicular movement, noise and habitat destruction will disturb animals in the study area. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• Restrict decommissioning activities to post-dawn and pre-dusk, where possible. A list of activities permitted to occur outside of working hours must be incorporated into the EMPr. These activities may occur once permission has been granted by the landowner. • Decommissioning of the turbines must be undertaken in the shortest time practical • Speed limits must be implemented and enforced. 40km/h is recommended.
	During decommissioning personnel on site may be tempted to poach wildlife which would have a negative impact on the local fauna. *Nature: Direct, Indirect, and Cumulative* *Consequence: Severe* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**HIGH (-)**	• Decommission workers must be transported to and from the site daily. • An inspection of the immediate vegetation surrounding the turbine sites for evidence of snares must be undertaken.
Artificial lighting	During decommissioning strong artificial lights used at the work environment during nighttime will attract insects and thereby also bats. However only certain species of bats will readily forage around strong lights, whereas others avoid such lights even if there is insect prey available. This can draw insect prey away from other natural areas and thereby artificially favour certain species, affecting bat diversity in the area. *Nature: Direct and Indirect* *Consequence: Slight-Slightly Beneficial* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**LOW (-)**	• Utilise lights with wavelengths that attract fewer insects (low thermal/infrared signature), such lights generally have a colour temperature of 5000K (Kelvin) or more. If not required for safety or security purposes, lights should be switched off when not in use.

DECOMISSIONING PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
Loss of foraging habitat	During decommissioning some foraging habitat will be permanently lost. Temporary foraging habitat loss will occur due to storage areas and movement of heavy vehicles. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Moderate*	**MODERATE (-)**	• The Bat Specialist must inform the sensitivity map through the identification of high and moderate sensitive areas which should be avoided. • Keep to designated areas for vegetation removal and keep to designated roads with all construction vehicles.
Job creation	During decommissioning temporary workers would be required to do the dissembling and/or replacement of components and skilled employees (project managers, technicians, etc.) would also be required. The number of employment positions is unknown as this is new technology and none of the existing plants have as yet been decommissioned. However, it could be expected that suitable workers will be available as a large number of people would have gained relevant skills over the 20 year operational period of the Soyuz 6 WEF and similar plants in the region. *Nature: Direct, and Cumulative* *Consequence: Beneficial* *Extent: Localised* *Duration: Short Term* *Probability: Definite* *Reversibility/Mitigation: N/A*	**MODERATE (+)**	• No mitigation required. • The Socio-Economic Specialist should provide recommendations to enhance the benefits associated with job creation.
Impacts on living and movement patterns	During decommissioning there may be negative impacts on traffic movement patterns due to the large construction vehicles required to move new and old components to and from the site. Impacts on road safety, impacts on road infrastructure and dust generation would thus be pertinent. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• A traffic management plan should be developed prior to decommissioning to inform the transportation risks associated with the old components and waste materials.
Safety and security concerns	The decommissioning phase would increase the influx of people, which could increase the likelihood of safety and security issues. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**LOW (-)**	• The local SAPS and Ward Councillors should be informed of the construction progress and timelines to ensure that they are able to adequately deal with any type of disruptive behaviour which could occur.

DECOMISSIONING PHASE			
Issue	**Impact**	**Significance (Pre-mitigation)**	**Mitigation & Further Assessment**
Visual intrusion of construction equipment	During decommissioning the visual intrusion of the equipment needed to dismantle the turbines may affect the local residents. *Nature: Direct, Indirect, and Cumulative* *Consequence: Moderate* *Extent: Localised* *Duration: Short Term* *Probability: May Occur* *Reversibility/Mitigation: Difficult*	**MODERATE (-)**	• Dismantling must be limited to normal working hours, between 07:00 and 18:00 to ensure that construction lighting on-site is limited, where possible. A list of activities permitted to occur outside of working hours must be incorporated into the EMPr. These activities may occur once permission has been granted by the landowner.

9.4 CUMULATIVE IMPACT STATEMENT

9.4.1 CUMULATIVE IMPACT IDENTIFICATION PROCESS

Sadler (1996) defines cumulative impacts as the "the net result of environmental impact from a number of projects and activities". The impact of the proposed WEF may not be significant or be a serious threat to the environment, but a large number of projects in one area, or occurring in the same vegetation type may have significant impacts (DEAT, 2004). The IFC Good Practice Handbook for Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets were used to compile the section below.

The International Finance Corporation Standards (IFC) recognises Cumulative Impact Assessment (CIA) and management as essential in risk management. However, CIA is also "One of the biggest risk management challenges currently facing project developers in emerging markets…". According to the IFC, "cumulative effects (or impacts) are typically the result of incremental changes to the environment caused by multiple human activities and natural processes".

These challenges include: a lack of basic baseline data, uncertainty associated with anticipated developments, limited government capacity, and absence of strategic regional, sectoral, or integrated resource planning schemes. Considerable debate exists as to whether CIA should be incorporated into good practice of Environmental and Social Impact Assessment, or whether it requires a separate stand-alone process. As a minimum, according to the IFC, developers should assess whether their projects could contribute to cumulative impacts or be impacted upon by other projects and as such the IFC recommends that developers conduct a Rapid Cumulative Impact Assessment (RCIA) either as part of the EIA or as a separate study. This RCIA should follow six (6) general steps:

STEP 1 & 2 – Scoping level Issues identification that could have a cumulative impact

According to the IFC the first step in conducting a Cumulative Impact Assessment (CIA) is to identify what are referred to as Valued Environmental and Social Components (VECs) i.e. biophysical or social amenities that may be affected by cumulative impacts associated with a development. This is typically done through

interaction with relevant stakeholders. In terms of a wind farm the following main cumulative impacts that are likely to influence decision making are anticipated:

- Visual Impacts;
- Impacts on birds and bats; and
- Impacts on the loss of indigenous vegetation and SCCs.

According to the Scottish Natural Heritage Council Guidance Notes on assessing the cumulative impact of onshore wind energy developments, the cumulative impact of a wind farm development in regard to visual impacts is a product of the distance between wind farms, the distance over which they are visible, the overall character of the landscape, the siting and design of the wind farms and the way in which the landscape is experienced. These aspects need to be assessed during the Scoping Phase to determine if the cumulative impact would be significant and thus would require a CIA during the EIA phase.

In terms of birds, collision risk, barrier effect, disturbance and displacement effects, and habitat loss would need to be determined cumulatively for the area of influence. For example, an increase in turbine numbers, as a result of multiple wind farms, could force birds to fly through the windfarm increasing collisions risk as the energetic cost of going around multiple wind farms are too high. Species that needs to be included in the assessment are those specifically sensitive to windfarms and protected species in terms of the relevant legislation. Identifying the range of species likely to be present and/or affected should be completed during the Scoping Phase and this list should be signed-off on by the relevant stakeholders prior to the commencement of the CIA.

In terms of the ecological environment, the cumulative impact of the removal of the same types of vegetation for the proposed, may result in the irreplaceable loss of indigenous species and protected or rare SCCs.

In addition, the removal of indigenous vegetation with a limited distribution range, also increases the risk of invasion by alien species to the point where alien vegetation can displace entire sections of indigenous vegetation leading to local extinctions.

The physical extent to which the impacts need to be assessed will depend on past, existing and potential new (application submitted, under construction, etc.) wind farm and other developments surrounding the current proposed development. Within the proposed WEF development area and a 100 km radius around it, the following WEFs are applicable:

- Soyuz 1 WEF (DFFE Ref: TBA)
- Soyuz 2 WEF (DFFE Ref: TBA)
- Soyuz 3 WEF (DFFE Ref: TBA)
- Soyuz 4 WEF (DFFE Ref: TBA)
- Soyuz 5 WEF (DFFE Ref: TBA)
- Taaibos North WEF (DFFE Ref: TBA)
- Taaibos South WEF (DFFE Ref: TBA)
- Soutrivier Central WEF (DFFE Ref: TBA)
- Soutrivier South WEF (DFFE Ref: TBA)
- Soutrivier North WEF (DFFE Ref: TBA)
- Mainstream Victoria West Wind and Solar (DFFE Ref: 12/12/20/1788)
- Modderfontein Solar PV Facility (DFFE Ref: 14/12/16/3/3/1/917)
- Noblesfontein Wind Energy Facility (DFFE Ref: 12/12/20/1993/2) (operational)
- Ishwati Emoyeni Wind Energy Facility (DFFE Ref: 14/12/16/3/3/2/411)
- Brakpoort PV Solar PV Facility (DFFE Ref: 14/12/16/3/3/2/331)
- Nuweveld North Wind Energy Facility (DFFE Ref: 14/12/16/3/3/2/2042)

- Nuweveld West Wind Energy Facility (DFFE Ref: 14/12/16/3/3/2/2043)
- Nuweveld East Wind Energy Facility (DFFE Ref: 14/12/16/3/3/2/2044)
- De Aar Wind Energy Facility 1 (DFFE Ref: 12/12/20/2463/1)
- De Aar Wind Energy Facility 2 (DFFE Ref: 12/12/20/2463/2)

In such areas, where multiple facilities will be constructed, it is important to consider the overall or cumulative impact of these facilities on various aspects such as birds and bats. Consideration of each project in isolation may not adequately judge the effect that the combined capacity of these developments will have on the abovementioned aspects.

STEP 3 – Baseline Determination

The next step in the CIA process would be to obtain baseline information from the entire affected area, which can be completed in one of two ways:

- Information sharing, i.e. specialist reports pertaining to the wind farms within the affected area can be used as a baseline and the relevant specialists will then be required to review this information and ensure that the gaps are filled within his/her specialist report to ensure that the study covers the affected area in order to complete the CIA
- Baseline information can be obtained and analysed for the affected area.

It is imperative that baseline information does not only consist of recent data collection but also include any historical data available for the area in order to identify the trends or changes over time in order to ensure that recent data is not representative of an already shifted baseline.

STEP 4 – Assessment of the contribution of the development under evaluation to the predicted cumulative impacts

The next step would be to use the baseline data obtained for the area of influence to assess the impact of the development on the relevant environmental / social variables. The methods used for the assessment would be dependent on the variable being assessed. For example, for visual impacts, maps and photomontages can be used to determine what the visual impact from a number of wind farm will be on sensitive receptors, whereas in the case of birds information required would relate to migration corridors, population viability, nesting sites, etc. For a VIA perspective, the relevant specialist would need to look at combined visibility, i.e. are a number of developments visible from a single viewpoint as well as sequential effects, i.e. does the observer have to move to another viewpoint in order to see other developments in the area (SNHC Guidance Notes).

STEP 5 – Evaluation of the significance of predicted cumulative impacts to the viability or sustainability of the affected environmental components

Step 5 entails setting thresholds for the variables to be assessed. This could for example relate to the maximum amount of turbines in a landscape before visual impacts become unacceptable. If setting specific thresholds or targets for environmental variable are not possible then another option would be to identify the limits of acceptable change. This needs to be done in conjunction with the various stakeholders so that agreement can be reached in regards to these limits. The concept of thresholds of acceptable change would then be used to assess the significance of the cumulative impact by considering the level of change associated with all developments within the applicable geographical scope relative to the limit of acceptable change. It is important to bear in mind that the cumulative impact of two similar developments may be less or greater than the sum of the impacts of the individual developments.

Impacts with regards to the visual impact of the area will vary in degree based on the sensitivity of the visual receptors, the landscape context, residents and/or visitors to the area, the magnitude of change in terms of scale, nature, duration, and frequency of combined and sequential views (SNHC Guidance Notes).

Impacts with regards to birds / bats should be assessed based on species population size, population trends and range. The spatial scale would be dependent on the conservation objectives, i.e. maintain conservation of a national scale or on a local scale.

Cumulative impacts can be desirable and undesirable. Desirable cumulative impacts of development can, for example, lower rates of unemployment and accessibility to clean energy.

STEP 6 – Design and implementation of mitigation measures to manage the development's contribution to the cumulative impacts and risks

The final step would include the management and mitigation of potential impacts. This may include negotiations with other project proponents to reduce the overall mitigation required by a single project, additional mitigation measures to further reduce impacts identified in the EIA, project design changes, etc.

9.4.2 Cumulative Impacts for Consideration

A preliminary identification of cumulative impacts has been conducted in the Scoping Phase for the proposed WEF (initial ratings in Section 9.3 above) and will be assessed further in the EIA Phase. All Specialist Impact Assessments will include a cumulative impact statement. Specialists will define all identified cumulative impacts and provide an assessment of these impacts. Each identified impact will be rated using the significance rating methodology.

The likelihood of cumulative impacts of the proposed WEF is deemed relatively moderate to high due to the number of proposed developments within the general area.

9.5 Gaps in Knowledge

Due to the complex and dynamic nature of the environment, uncertainty and gaps in our knowledge are inevitable. The Precautionary Principle has been adopted to account for this uncertainty throughout the Scoping Phase of the proposed WEF and will similarly be implemented in the EIA Phase.

The Precautionary Principle ensures that:

- Uncertainty surrounding impacts are identified and addressed appropriately;
- Preventative measures are taken into account throughout the project;
- Various alternatives are thoroughly explored;
- Adequate and transparent public participation is conducted;
- A holistic approach is adopted to ensure social, economic and ecological impacts are explored, and mitigation measures are determined, through an integrated and balanced approach; and
- An adaptive approach is adopted to account for the complexities and dynamism inherent in environmental processes.

The Precautionary Principle ensures that potential impacts are predicted, avoided and mitigated to avoid threats of a serious or irreversible nature (IUCN, 2007).

10 PLAN OF STUDY: ENVIRONMENTAL IMPACT ASSESSMENT PHASE

This Chapter sets out the Plan of Study (PoS) for the EIA phase of the assessment. Consultation with DFFE will be ongoing throughout this EIA process. However, it is anticipated that DFFE will provide relevant comment with respect to the adequacy of this Plan of Study for the EIA, as it informs the scope and scale of the EIR.

10.1 SPECIFIC CHALLENGES TO THE EIA PHASE

The specific challenges and impacts relevant to the proposed WEF, as a development within the Ubuntu area, are the following:

- Impacts on the topography, geology and soils;
- Impacts on the current land uses;
- Removal of top soil and soil erosion;
- Impacts on terrestrial ecosystems;
- Impacts on aquatic ecosystems;
- Impacts on health and safety;
- Impacts on archaeological, paleontological and cultural sites;
- Impacts on the flow of traffic;
- Noise emissions;
- Visual Impacts; and
- Impacts on the socio-economic environment of the region.

10.2 SCOPE AND INTENT OF THE EIA PHASE

The above aspects (Section 10.1) will be assessed as part of the EIA process, although it is assumed that additional impacts will be raised by I&APs, the EAP and/or the specialist consultants, and these will also be assessed.

The EIA phase has four key elements, namely:

Specialist Studies: Specialist studies identified as being necessary during the Scoping Phase, plus any additional studies that may be required by the authorities, will be undertaken during the initial phase of the EIA. Appropriately qualified and experienced specialists will be appointed to undertake the various assessments. Specialists will gather baseline information relevant to the study being undertaken and will assess impacts associated with the development. Specialists will also make recommendations to mitigate negative impacts and enhance benefits. The resulting information will be synthesised into the Environmental Impact Report (EIR), whilst the full specialist reports will be attached to the EIR as a Specialist Volume.

Environmental Impact Report (EIR): The main purpose of this report is to gather and synthesise environmental information and evaluate the overall environmental impacts associated with the development, to consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIR also identifies mitigation measures and management recommendations to minimise negative impacts and enhance benefits. The EIR and associated specialist reports are made available for public and authority review and comment. The availability of the report will be advertised in one Provincial and one local newspaper and the report will also be made available for public scrutiny in easily accessible locations.

Environmental Management Programme (EMPr): The EMPr provides guidelines to the project proponent and the technical team on how best to implement the mitigation measures and management recommendations outlined in the EIR during the construction and operational phase.

Public Participation Process (PPP) commenced during the Scoping Phase will be continued, during which I&APs are afforded further opportunities to raise their issues, concerns and comments regarding the proposed project. It is possible that some of the project details may have changed in response to the preliminary findings of the Scoping Report, and as a result of design changes made by the project proponent. I&APs and key stakeholders are given the opportunity to review the Draft EIR before it is submitted to the authorities for consideration. Comments on the Draft EIR received from I&APs are included and addressed in the submitted EIR in the form of an Issues & Response Trail.

10.2.1 Impacts Assessment Methodology

CES has developed a revised rating scale for the Scoping Phase in accordance with the requirement outlined in Appendix 2 of the amended EIA Regulations (2014 and subsequent 2017 amendments). This scale takes into consideration the following variables:

- Significance
- Consequence
- Extent
- Duration
- Probability
- Reversibility and Mitigation

Issues Identification Matrix

Six factors are considered when assessing the significance of the identified issues, namely:

1. **Significance** - Each of the below criterion (points 2-6 below) are ranked with scores assigned, as presented in Table 10-1 to determine the overall significance of an activity. The total scores recorded for the effect (which includes scores for duration; extent; consequence and probability) and reversibility / mitigation are then read off the matrix presented in Table 10-1, to determine the overall significance of the issue. The overall significance is either negative or positive.
2. **Consequence** - the consequence scale is used in order to objectively evaluate how severe a number of negative impacts might be on the issue under consideration, or how beneficial a number of positive impacts might be on the issue under consideration.
3. **Extent** - the spatial scale defines the physical extent of the impact.
4. **Duration** - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
5. The **probability** of the impact occurring - the likelihood of impacts taking place as a result of project actions arising from the various alternatives. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development and alternatives. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.
6. **Reversibility / Mitigation** – The degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. The four categories used are listed and explained in Table 10-1 below. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

This impacts methodology will be used for the assessment of all general impacts (those impacts identified and assessed by the EAP), as well as all specialist impacts (those impacts identified and assessed by the various specialists)

Table 10-1: Ranking of Evaluation Criteria.

Effect	**Duration**	
	Short term	Less than 5 years
	Medium term	Between 5-20 years
	Long term	More than 20 years
	Extent	
	Localized	The proposed site and its immediate environs
	Moderate	District / Municipal and Provincial level
	Extensive	National and International level
	Consequence	
	Slight	Slight impacts or benefits on the affected system(s) or party(ies)
	Moderate	Moderate impacts or benefits on the affected system(s) or party(ies)
	Severe/ Beneficial	Severe impacts or benefits on the affected system(s) or party(ies)
	Probability	
	Unlikely	The likelihood of these impacts occurring is slight (low probability)
	May Occur	The likelihood of these impacts occurring is possible (high probability)
	Definite	The likelihood is that this impact will definitely occur
Reversibility/ Mitigation	**Impact Reversibility / Mitigation**	
	Low	The impact can be easily, effectively and cost effectively mitigated/reversed
	Moderate	The impact can be effectively mitigated/reversed without much difficulty or cost
	High	The impact could be mitigated/reversed but there will be some difficultly in ensuring effectiveness and/or implementation, and significant costs
	Very High	The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly

10.3 SPECIALIST STUDIES

Based on the outcome of the current scoping report, it is proposed that the following specialist studies must be conducted as part of the EIA phase:

- **Agricultural Impact Assessment**
- **Avifaunal Monitoring and Impact Assessment**
- **Bat Monitoring and Impact Assessment**
- **Botanical Impact Assessment**
- **Faunal Impact Assessment**
- **Freshwater Impact Assessment**
- **Heritage Impact Assessment**
- **Noise Impact Assessment**
- **Paleontological Impact Assessment**
- **Socio-economic Impact Assessment**
- **Traffic Impact Assessment**
- **Visual Impact Assessment**

The ToR for the above-mentioned assessments, which outline the information required from the specialists during the EIA Phase, are provided below as well as the methodology for assessing the significance of impacts and alternatives. Specialists will also be required to address issues raised by I&APs in their reports. The

specialists have undertaken high level assessments of the site, and as such, key risks have been highlighted within their ToRs outlines below.

The scope of the specialist studies will be informed by the following gazetted protocols in terms of the DFFE Screening Tool.

10.3.1 Agricultural Impact Assessment

SPECIALIST: Mariné Pienaar, TerraAfrica

Following the stipulations of GN320 of NEMA (published 20 March 2020), the scope of the agricultural assessment will include:

- Conduct a desktop assessment of the baseline soil and agricultural properties for the proposed project site
- A proper description of the agro-ecosystem of each development area that includes soil properties and terrain analysis.
- An analysis of the current land productivity and land uses and determination whether agriculture is a financially viable and sustainable land use option.
- Determination of existing negative impacts on agricultural productivity of the proposed sites such as the presence of waste dump areas, alien vegetation and existing land degradation.
- Determination of the site sensitivity to the proposed projects and calculation of whether the project infrastructure layout will fall within the allowable development limits or exceed it.
- Assessment of the impacts that a change in land use from agriculture to renewable energy generation will have on both farm productivity as well as agricultural employment.
- Recommendation of mitigation and management measures to reduce the significance of the anticipated impacts.

10.3.2 Avifaunal Monitoring and Impact Assessment

SPECIALIST: Owen Davis, Arcus Consultancy Service South Africa

An Avifaunal Specialist Assessment will be undertaken, based on the outcome of the reconnaissance study and the findings of the pre-application avifaunal monitoring. The assessment, as a minimum, will include the following aspects.

The implementation of avifaunal surveys, utilising transects, vantage point watches, focal points and incidental counts, to inform the assessment of the potential impacts of the planned infrastructure within the development footprint. The monitoring protocol is guided by the following:

- Procedures for the Assessment and Minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of NEMA when applying for Environmental Authorisation (Gazetted October 2020).
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts om avifaunal species by onshore wind energy generation facilities where the electricity output is 20MW or more ('the Protocol') (Government Gazette No. 43110 – 20 March 2020).
- Jenkins, A.R., Van Rooyen, C.S., Smallie, J.J., Anderson, M.D., & A.H. Smit. 2015. Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa. Produced by the Wildlife & Energy Programme of the Endangered Wildlife Trust & BirdLife South Africa. Hereafter referred to as the wind guidelines.

Potential impacts to be assessed in the EIA Phase will be assessed based on the methodology provided by the Environmental Assessment Practitioner (EAP), CES. A significance rating and impact assessment will be determined for each impact and mitigation measures provided where appropriate. For each impact, the significance will be determined by identifying the status, extent, duration, consequence, probability of occurrence, and reversibility of the impact (as well as the irreplaceability of resource loss) in the absence of any mitigation ('without mitigation'). Mitigation measures will be identified and the significance will be re-

rated, assuming the effective implementation of the mitigation ('with mitigation'). Any comments received during the scoping phase will be addressed and incorporated into the EIA Report.

The avifaunal specialists report will be structured around the following terms of reference:

- A discussion on bird abundance and movement within the site;
- A discussion on presence of target or threatened species and their occurrence on the site at heights which could pose risks to collision;
- An assessment of risk of identified target species to collision including the expected fatality rates of the target species based on a suitable model commonly used for risk determination, per species and for the site;
- An identification and mapping where relevant, of any migratory or preferential bird routes or corridors;
- A discussion on the risk of displacement;
- Areas identified within the site as having a very high sensitivity for bird collision or displacement and in which the development of turbines should be avoided. These areas will be mapped.
- A cumulative impact assessment will be undertaken which includes:
  - available fatality rates for target species at the wind energy generation facilities within a 35 km radius;
  - the possible additional fatalities from the proposed wind energy generation facility for target species as well as general avifaunal species; and
  - a discussion on the possible cumulative impact of the proposed facility on regional populations of target species;
  - if no existing operating wind energy generation facilities occur within the 35 km radius a discussion on possible cumulative impacts on target species from the proposed facility will be included.
- A plan for post construction monitoring (on both the preferred site as well as the control site) and reporting, which will include:
  - timeframes and intervals for monitoring;
  - number of turbines to be monitored, including any specific area for monitoring;
  - methodology for searcher efficiency and scavenger removal;
  - method for monitoring, i.e. transects or radial as well as extent of monitoring area;
  - results of monitoring compared against expected fatality rates per target species as well as general species;
  - reporting requirements, including organisations for submission of reports;
  - years and intervals for monitoring to occur; and
  - all methods used to estimate bird numbers and movements during reconnaissance and preapplication monitoring, which should be applied in exactly the same order to ensure the comparability of these two data sets.

The findings of the Avifaunal Specialist Assessment will be written up in an Avifaunal Specialist Assessment Report that contains as a minimum the information as required in Appendix 6 of the NEMA EIA Regulations, 2014 (as amended), sections 24(5)(a) and (h) and 44 of NEMA, the Protocol, as well as Performance Standard 6 of the IFC performance Standards.

10.3.3 Bat Impact Assessment

SPECIALIST: Craig Campbell, Arcus Consultancy Service South Africa

The following legislation / guidelines will be referenced within the Bat Impact Assessment:

- The National Gazette, No. 43110 of 20 March, 2020: "National Environmental Management Act (107/1998) Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of sections 24 (5) (a) and (h) and 44 of the Act, when applying for Environmental Authorisation",
- Appendix 6 of the EIA Regulations 2014, as amended.
- Any other relevant guidelines.

Data obtained from the pre-construction monitoring campaign has been collected, analysed and included in the scoping report, and once a full dataset has been obtained for the entire monitoring campaign a detailed analyses will take place and inform the relevant Environmental Impact Assessment.

Potential impacts to be assessed in the EIA Phase will be assessed based on the methodology provided by the Environmental Assessment Practitioner (EAP), CES. A significance rating and impact assessment will be determined for each impact and mitigation measures provided where appropriate. For each impact, the significance will be determined by identifying the status, extent, duration, consequence, probability of occurrence, and reversibility of the impact (as well as the irreplaceability of resource loss) in the absence of any mitigation ('without mitigation'). Mitigation measures will be identified and the significance will be re-rated, assuming the effective implementation of the mitigation ('with mitigation'). Any comments received during the scoping phase will be addressed and incorporated into the EIA Report.

Cumulative impacts will be assessed as the incremental impact of the proposed activity on the baseline, when added to the impacts of other past, present or reasonably foreseeable future activities within a 50 km radius.

The outcome of the EIA study will be a description of bat activity at the proposed project sites, an evaluation of potential risks/impacts to bats (including cumulative impacts), recommendations for WEF layouts and design mitigation measures to reduce impacts, including an environmental management plan for the project.

The findings of the Bat Specialist Assessment will be written up in a Bat Specialist Assessment Report that contains as a minimum the information as required in Appendix 6 of the NEMA EIA Regulations, 2014 (as amended), as well as Performance Standard 6 of the IFC performance Standards.

The Bat Impact Assessment Report, which will be prepared as part of the EIA phase will, at a minimum, include the following:

- Consolidation and analysis of the screening phase and pre-construction bat monitoring data collected on site to date;
- Describe the baseline environment of the project and its sensitivity with regard to bats based on the outcomes of the pre-construction monitoring;
- Assessment of the risk to bat species;
- Assessment of the significance of potential impacts on bat species;
- A cumulative impact assessment will be undertaken which includes:
    - available fatality rates for target species at the wind energy generation facilities within a 35 km radius;
    - the possible additional fatalities from the proposed wind energy generation facility for target species as well as general bat species; and
    - a discussion on the possible cumulative impact of the proposed facility on regional populations of target species;
    - if no existing operating wind energy generation facilities occur within the 35 km radius a discussion on possible cumulative impacts on target species from the proposed facility will be included.
- Design of appropriate mitigation measures to reduce these impacts to acceptable levels where necessary;
- Sensitivity mapping for the site; and
- Identify information gaps and limitations; and
- Identify potential mitigation or enhancement measures to minimise impacts to bats. This would include an operational monitoring plan for the site.

An operational acoustic monitoring plan and carcass searches for bats will be investigated. Should these be necessary, they will be designed and based on best practice, to monitor mortality and bat activity levels. Operational monitoring is typically recommended for the first two years initially according to the guidelines. Depending on the findings of the first two years of monitoring, 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.

10.3.4 Botanical Impact Assessment

SPECIALIST: Tarryn Martin, Biodiversity Africa

The proposed Soyuz 6 WEF footprint will be assessed. The purpose of the specialist study will be to meet the authorities' requirements for Terrestrial Biodiversity Assessment and plant species assessment for the proposals and, as a minimum will include the following:

1. A comprehensive desktop study to identify potential risks for a vegetation and flora assessment report relating to the site and immediate surrounding area. This will include the relevant Regional Planning frameworks and review of previous studies.
2. A single site visit to assess the following:
    - Broad level field survey of vegetation, flora and habitats present (including any riparian vegetation or wetland vegetation) undertaken during the flowering season (this was done from 10–20 March 2022).
    - Verify and update species list, identifying, highlighting and, where feasible, locating plant species that are of Conservation Concern (i.e. Critically Endangered, Endangered, Vulnerable or Near Threatened) and/or requiring permits for destruction/relocation in terms of NEMBA and any respective Provincial Ordinances. Mapping of any populations of such species observed during the site visit.
    - Mapping of the various vegetation communities and an assessment of their integrity, ecological sensitivity, levels of degradation and transformation, alien infestation and flora species of special concern, the outcome being a detailed sensitivity map ranked into high, medium or low classes.
3. Detailed reporting will be comprised of a Draft Terrestrial Biodiversity Assessment Report (for public review and comment) and a Final Terrestrial Biodiversity Assessment Report for submission. The draft and final detailed reports will address the following (as per the gazetted Terrestrial Biodiversity Assessment Protocol):
    - Indicate any assumptions made and gaps in available information. Assessment of all the vegetation types within the relevant Regional Planning Frameworks.
    - A detailed list of plant species highlighting the various species of special concern categories (endemic, threatened, Red Data species and other protected species requiring permits for destruction/relocation and invasive/exotic weeds). Clearly indicate the need for any further permitting/licensing or detailed studies to specification of animal and plant species protocols.
    - Faunal assessment will be compromised of a general fauna desktop assessment, as well as specific taxa specialist assessments, which would include on-site assessments as required and camera trapping. It is not anticipated that any methods requiring fauna capture will be followed.
    - Description and assessment of the vegetation communities and site sensitivities ranked into high, medium or low classes based on sensitivity and conservation importance. A standard methodology has been developed based on other projects in the specific area.
    - A habitat sensitivity map will be compiled, indicting the sensitivities as described above,
    - A map indicating buffers to accommodate Regional Planning requirements (if required).
    - Assessment of Impacts and Mitigation Measure, as well as specific measure that may be required for alternative development plans.
    - Recommendations for mitigation measures that should be included in the EMPr with specific management actions for construction and Operation.
    - Address any comments raised by IAP's or identified in the project in the final draft and final report.

10.3.5 Faunal Impact Assessment

SPECIALIST: Amber Jackson, Biodiversity Africa

The purpose of the specialist study will be to meet the authorities' requirements for Terrestrial Biodiversity Assessment and plant species assessment for the proposals and, as a minimum will include the following:

1. A comprehensive desktop study to identify potential risks for a faunal assessment report relating to the site and immediate surrounding area.
2. A single site visit to assess the following:
    - Broad level field survey of fauna and faunal habitats present late summer/early autumn.
    - Verify and update species list, identifying, highlighting and, where feasible, locating species that are of Conservation Concern (i.e. Critically Endangered, Endangered, Vulnerable or Near Threatened).
    - Mapping of the various habitats and an assessment of their ecological sensitivity, the outcome being a detailed sensitivity map ranked into high, medium or low classes.
3. Detailed reporting will be comprised of a Draft Terrestrial Faunal Assessment Report (for public review and comment) and a Final Terrestrial Faunal Assessment Report for submission. The draft and final detailed reports will address the following (as per the gazetted Terrestrial Biodiversity Assessment Protocol):
    - Indicate any assumptions made and gaps in available information. Assessment of all the vegetation types within the relevant Regional Planning Frameworks.
    - A detailed list of faunal species highlighting the various species of special concern categories (endemic, threatened and protected species).
    - Description and assessment of the fauna and faunal habitat sensitivities ranked into high, medium or low classes based on sensitivity and conservation importance. A standard methodology has been developed based on other projects in the specific area.
    - A habitat sensitivity map will be compiled, indicting the sensitivities as described above.
    - Assessment of Impacts and Mitigation Measure, as well as specific measure that may be required for alternative development plans.
    - Recommendations for mitigation measures that should be included in the EMPr with specific management actions for construction and Operation.
    - Address any comments raised by IAP's or identified in the project in the final draft and final report.

10.3.6 Freshwater Impact Assessment

SPECIALIST: Aidan Gouws, CES and Ryan Edwards, Verdant Environmental

The following points highlight the envisaged activities and tasks which will be undertaken during the Freshwater Impact Assessment, which will be prepared as part of the EIA phase of the project:

The specialist assessment sought to identify and delineate all watercourses within 100 m and wetland ecosystems within 500 m of the project site that stand to be negatively impacted by the proposed activities and assess these in terms of their health / functionality and functional / ecological importance. Other watercourses directly impacted upon by the project were also delineated and assessed. The terms of reference for the Aquatic Biodiversity and Wetland Ecosystem Assessment were therefore specified as follows, to:

- Undertake a desktop assessment of the freshwater ecosystem (river and wetland) context using available national and regional spatial datasets, assessments, and classifications;
- Undertake a desktop screening of all wetlands, rivers and other watercourses within 500 m of the project site that are likely to be negatively impacted by the project and confirmation of the study

area for infield investigation. The remaining watercourses within 500 m were mapped and classified at a desktop level only;
- Delineate the wetlands and riparian zones according to the national wetland and riparian zone delineation guidelines (DWAF, 2005);
- Classify the wetlands and rivers according to the national aquatic ecosystem classification system (Ollis et al., 2013);
- Assess of the Present Ecological State (PES) of the delineated wetland units and river reaches using published assessment tools;
- Assess the importance of the ecosystem services provided by the delineated wetland and riparian zones;
- Assess of the Ecological Importance and Sensitivity (EIS) of the delineated wetlands and rivers using published assessment tools;
- Determine the recommended ecological category (REC) for each of the delineated wetland and river units using a generic matrix for the determination of RECs for water resources (DWAF);
- Provide recommended best practice and site-specific project design (layout and design) measures to avoid and minimise impacts to wetland and freshwater / aquatic ecosystems;
- Identify, describe and assess the potential and likely direct and indirect impacts of the project on local wetlands and rivers, including cumulative impacts;
- Provide the project design, construction phase and operational phase mitigation measures to avoid, minimize and/or rehabilitate the potential impacts;
- Assess the significance of the potential impacts of the project on wetland and river ecosystems using a structured assessment method;
- Assess the qualitative risk of the proposed development activities on wetlands and rivers using the DWS risk matrix for Section 21(c) and 21(i) water uses; and
- Determine any outright fatal flaws associated with the project.

The Aquatic Biodiversity and Wetland Ecosystem Specialist Assessment will be conducted in accordance with the Aquatic Biodiversity Protocol (2020). This protocol provides the criteria for the specialist assessment and minimum report content requirements for impacts on aquatic biodiversity for activities requiring EA. This protocol replaces the requirements of Appendix 6 of the EIA Regulations 2014, GN R. 982 (as amended), published under NEMA. The report will also be compiled in accordance with the requirements of a Watercourse/Wetland Delineation Report, as published under the National Water Act, 1998 (Act 36 of 1998).

10.3.7 Archaeological (Heritage) Impact Assessment

SPECIALIST: Nelius Kruger, CES

Heritage specialist input into the environmental impact grading is essential to ensure that, through the management of change, developments still conserve our heritage resources. Heritage specialist input can play a positive role in the development process by enriching an understanding of the past and its contribution to the present. It is also a legal requirement for certain development categories which may have an impact on heritage resources. The heritage component is provided for in the National Environmental Management Act, (Act 107 of 1998) and endorsed by section 38 of the National Heritage Resources Act (NHRA - Act 25 of 1999). In addition, the NHRA protects all structures and features older than 60 years, archaeological sites and material and graves as well as burial sites. The objective of this legislation is to ensure that developers implement measures to limit the potentially negative effects that the development could have on heritage resources. Based hereon, this project functioned according to the following terms of reference for heritage specialist input:

- Provide a description of the heritage landscape of the project area in terms of cultural context and provenience by means of a detailed desktop background study;
- Provide a description of known and documented historical archaeological artefacts, structures (including graves) and settlements – if present - in the project area by means of a detailed desktop study;

- Compile the above into a broad heritage baseline for the project area and discuss the nature and degree of significance of this heritage baseline landscape;
- Provide a level of probability of site distribution and occurrence in the project area.
- Estimate the extent and severity of potential developmental impacts on the heritage landscape as a result of the planned development and associated actions;
- Drawing on findings from this desktop assessment, guide the project planning in terms of potential heritage impact;
- Recommend further heritage assessment requirements for the project based on the heritage landscape and its estimated sensitivity;
- Assess and rate Heritage Impacts:
- Recommend mitigation and management measures to ensure protection of heritage resources; and
- Provide an integrated Heritage Impact Assessment Report complying to SAHRA's minimum standards for Heritage Impact Assessment Studies and Reporting and the National Heritage Resources Act, 1999.

10.3.8 Paleontological Impact Assessment

SPECIALIST: Elize Butler, Banzai Environmental

The Scope of Work for the Palaeontological Specialist Assessment, which will form part of the EIA phase of this project, includes the following tasks:

- Undertake a site inspection to identify the site sensitivities and verify them in terms of the National Web-Based Screening Tool (https://screening.environment.gov.za/).
- Determination, description and mapping of the baseline environmental conditions (geology / palaeontology) and palaeosensitivity of the study areas in question. Specify development setbacks / buffers, and provide clear reasons for these recommendations. This environmental screening will inform the layout.
- Conduct field surveys and compile specialist studies in adherence to: (a) the gazetted Environmental Assessment Protocols of the NEMA EIA Regulations (2014, as amended), where applicable (i.e. Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed (GG 43110 / GNR 320, 20 March 2020)); (b) Appendix 6 of the NEMA EIA Regulations (2014, as amended) (GG 40772 / GNR 326, 07 April 2017); (c) National Heritage Resources Act (Act No. 25 of 1999), as applicable; and (d) any additional relevant legislation and guidelines that may be deemed necessary
- Provide sensitive features spatial data in a useable GIS format (kmz / shp);
- Assess the direct, indirect and cumulative impacts associated with the proposed renewable energy and grid connection developments, with and without mitigation;
- Address relevant concerns / comments raised by Interested and Affected Parties and Stakeholders, including the Competent Authority, during Public Participation Processes on the respective Draft Scoping and EIA Reports and BA Reports;
- Identify relevant permits that may be required;
- Recommend mitigation measures, best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts to be included in the respective Environmental Management Programmes (EMPr);
- Update draft specialist assessment reports after Environmental Assessment Practitioner (EAP) and Client review (before public release) and following public review for submission to the Competent Authority for decision-making; and
- Address any queries from the Competent Authority during the decision-making phase (as and when they arise).

All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards developed by SAHRA (2013).

10.3.9 NOISE IMPACT ASSESSMENT

SPECIALIST: Morne de Jager, Environmental Acoustic Research

The purpose of an environmental noise impact investigation and assessment is to determine and quantify the acoustical impact of, or on a proposed development.

The methodology with regards to the Noise Impact Assessment, which will form part of the EIA phase of this process, is as follows:

- Detailed processing of the ambient sound level data as measured during the site visit. The data will be analysed to motivate appropriate noise limits;
- Information as received from the developer will be used to model the potential noise impact. The following information will be considered:
    - The Sound Power Emission details of a wind turbine that may be used at this WEF;
    - The latest WEF layout to be assessed;
    - The topographical surface contours of the project focus area;
    - Surface and meteorological constants;
- The potential impact will be evaluated (where possible) in terms of the nature (description of what causes the effect, what/who might be affected and how it/they might be affected) as well as the extent of the impact;
- The potential significance of the identified issues will be calculated based on the evaluation of the issues/impacts;
- The development of an Environmental Management Plan and a proposal of potential mitigation measures (if required); and
- Conclusion and associated recommendations.

10.3.10 SOCIO-ECONOMIC IMPACT ASSESSMENT

SPECIALIST: Hilda Bezuidenhout, CES

The nature of the proposed project deems it necessary to conduct a Socio-economic Impact Assessment. This process will include:

- The provision of a detailed description of the socio-economic environment in and around the project area.
- Analysis the potential impacts of the proposed project.
- Provision of guidelines for limiting or mitigating negative impacts and optimising benefits.

The specific terms of reference are as follows:

- Describe the local social environment, with particular reference to the possible labour-sending communities.
- Determine the current land-use patterns of the development area and the areas outside of the development boundary that are likely to be affected.
- Assess the significance of potential environmental and social impacts on the local populace and the district.
- Evaluate how the project could contribute to Local Economic Development (LED) in line with the Integrated Development Plans (LED) of the local and district municipalities.
- Establish a baseline understanding of current state of livelihoods, income sources, education levels and food security.
- Investigate possible impacts on livelihoods, income levels, education levels, food security and other factors relevant to the affected communities, as per the methodology described in Chapter 9 below.
- Consultation with stakeholders and I&APs.
- Develop a monitoring programme to ensure effective implementation of the recommended mitigation measures.

10.3.11 TRAFFIC IMPACT ASSESSMENT

SPECIALIST: Iris Wink, JG Afrika

The traffic impact assessment will cover the project background, scope of work, approach and methodology, general assumptions, and source of information and will include:

- Site description
- Transportation routes describing site access points and ports of entry
- Description of project aspects relevant to the transport study such as:
    - Selected Candidate Turbine
    - Transportation requirements
    - Permitting – General Rules
    - Transporting Wind Turbine Components
    - Transporting Cranes, Mobile Cranes and other Components
    - Transporting Other Material and Equipment
- Identification and of activities with potential traffic impacts
- Assessment of traffic related environmental impacts and identification of management actions
- Conclusions and recommendations for:
    - Access and internal circulation
    - Haulage routes for wind turbine components
    - Traffic impact

10.3.12 VISUAL IMPACT ASSESSMENT

SPECIALIST: Peter Velcich, NuLeaf Planning and Environmental

The primary goal of the Environmental Impact Assessment (EIA) Phase Visual Impact Assessment (VIA) report will be to ensure that visual impacts are adequately assessed and considered so that the relevant authorities can decide if the proposed WEF has unreasonable or undue visual impacts. The secondary aim is to identify effective and practical mitigation measures, if possible.

Since the purpose of a VIA is not to predict whether specific individuals or entities will find this type of development (renewable wind energy facility) pleasing or not but instead to identify the important visual features of the surrounding landscape, especially the features and characteristics that contribute to scenic quality, as the basis for determining how and to what degree a particular project will impact on those scenic values. The study will include the following:

1. Refinement of the baseline study, description of the visual character of the sites and zone of visual influence, if required.
2. Adjust the list of identified visual impacts resulting from the proposed development (with consideration of any public and/or relevant authorities' comments), if required.
3. Assessment of visual impacts based on the following VIA rating criteria, namely:
    a) Quality of the affected environment (landscape) – the aesthetic excellence and significance of the visual resources and scenery;
    b) Viewer incidence, perception and sensitivity – the level of acceptable visual impact is influenced by the type of visual receptors.
    c) Determine the Visual Absorption Capacity (VAC) – the capacity of the receiving environment to absorb the potential visual impact of the proposed development;
    d) Refine the potential visual exposure (visibility) - the geographic area from which the project may be visible based on any layout changes undertaken between the Scoping and EIA Phase;
    e) Refine the Shadow Flicker Assessment – based on any layout changes undertaken between the Scoping and EIA Phase, determine the affected zone caused when the shadow of an object repeatedly passes or pulsates over the same point in the landscape;

f) Determine the cumulative visual exposure - the combined or incremental effects resulting from changes caused by a proposed development in conjunction with other existing or proposed activities;
g) Visual Impact Index - the combined results of visual exposure, viewer incidence / perception and visual distance of the proposed facility. Values are assigned for each potential visual impact per data category and merged in order to calculate the visual impact index;

4. Assessment of the significance of the visual impacts, rated according to methodology outlined in Section 9 below, which includes:
   a) Extent, duration, magnitude and probability to determine significance; and
   b) Significance considered with status (positive, negative or neutral) and reversibility (reversible, recoverable or irreversible) following decommissioning of the proposed facility.
5. Impacts will be rated before mitigation and after, assuming mitigation is possible.
6. Development of mitigation measures to reduce visual impacts and enhance any positive visual benefits, where possible.
7. Undertaking of photo simulations (in addition to the spatial analyses) in order to illustrate the potential visual impact of the proposed facility within the receiving environment.

10.4 Environmental Impact Report (EIR)

The main purpose of this report is to gather and evaluate environmental information, so as to provide sufficient supporting arguments to evaluate overall impacts, consider mitigation measures and alternative options, and make a valued judgement in choosing the best development alternative. The EIR is made available for public and authority review. The availability of the report is advertised in the local newspaper and is situated at an easily accessible location.

10.5 Issues and Response Trail

The issues and response trial consists of the compilation of comments, issues and concerns raised by I&APs and the authorities as well as the relevant responses to these comments.

10.6 Environmental Management Programme (EMPr)

The EMPr informs the client and the technical team of the guidelines which will need to be followed during construction to ensure that there are no lasting or cumulative negative impacts of the construction process on the environment.

- The standards and guidelines that must be achieved in terms of environmental legislation.
- Mitigation measures and environmental specifications which must be implemented for all phases of the project in order to minimise the extent of environmental impacts, to manage environmental impacts and where possible to improve the condition of the environment.
- Provide guidance through method statements that are required to be implemented to achieve the environmental specifications.
- Define corrective action that must be taken in the event of non-compliance with the specifications of the EMPr.
- Prevent long-term or permanent environmental degradation.

In addition to this, the Public Participation Process (PPP) is a continuous process. As for the Scoping Phase, opportunity is provided for I&APs to voice concerns and issues regarding the project. At this stage the project details may have changed in response to the preliminary findings of the Draft Scoping Report. I&APs and key stakeholders are also given the opportunity to review the Environmental Impact Report (EIR) before it is submitted to the authorities.

10.7 Environmental Authorisation (EA) and Appeals Process

Upon thorough examination of the EIR, the authority will either issue an Environmental Authorisation (EA), which either authorises the project or refuses authorisation. Should authorisation be granted, it usually carries Conditions of Approval. The proponent is obliged to adhere to these conditions. Once the authorisation has been issued, it is publicised, and the public are given 20 calendar days from the issuing of the authorisation to lodge an appeal with the authorities.

10.8 The Public Participation Process (PPP)

The primary aims for the PPP include the following:

- Disclose activities planned by the project proponent and the EIA team;
- Identify and respond to concerns, grievances and enquiries made by the I&APs;
- Harness local expertise, needs and knowledge from the I&APs;
- Identify additional or new stakeholders and people affected by, or interested in, the proposed project;
- Ensure that all issues and enquiries raised by I&APs have been adequately assessed and addressed;
- Share the findings of the EIA and specialists studies, such as significant impacts, mitigation measures, management actions, and monitoring programmes; and
- Address and include any new concerns or comments that arise.

The PPP commenced during the Scoping Phase and will continue during the EIA Phase, during which I&APs are afforded further opportunities to raise their issues, concerns and comments regarding the proposed project. It is possible that some of the project details may have changed in response to the preliminary findings presented in the Final Scoping Report, and as a result of design changes made by the project proponent. I&APs and key stakeholders are given the opportunity to review the Draft EIR before it is submitted to the authorities for consideration. Comments on the Draft EIR received from I&APs will be included and addressed in the Final EIR.

10.8.1 Initial PPP

Stakeholders which are likely to be affected by the proposed Soyuz 6 WEF will be included in the initial I&AP Database, these will include the relevant departments, landowners and surrounding landowners. In addition, individuals who contact CES for information on the Soyuz 6 WEF project, due to notification by means of the onsite signage, the advertisement or word-of-mouth, etc. will be registered on the I&AP Database.

10.8.2 Public Review Of The Draft Scoping Report (DSR)

All I&APs included in the Register of I&APs, will be notified in writing of the availability of the DSR for public review. The notification letter will provide details of the 30-day public comment period, the venues and websites where the report could be viewed, the contact details of the PPP consultant and how written comments on the DSR should be submitted.

10.8.3 Public Review of the Draft Environmental Impact Report (DEIR)

All I&APs on the Register of I&APs will be notified in writing of the availability of the DEIR for public review. The notification letter will provide details of the 30-day public comment period, the venues and websites where the report can be viewed, the contact details of the PPP consultant and how written comments on the DEIR should be submitted, and details of the public meeting to present the DEIR.

10.8.4 Notification of Environmental Authorisation (EA)

Advertisements announcing the Environmental Authorisation will be placed in the same newspaper used to announce the project and the EIA. The adverts will inform I&APs of the decision and where the decision can be accessed and will draw their attention to their right to appeal the decision and set out the appeal procedures.

10.9 ENVIRONMENTAL IMPACT REPORT (EIR)

The Specialist Studies described in Section 9.3 will inform the EIR. In addition, the EIR will gather any comments received from I&APs and determine whether it is necessary to increase the scope of work or amend the Terms of Reference for the specialists. The EIR will examine the 'No-Go' alternative along with the proposed development, as required in the EIA regulations.

10.9.1 STRUCTURE OF THE EIA REPORT

Proposed structure of EIR:

To avoid the EIR being excessively long and cumbersome, whilst meeting the content requirements specified in the NEMA EIA regulations, the final report will be divided into a number of volumes indicated in Table 10-2.

Table 10-2: Reports that will be generated in the EIA phase for the proposed Soyuz 6 WEF.

REPORT	CONTENTS
Environmental Impact Report (EIR)	This report will contain the following; **1. Introduction** - Detail of the environmental assessment practitioner who compiled the report - Expertise of the EAP to carry out an environmental impact assessment **2. Description of the Project** - A description of the property on which the activity is to be undertaken - The location of the activity on the property - A description of the types of activities that are proposed for the development. **3. Description of the Affected Environment** - The natural environment - The socio-economic environment - The legal, policy and planning setting **4. The Public Participation Process** - Steps undertaken in order to notify and involve I&APs - Advertisements and media - Meetings held in the PPP - Comments and Response Report management **5. Summary of Comments and Response Trail** - Summary of comments and issues raised by I&APs and responses to the issues **6. Summary of Specialist Reports** - Summary of the findings and recommendations of all specialist studies **7. Alternatives Considered** - Description of all alternatives considered in the EIA - Initial screening of alternatives - Description and comparative assessment of all alternatives identified during the EIA **8. The Significance of Potential Environmental Impacts** - The methodology used to determine the significance of environmental impacts - Impacts on the natural environment - Impacts on the socio-economic environment - Impacts on the legal, policy and planning setting **9. Environmental Impact Statement** - A summary of the key findings of the EIA - Comparative assessment of the positive and negative implications of the proposed activity and identified alternatives **10. Conclusions** - Mitigation measures for identified adverse environmental impacts - Opinion as to whether the activity should or should not be authorised

	⮚ Any conditions that should be made in respect to any form of authorisation ***It should be noted that the above is not the exact Table of Contents for the EIA, but is intended to indicate the major topics that will be covered in the report.***
Specialist Studies	This will be a compilation of all the specialist studies undertaken in the EIA, and will include detailed assessments of - ⮚ Agricultural Impacts ⮚ Avifaunal Impacts ⮚ Botanical Impacts ⮚ Bat Impacts ⮚ Faunal Impacts ⮚ Freshwater Impacts ⮚ Heritage Impacts ⮚ Noise impacts ⮚ Paleontological Impacts ⮚ Socio-economic Impacts ⮚ Traffic ⮚ Visual Impacts
Comments and Response Report	This will include - **1. Lists of persons, organisations and organs of state that were registered as I&APs (limited information shared as per POPIA)** **2. Comments and Response Report for the Scoping and EIA phases** **3. Copies of any representations, objections and comments received from I&APs**
Environmental Management Programme (EMP)	Environmental management programme for key activities at the proposed renewable energy facility, which will contain the following - **1. Introduction** ⮚ The details of the EAP who prepared the EMPr ⮚ The expertise of the EAP to prepare an EMPr **2. Detailed description of the aspects of the activity covered by the EMPr** **3. Mitigation Measures and Actions** ⮚ Planning and Design ⮚ Pre-construction and construction activities ⮚ Operation and undertaking of the activity ⮚ Rehabilitation of the environment **4. Responsibilities** ⮚ Persons responsible ⮚ Time periods for implementation **5. Monitoring Programmes**

11 PUBLIC PARTICIPATION

11.1 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES

Public consultation is a legal requirement throughout the EIA process according to the NEMA EIA Regulations (2014, as amended). Developers are required to conduct public consultation throughout the Scoping and EIR phase. Formal EIA documents are required to be made available for public review and comment by the proponent, these include the Project Brief, Scoping Report and Terms of Reference for the EIA, the draft and final EIA reports and the decision of the Competent Authority (DFFE). The method of public consultation to be used depends largely on the location of the development and the level of education of those being impacted on by the project. Required means of public consultation include:

- Site notice(s);
- Newspaper advertisement(s);
- Letter of Notification and information to affected landowner(s), stakeholders and registered I&APs;
- Background Information Document (BID) distribution;
- Public meeting (Attendance register and meeting minutes); and
- Authority and Stakeholder engagement (DFFE, DWS, SAHRA, DMRE, etc.).

Please note that all proof of public notification will been attached as APPENDIX C.

11.1.1 NEWSPAPER ADVERTISEMENT

- 1st Advert: Volksblad, 9 September 2022, please see APPENDIX C.

11.1.2 ONSITE NOTICES

- An onsite notice board has been erected at the entrance to the site: See APPENDIX C.

11.1.3 INTERESTED AND AFFECTED PARTIES (I&APS) IDENTIFICATION AND NOTIFICATION

In addition to the above notification, certain I&APs were identified based on their potential interest in the project. In Table 11-1, all relevant organisations will be invited to comment on the reports as and when available. This list is considered a live document and names will be added and/removed based on the consultation process. Proof of correspondence will be added to APPENDIX C.

PLEASE NOTE THAT DUE TO THE POPIA ACT, AND THE LIST BEING POPULATED BY THE EAP, ONLY FARM NAMES AND STAKEHOLDER NAMES ARE VISIBLE, NO PERSONAL INFORMATION WILL BE SHARED UNTIL CORRESPONDENCE HAS BEEN CIRULATED DURING PPP.

Table 11-1: Stakeholder and Organisational Database

Stakeholders
Department of Forestry, Fisheries and the Environment (DFFE)
Department of Forestry, Fisheries and the Environment (DFFE): Biodiversity & Conservation
Department of Nature Conservation and Environmental Affairs (Northern Cape)
Department of Water & Sanitation DWS (Northern Cape)
Department of Mineral Resources (DMR)
Northern Cape Tourism
Department of Energy
Eskom
Eskom: Renewable Energy
Pixley Ka Seme District Municipality
Ubuntu Local Municipality
Ubuntu LM Wards 6 and 2 Councillors
SALGA Northern Cape

South African Heritage Resources Agency (SAHRA)
Telkom
Sentech
Vodacom
MTN
Cell C
Civil Aviation Authority (CAA)
Air Traffic and Navigation Services (ATNS)
Roads (SANRAL/Public Works)
BirdLife South Africa
Endangered Wildlife Trust
Department of Defence
South African Radio Astronomy Observatory (SARAO)
WEF LANDOWNERS
Izak Theron Philip Theron Pieter Nel
SURROUNDING LANDOWNERS
Andries Grove Andries Marais Andries van niekerk Davey van den Berg Francois Viljoen Gawie van Heerden George-Martin Lambrechts Gerand Sieberhagen Gerrit Raath Hendrick Ackerman JJ Mocke Johan Du Plessis Johan van Zyl Johan Viljoen JOSEPH & VAN RENSBURG ATTORNEYS MC Dippenaar Mr Andre Raath Mr Wilhelm van Zyl NJS van der Merwe Oloff Paul Philip Raath Philip Theron Philip van der Merwe Pieter Franken Pieter Nel Rikus van der Merwe Totius du Plessis Wessel Campher Wim van der Merwe Zacharias
REGISTERED INTERESTED AND AFFECTED PARTIES
Rikus van der merwe

Andre van Rensburg ***To be added as requests are received***

11.1.4 Surrounding and Affected Landowners

The residents of the surrounding areas have been identified and notified of the WEF EIA. Notifications include the contact details of the EAP for the landowners to register themselves and/or submit their comments on the proposed development.

11.1.5 Registered I&APs

Other than I&APs initially identified, all persons requesting to be registered as I&APs have been and will continue to be included in the I&AP database (Table 11-1).

11.1.6 The Public Participation Process followed and to be followed includes:

Release of the Draft Scoping Report for Authority, Stakeholder and Public review.

The Draft Scoping Report will be available for public review from the **20th of September 2022 to 21st of October 2022** (30 days, inclusive of one public holiday).

(a) Hard copies of the Draft Scoping Report will be made available at:
- Emthanjeni Local Municipality, Mark Street, Britstown

(b) Soft copies are available on the CES website (www.cesnet.co.za)

Release of the Draft Environmental Impact Assessment Report for Authority, Stakeholder and Public review

The Draft EIR will be made available for public review: anticipated dates – December 2022 to January 2023 (30 days + 15 days December shutdown)

(a) Hard copies of the Draft Environmental Impact Assessment Report will be available at:
- Emthanjeni Local Municipality, Mark Street, Britstown

(b) Electronic copies will be made available on the CES website (www.cesnet.co.za)

11.2 Comments and Response Report

The comments and response report will be a live and continuously updated report which details all comments received and the responses there to. This report will be included as Appendix D of the Final Scoping Report.

12 CONCLUSIONS

12.1 CONCLUSION

Soyuz 6 (Pty) Ltd, plans to develop, construct and operate a Wind Energy Facility (WEF) 53 km south of Britstown in the Ubuntu Local Municipality in the Northern Cape Province. The project site is situated in within the greater Pixley Ka Seme District Municipality. According to the data in the area, this project site appears to have favourable wind conditions to operate a wind farm.

The proposed Soyuz 6 Wind Energy Facility (WEF) will consist of up to 75 turbines, with a total facility output of up to 480MW. The WEF will also include a powerline and switching station in order to connect the WEF to the existing Eskom Substation (this will be applied for in a separate environmental application). The WEF will also include a Battery Energy Storage System (BESS), temporary and permanent laydown areas, an IPP Substation (SS), a Concrete Tower Manufacturing Facility (CTMF), access roads and a construction compound (CC) area. The construction footprint of the proposed WEF will be up to 215 ha and rehabilitated to an operational footprint of up to 150 ha.

12.2 PREFERRED ALTERNATIVE

Based on the assessment of alternatives, the preferred alternative for the Soyuz 6 WEF consists of:

- **Alternative location 1** – Turbines located on the following farms portions which were selected on the basis of good wind resource potential, land availability and the sites proximity to available Eskom electricity grid capacity (the final layout of the turbines will only be confirmed following the EIA phase of the project).

SOYUZ 6 WEF		
SG DIGIT NUMBER	**FARM NUMBER/PORTION**	**AREA (HA)**
N071C06300000000141000000	141	2971
N071C06300000000013000010	1/13	194
N071C06300000000013000020	2/13	1074
N071C06300000000012000010	1/12	2787
N071C06300000000148000001	RE/148	1004
N071C06300000000156000000	156	1545
N071C06300000000157000000	157	1856
N071C06300000000016000040	4/16	810
N071C06300000000016000001	RE/16	481
N071C06300000000016000030	3/16	1924
	TOTAL	**16243**

- **Alternative energy technology 1** – Wind turbines as a preferred technology as a low carbon emitting and renewable energy resource.
- **Alternative layout 1:** Current proposed layout of up to 75 turbine WEF layout, access route, electrical switching stations and short connecting powerline.
- **Alternative design 1 –** The following turbine design specifications are proposed:
    - WEF Capacity - Up to 480 MW
    - Number of Turbines - Up to 75
    - Hub Height - Up to 160 m
    - Rotor Diameter - Up to 200 m
    - Blade length - Up to 100 m

12.3 PRELIMINARY SCREENING

The current proposed WEF layout is preliminary, and the final layout will be confirmed based on the outcome of the specialist studies undertaken during the EIA process.

The nature of the proposed site for the establishment of the WEF is suitably placed on land currently used for livestock grazing. However, the establishment of the proposed Soyuz 6 WEF raises various issues pertaining to:

- Agricultural productivity.
- Visual intrusion on the landscape.
- Noise impacts on surrounding land inhabitants.
- Ecological sensitivity (flora and fauna).
- Avifaunal and bat sensitivity.
- Heritage sites and resources.
- Paleontological sites in terms of potential fossil deposits.
- Socio-economic impacts and benefits.

These key issues are to be comprehensively addressed and assessed according to the Terms of Reference developed for each specialist during the EIA phase.

12.4 OPINION

It is the opinion of the EAP that at this stage, **no fatal flaws** have been identified and there is no reason why the proposed Soyuz 6 WEF should not proceed to the EIR phase for further assessment.

A Water Use Licence (WUL) will be required for any construction activity within the extent of a watercourse (i.e. riparian and instream habitat (or within 100 m of the watercourse) or the 1:100 year floodline; whichever is the greatest) or within 500 m of a wetland in terms of the following triggers from the National Water Act (No. 36 of 1998):

- Sec 21 (c) - impeding or diverting the flow of water in a watercourse
- Sec 21 (i) - altering the bed, banks, course or characteristics of a watercourse.

The relevant WULs must be obtained from the Department of Water and Sanitation (DWS) prior to commencement of construction. In addition, any protected plant species that may need to be removed, will be subject to a plant removal permit either from NCPG and DFFE, prior to the removal or disturbance of such species.

12.5 FATAL FLAWS

The current Draft Scoping Report has not identified any fatal flaws associated with the proposed Soyuz 6 WEF and suggest that there is no reason why the proposed development should not proceed to EIA phase for further assessment.

12.6 THE EIA PROCESS

The following activities will form part of the EIA phase:

- Public Participation: public review of documentation;
- Specialist studies as described in the Plan of Study;
- Consultation with Stakeholders I&APs regarding possible significance of impacts and suitable mitigation measures;
- Evaluation of impacts prior to mitigation;
- Compilation of practical and effective mitigation measures;
- Evaluation of impacts after mitigation;
- Provision of an opinion as to whether or not the activity should be authorised;

- Compilation of an environmental impact statement; and
- Compilation of a draft Environmental Management Programme (EMPr).

13 APPENDIX A | EAP DECLARATION

PLEASE FIND SIGNED EAP DECLARATION HERE WITHIN

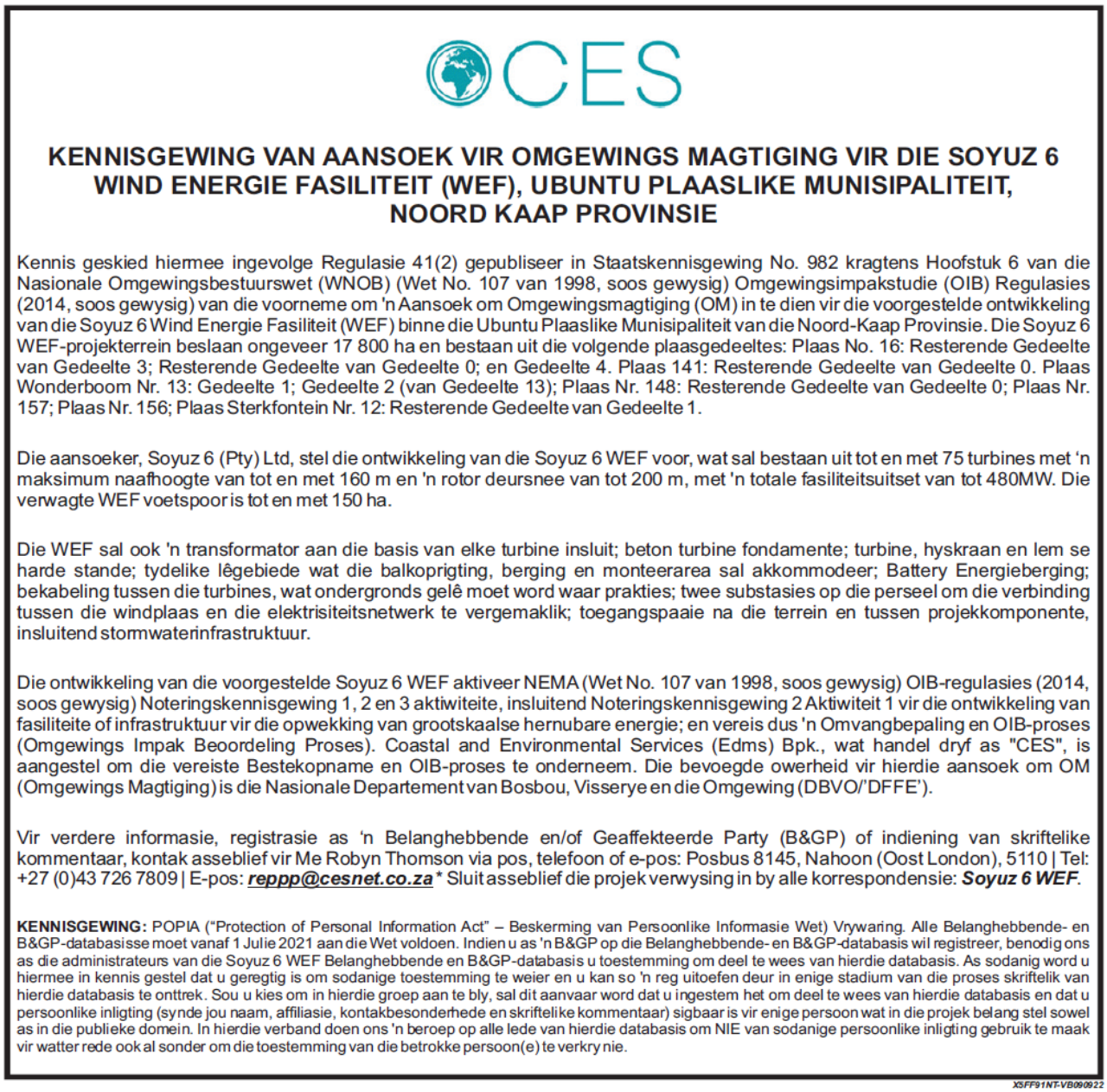
14 APPENDIX B | EAP CVs

PLEASE FIND EAP TEAM CVs HERE WITHIN

15 APPENDIX C | PPP PROOFS

15.1 PROOF OF ADVERTISEMENT

Proof of the advertisement will be included in the Final Scoping Report.



CES

KENNISGEWING VAN AANSOEK VIR OMGEWINGS MAGTIGING VIR DIE SOYUZ 6 WIND ENERGIE FASILITEIT (WEF), UBUNTU PLAASLIKE MUNISIPALITEIT, NOORD KAAP PROVINSIE

Kennis geskied hiermee ingevolge Regulasie 41(2) gepubliseer in Staatskennisgewing No. 982 kragtens Hoofstuk 6 van die Nasionale Omgewingsbestuurswet (WNOB) (Wet No. 107 van 1998, soos gewysig) Omgewingsimpakstudie (OIB) Regulasies (2014, soos gewysig) van die voorneme om 'n Aansoek om Omgewingsmagtiging (OM) in te dien vir die voorgestelde ontwikkeling van die Soyuz 6 Wind Energie Fasiliteit (WEF) binne die Ubuntu Plaaslike Munisipaliteit van die Noord-Kaap Provinsie. Die Soyuz 6 WEF-projekterrein beslaan ongeveer 17 800 ha en bestaan uit die volgende plaasgedeeltes: Plaas No. 16: Resterende Gedeelte van Gedeelte 3; Resterende Gedeelte van Gedeelte 0; en Gedeelte 4. Plaas 141: Resterende Gedeelte van Gedeelte 0. Plaas Wonderboom Nr. 13: Gedeelte 1; Gedeelte 2 (van Gedeelte 13); Plaas Nr. 148: Resterende Gedeelte van Gedeelte 0; Plaas Nr. 157; Plaas Nr. 156; Plaas Sterkfontein Nr. 12: Resterende Gedeelte van Gedeelte 1.

Die aansoeker, Soyuz 6 (Pty) Ltd, stel die ontwikkeling van die Soyuz 6 WEF voor, wat sal bestaan uit tot en met 75 turbines met 'n maksimum naafhoogte van tot en met 160 m en 'n rotor deursnee van tot 200 m, met 'n totale fasiliteitsuitset van tot 480MW. Die verwagte WEF voetspoor is tot en met 150 ha.

Die WEF sal ook 'n transformator aan die basis van elke turbine insluit; beton turbine fondamente; turbine, hyskraan en lem se harde stande; tydelike lêgebiede wat die balkoprigting, berging en monteerarea sal akkommodeer; Battery Energieberging; bekabeling tussen die turbines, wat ondergronds gelê moet word waar prakties; twee substasies op die perseel om die verbinding tussen die windplaas en die elektrisiteitsnetwerk te vergemaklik; toegangspaaie na die terrein en tussen projekkomponente, insluitend stormwaterinfrastruktuur.

Die ontwikkeling van die voorgestelde Soyuz 6 WEF aktiveer NEMA (Wet No. 107 van 1998, soos gewysig) OIB-regulasies (2014, soos gewysig) Noteringskennisgewing 1, 2 en 3 aktiwiteite, insluitend Noteringskennisgewing 2 Aktiwiteit 1 vir die ontwikkeling van fasiliteite of infrastruktuur vir die opwekking van grootskaalse hernubare energie; en vereis dus 'n Omvangbepaling en OIB-proses (Omgewings Impak Beoordeling Proses). Coastal and Environmental Services (Edms) Bpk., wat handel dryf as "CES", is aangestel om die vereiste Bestekopname en OIB-proses te onderneem. Die bevoegde owerheid vir hierdie aansoek om OM (Omgewings Magtiging) is die Nasionale Departement van Bosbou, Visserye en die Omgewing (DBVO/'DFFE').

Vir verdere informasie, registrasie as 'n Belanghebbende en/of Geaffekteerde Party (B&GP) of indiening van skriftelike kommentaar, kontak asseblief vir Me Robyn Thomson via pos, telefoon of e-pos: Posbus 8145, Nahoon (Oost London), 5110 | Tel: +27 (0)43 726 7809 | E-pos: ***reppp@cesnet.co.za*** * Sluit asseblief die projek verwysing in by alle korrespondensie: ***Soyuz 6 WEF***.

KENNISGEWING: POPIA ("Protection of Personal Information Act" – Beskerming van Persoonlike Informasie Wet) Vrywaring. Alle Belanghebbende- en B&GP-databasisse moet vanaf 1 Julie 2021 aan die Wet voldoen. Indien u as 'n B&GP op die Belanghebbende- en B&GP-databasis wil registreer, benodig ons as die administrateurs van die Soyuz 6 WEF Belanghebbende en B&GP-databasis u toestemming om deel te wees van hierdie databasis. As sodanig word u hiermee in kennis gestel dat u geregtig is om sodanige toestemming te weier en u kan so 'n reg uitoefen deur in enige stadium van die proses skriftelik van hierdie databasis te onttrek. Sou u kies om in hierdie groep aan te bly, sal dit aanvaar word dat u ingestem het om deel te wees van hierdie databasis en dat u persoonlike inligting (synde jou naam, affiliasie, kontakbesonderhede en skriftelike kommentaar) sigbaar is vir enige persoon wat in die projek belang stel sowel as in die publieke domein. In hierdie verband doen ons 'n beroep op alle lede van hierdie databasis om NIE van sodanige persoonlike inligting gebruik te maak vir watter rede ook al sonder om die toestemming van die betrokke persoon(e) te verkry nie.

X5FF91NT-VB090922

EIENDOMME

AFTREEOORDE TE HUUR
3310

SANTÉ AFTREE-OORD: Noordstad Bfn, 2 Slk/2 badk/gaste toilet/sit/eet-kombuis/opwas/braai - area,dubbel motorhuis Beskikbaar 01/10/2022. R8 000 pm **083 581 1627**

REGSKENNISGEWINGS & TENDERS

HOFBEVELE/ SEKWESTRASIES/ LIKWIDASIES
4005

NOORDMANS ATTORNEYS

IN THE HIGH COURT OF SOUTH AFRICA, FREE STATE DIVISION, BLOEMFONTEIN **APPLICATION NO.: 3304/2022** BEFORE THE HONOURABLE JUSTICE C VAN ZYL ON THE 25TH DAY OF AUGUST 2022. In the matter between: **DIRK CORNELIUS SMIT** APPLICANT and **GOLDFIELDS RESORTS (PTY) LTD** (Registration No.: 1995/004895/07) 1ST RESPONDENT **VIRGINIA PARK HOTEL (PTY) LTD** (Registration No.: 1993/004914/07) 2ND RESPONDENT;
Registered address: 112 Highlands Avenue (Tlkwe Lodge) Virginia FREE STATE PROVINCE
Having considered the documents filed of record and having heard the legal practitioner/s, **IT IS ORDERED THAT:**
1. That rule nisi, dated 15 July 2022, is extended to **06 October 2022**.
2. This order is to be served on the South African Revenue Service and other Institutions.
BY ORDER OF THIS COURT
3304/22(2)
SEP 9(NC)4005

NOORDMANS ATTORNEYS

IN THE HIGH COURT OF SOUTH AFRICA, FREE STATE DIVISION, BLOEMFONTEIN **APPLICATION NO.: 3304/2022.** BEFORE THE HONOURABLE JUSTICE C VAN ZYL ON THE 15TH DAY OF JULY 2022
In the matter between: **DIRK CORNELIUS SMIT** APPLICANT and **GOLDFIELDS RESORTS (PTY) LTD** (Registration No.: 1995/004895/07) FIRST RESPONDENT VIRGINIA PARK HOTEL (PTY) LTD (Registration No.: 1993/004914/07) SECOND RESPONDENT
Having considered the documents filed of record and having heard the legal practicioner/s, **IT IS ORDERED THAT:**
1. That applicants non-compliance with form, process and prescribed time periods be condoned and that this application be heard on an urgent basis in accordance with the provisions of Uniform Rule of Court 6(12);
2. That the Respondents be placed under provisional liquidation in the hands of the Master of the Free State High Court, Bloemfontein.
3. That a provisional order of liquidation be issued calling upon the Respondents and all interested parties to show cause, if any, to the Court on **Thursday, 25th of August 2022 at 09:30** why a final order of liquidation should not be granted against Respondent;
4. Service of this Rule nisi, a copy of the Notice of Motion and annexures thereto, be effected on the Respondents at its registered address or its principal place of business within the Court's jurisdiction;
5. This order must, without delay, be published in "Die Volksblad" and the Government Gazette;
6. A copy of the winding-up order be served on:
(i) the Respondents;
(ii) every registered trade union that as far as the Sheriff can reasonably ascertain represents any of the employees of the Respondents;
(iii) the employees of the Respondents by affixing a copy of the application and provisional order on any notice board to which the employees have access inside the Respondents' premises or if there is no access to the premises by the employees, by affixing a copy to the front gate of the front door of the premises from which the Respondents conducts any business; and
(iv) the South African Revenue Service.
7. The Sheriff must ascertain whether the employees of the Respondents are represented by a trade union and whether there is a notice board on the premises to which said employees have access.
8. That the costs of this application are to be paid from the estates of the Respondents on an attorney and client scale.
BY ORDER OF THIS COURT, COURT REGISTRAR; NOORDMANS ATTORNEYS
3304/22(1)
SEP 9(NC)4005

Geklassifiseerd

CES

KENNISGEWING VAN AANSOEK VIR OMGEWINGS MAGTIGING VIR DIE SOYUZ 1 WIND ENERGIE FASILITEIT (WEF), EMTHANJENI PLAASLIKE MUNISIPALITEIT, NOORD KAAP PROVINSIE

Kennis geskied hiermee ingevolge Regulasie 41(2) gepubliseer in Staatskennisgewing No. 982 kragtens Hoofstuk 6 van die Nasionale Omgewingsbestuurswet (WNOB) (Wet No. 107 van 1998, soos gewysig) Omgewingsimpakstudie (OIB) Regulasies (2014, soos gewysig) van die voorneme om 'n Aansoek om Omgewingsmagtiging (OM) in te dien vir die voorgestelde ontwikkeling van die Soyuz 1 Wind Energie Fasiliteit (WEF) binne die Emthanjeni Plaaslike Munisipaliteit van die Noord-Kaap Provinsie. Die Soyuz 1 WEF-projekterrein beslaan ongeveer 16 200 ha en bestaan uit die volgende plaasgedeeltes: Plaas Perdepoort Nr. 169: Oorgeblewe Gedeelte (Gedeelte 0) en Gedeelte 1. Plaas Nieuwejaarsfontein Nr. 147: Gedeelte 11 (van Gedeelte 2), Gedeelte 9 (van Gedeelte 1) en Gedeelte 1; Plaas 145 Oorgeblewe gedeelte (Gedeelte 0); en Plaas 144, Gedeelte 0.

Die aansoeker, Soyuz 1 (Pty) Ltd, stel die ontwikkeling van die Soyuz 1 WEF voor, wat sal bestaan uit tot en met 75 turbines met 'n maksimum naafhoogte van tot en met 160 m en 'n rotor deursnee van tot 200 m, met 'n totale fasiliteitsuitset van tot 480MW. Die verwagte WEF-voetspoor is tot en met 150 ha.

Die WEF sal ook 'n transformator aan die basis van elke turbine insluit; beton turbine fondamente; turbine, hyskraan en lem se harde stande; tydelike lêgebiede wat die balkoprigting, berging en monteerarea sal akkommodeer; Battery Energieberging; bekabeling tussen die turbines, wat ondergronds geïlê moet word waar prakties; twee substasies op die perseel om die verbinding tussen die windplaas en die elektriseitsnetwerk te vergemaklik; toegangspaaie na die terrein en tussen projekkomponente, insluitend stormwaterinfrastruktuur.

Die WEF sal 'n totale padnetwerk van tot 125 km hê; 'n tydelike kamperterrein en beton-aanlegte en bedryfs- en instandhoudingsgebou, insluitend 'n hekhuis, sekuriteitsgebou, beheersentrum, kantore, pakhuise, 'n werkswinkel en besoekersentrum.

Die ontwikkeling van die voorgestelde Soyuz 1 WEF aktiveer NEMA (Wet No. 107 van 1998, soos gewysig) OIB-regulasies (2014, soos gewysig) Noteringskennisgewing 1, 2 en 3 aktiwiteite, insluitend Noteringskennisgewing 2 Aktiwiteit 1 vir die ontwikkeling van fasiliteite of infrastruktuur vir die opwekking van grootskaalse hernubare energie; en vereis dus 'n Omvangbepaling en OIB-proses (Omgewings Impak Beoordeling Proses). Coastal and Environmental Services (Edms) Bpk., wat handel dryf as "CES", is aangestel om die vereiste Bestekopname en OIB-proses te onderneem. Die bevoegde owerheid vir hierdie aansoek om OM (Omgewings Magtiging) is die Nasionale Departement van Bosbou, Visserye en die Omgewing (DBVO/'DFFE').

Vir verdere informasie, registrasie as 'n Belanghebbende en/of Geaffekteerde Party (B&GP) of indiening van skriftelike kommentaar, kontak asseblief vir Me Robyn Thomson via pos, telefoon of e-pos: Posbus 8145, Nahoon (Oost London), 5110 | Tel: +27 (0)43 726 7809 | E-pos: ***reppp@cesnet.co.za*** * Sluit asseblief die projek verwysing in by alle korrespondensie: ***Soyuz 1 WEF.***

KENNISGEWING: POPIA ("Protection of Personal Information Act" – Beskerming van Persoonlike Inligtingwet Wet) Vrywaring. Alle Belanghebbende- en Geaffekteerde Party (B&GP)-databasisse moet vanaf 1 Julie 2021 aan die Wet voldoen. Indien u as 'n B&GP op die databasis wil registreer, benodig ons as die administrateurs van die Soyuz 1 WEF databasis u toestemming om deel te wees van hierdie databasis. As sodanig word u hiermee in kennis gestel dat u geregtig is om sodanige toestemming te weier en u kan so 'n reg uitoefen deur in enige stadium van die proses skriftelik van hierdie databasis te ontrek. Sou u kies om in hierdie groep aan te bly, sal dit aanvaar word dat u ingestem het om deel te wees van hierdie databasis en dat u persoonlike inligting (synde jou naam, affiliasie, kontakbesonderhede en skriftelike kommentaar) sigbaar is vir enige persoon wat in die projek belang stel soweel as in die publieke domein. In hierdie verband doen ons 'n beroep op alle lede van hierdie databasis om NIE van sodanige persoonlike inligting gebruik te maak vir watter rede ook al sonder om die toestemming van die betrokke persoon(e) te verkry nie.

CES

KENNISGEWING VAN AANSOEK VIR OMGEWINGS MAGTIGING VIR DIE SOYUZ 2 WIND ENERGIE FASILITEIT (WEF), EMTHANJENI PLAASLIKE MUNISIPALITEIT, NOORD KAAP PROVINSIE

Kennis geskied hiermee ingevolge Regulasie 41(2) gepubliseer in Staatskennisgewing No. 982 kragtens Hoofstuk 6 van die Nasionale Omgewingsbestuurswet (WNOB) (Wet No. 107 van 1998, soos gewysig) Omgewingsimpakstudie (OIB) Regulasies (2014, soos gewysig) van die voorneme om 'n Aansoek om Omgewingsmagtiging (OM) in te dien vir die voorgestelde ontwikkeling van die Soyuz 2 Wind Energie Fasiliteit (WEF) binne die Emthanjeni Plaaslike Munisipaliteit van die Noord-Kaap Provinsie. Die Soyuz 2 WEF-projekterrein beslaan ongeveer 38 000 ha en bestaan uit die volgende plaasgedeeltes: Plaas Twyfelhoek Nr. 127: Gedeelte 3; Gedeelte 4; Gedeelte 0; Gedeelte 5 (van Gedeelte 1); Gedeelte 9 (van gedeelte 1); en Resterende Gedeelte van Gedeelte 1. Plaas Lemoenkloof Nr. 141: Resterende Gedeelte (Gedeelte 0); en Gedeelte 1. Plaas Dreunfontein Nr. 126: Gedeelte 0; en oorblywende Gedeelte van Gedeelte 1. Plaas Nr. 146, Gedeelte 0; en Plaas Nr. 144, Gedeelte 3.

Die aansoeker, Soyuz 2 (Pty) Ltd, stel die ontwikkeling van die Soyuz 2 WEF voor, wat sal bestaan uit tot en met 75 turbines met 'n maksimum naafhoogte van tot en met 160 m en 'n rotor deursnee van tot 200 m, met 'n totale fasiliteitsuitset van tot 480MW. Die verwagte WEF voetspoor is tot en met 150 ha.

Die WEF sal ook 'n transformator aan die basis van elke turbine insluit; beton turbine fondamente; turbine, hyskraan en lem se harde stande; tydelike lêgebiede wat die balkoprigting, berging en monteerarea sal akkommodeer; Battery Energieberging; bekabeling tussen die turbines, wat ondergronds geïlê moet word waar prakties; twee substasies op die perseel om die verbinding tussen die windplaas en die elektriseitsnetwerk te vergemaklik; toegangspaaie na die terrein en tussen projekkomponente, insluitend stormwaterinfrastruktuur.

Die WEF sal 'n totale padnetwerk van tot 125 km hê; 'n tydelike kamperterrein en beton-aanlegte en bedryfs- en instandhoudingsgebou, insluitend 'n hekhuis, sekuriteitsgebou, beheersentrum, kantore, pakhuise, 'n werkswinkel en besoekersentrum.

Die ontwikkeling van die voorgestelde Soyuz 2 WEF aktiveer NEMA (Wet No. 107 van 1998, soos gewysig) OIB-regulasies (2014, soos gewysig) Noteringskennisgewing 1, 2 en 3 aktiwiteite, insluitend Noteringskennisgewing 2 Aktiwiteit 1 vir die ontwikkeling van fasiliteite of infrastruktuur vir die opwekking van grootskaalse hernubare energie; en vereis dus 'n Omvangbepaling en OIB-proses (Omgewings Impak Beoordeling Proses). Coastal and Environmental Services (Edms) Bpk., wat handel dryf as "CES", is aangestel om die vereiste Bestekopname en OIB-proses te onderneem. Die bevoegde owerheid vir hierdie aansoek om OM (Omgewings Magtiging) is die Nasionale Departement van Bosbou, Visserye en die Omgewing (DBVO/'DFFE').
Vir verdere informasie, registrasie as 'n Belanghebbende en/of Geaffekteerde Party (B&GP) of indiening van skriftelike kommentaar, kontak asseblief vir Me Robyn Thomson via pos, telefoon of e-pos: Posbus 8145, Nahoon (Oost London), 5110 | Tel: +27 (0)43 726 7809 | E-pos: ***reppp@cesnet.co.za*** * Sluit asseblief die projek verwysing in by alle korrespondensie: ***Soyuz 2 WEF.***

KENNISGEWING: POPIA ("Protection of Personal Information Act" – Beskerming van Persoonlike Inligtingwet Wet) Vrywaring. Alle Belanghebbende- en Geaffekteerde Party (B&GP)-databasisse moet vanaf 1 Julie 2021 aan die Wet voldoen. Indien u as 'n B&GP op die databasis wil registreer, benodig ons as die administrateurs van die Soyuz 2 WEF databasis u toestemming om deel te wees van hierdie databasis. As sodanig word u hiermee in kennis gestel dat u geregtig is om sodanige toestemming te weier en u kan so 'n reg uitoefen deur in enige stadium van die proses skriftelik van hierdie databasis te ontrek. Sou u kies om in hierdie groep aan te bly, sal dit aanvaar word dat u ingestem het om deel te wees van hierdie databasis en dat u persoonlike inligting (synde jou naam, affiliasie, kontakbesonderhede en skriftelike kommentaar) sigbaar is vir enige persoon wat in die projek belang stel soweel as in die publieke domein. In hierdie verband doen ons 'n beroep op alle lede van hierdie databasis om NIE van sodanige persoonlike inligting gebruik te maak vir watter rede ook al sonder om die toestemming van die betrokke persoon(e) te verkry nie.

CES

KENNISGEWING VAN AANSOEK VIR OMGEWINGS MAGTIGING VIR DIE SOYUZ 3 WIND ENERGIE FASILITEIT (WEF), EMTHANJENI EN UBUNTU PLAASLIKE MUNISIPALITEIT, NOORD KAAP PROVINSIE

Kennis geskied hiermee ingevolge Regulasie 41(2) gepubliseer in Staatskennisgewing No. 982 kragtens Hoofstuk 6 van die Nasionale Omgewingsbestuurswet (WNOB) (Wet No. 107 van 1998, soos gewysig) Omgewingsimpakstudie (OIB) Regulasies (2014, soos gewysig) van die voorneme om 'n Aansoek om Omgewingsmagtiging (OM) in te dien vir die voorgestelde ontwikkeling van die Soyuz 3 Wind Energie Fasiliteit (WEF) binne die Emthanjeni en Ubuntu Plaaslike Munisipaliteit van die Noord-Kaap Provinsie. Die Soyuz 3 WEF-projekterrein beslaan ongeveer 23 800 ha en bestaan uit die volgende plaasgedeeltes: Plaas Combuisfontein Nr. 142: Gedeelte 2; Gedeelte 3 (van Gedeelte 1); Gedeelte 4; Gedeelte 8; Gedeelte 9; Gemsbokdam Gedeelte 6 (van Gedeelte 1). Plaas Nr. 143: Gedeelte 4 en Resterende Gedeelte van Gedeelte 1. Plaas Nr. 2: Gedeelte1; Gedeelte 2; en Oorblywende Omvang. Plaas Nr. 144, Gedeelte 0; Plaas Welgedagt Nr. 3 Resterende Gedeelte van Gedeelte 13.

Die aansoeker, Soyuz 3 (Pty) Ltd, stel die ontwikkeling van die Soyuz 3 WEF voor, wat sal bestaan uit tot en met 75 turbines met 'n maksimum naafhoogte van tot en met 160 m en 'n rotor deursnee van tot 200 m, met 'n totale fasiliteitsuitset van tot 480MW. Die verwagte WEF voetspoor is tot en met 150 ha.

Die WEF sal ook 'n transformator aan die basis van elke turbine insluit; beton turbine fondamente; turbine, hyskraan en lem se harde stande; tydelike lêgebiede wat die balkoprigting, berging en monteerarea sal akkommodeer; Battery Energieberging; bekabeling tussen die turbines, wat ondergronds geïlê moet word waar prakties; twee substasies op die perseel om die verbinding tussen die windplaas en die elektriseitsnetwerk te vergemaklik; toegangspaaie na die terrein en tussen projekkomponente, insluitend stormwaterinfrastruktuur.

Die WEF sal 'n totale padnetwerk van tot 125 km hê; 'n tydelike kamperterrein en beton-aanlegte en bedryfs- en instandhoudingsgebou, insluitend 'n hekhuis, sekuriteitsgebou, beheersentrum, kantore, pakhuise, 'n werkswinkel en besoekersentrum.

Die ontwikkeling van die voorgestelde Soyuz 3 WEF aktiveer NEMA (Wet No. 107 van 1998, soos gewysig) OIB-regulasies (2014, soos gewysig) Noteringskennisgewing 1, 2 en 3 aktiwiteite, insluitend Noteringskennisgewing 2 Aktiwiteit 1 vir die ontwikkeling van fasiliteite of infrastruktuur vir die opwekking van grootskaalse hernubare energie; en vereis dus 'n Omvangbepaling en OIB-proses (Omgewings Impak Beoordeling Proses). Coastal and Environmental Services (Edms) Bpk., wat handel dryf as "CES", is aangestel om die vereiste Bestekopname en OIB-proses te onderneem. Die bevoegde owerheid vir hierdie aansoek om OM (Omgewings Magtiging) is die Nasionale Departement van Bosbou, Visserye en die Omgewing (DBVO/'DFFE').

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KENNISGEWING: POPIA ("Protection of Personal Information Act" – Beskerming van Persoonlike Inligtingwet Wet) Vrywaring. Alle Belanghebbende- en Geaffekteerde Party (B&GP)-databasisse moet vanaf 1 Julie 2021 aan die Wet voldoen. Indien u as 'n B&GP op die databasis wil registreer, benodig ons as die administrateurs van die Soyuz 3 WEF databasis u toestemming om deel te wees van hierdie databasis. As sodanig word u hiermee in kennis gestel dat u geregtig is om sodanige toestemming te weier en u kan so 'n reg uitoefen deur in enige stadium van die proses skriftelik van hierdie databasis te ontrek. Sou u kies om in hierdie groep aan te bly, sal dit aanvaar word dat u ingestem het om deel te wees van hierdie databasis en dat u persoonlike inligting (synde jou naam, affiliasie, kontakbesonderhede en skriftelike kommentaar) sigbaar is vir enige persoon wat in die projek belang stel soweel as in die publieke domein. In hierdie verband doen ons 'n beroep op alle lede van hierdie databasis om NIE van sodanige persoonlike inligting gebruik te maak vir watter rede ook al sonder om die toestemming van die betrokke persoon(e) te verkry nie.

CES

KENNISGEWING VAN AANSOEK VIR OMGEWINGS MAGTIGING VIR DIE SOYUZ 4 WIND ENERGIE FASILITEIT (WEF), UBUNTU PLAASLIKE MUNISIPALITEIT, NOORD KAAP PROVINSIE

Kennis geskied hiermee ingevolge Regulasie 41(2) gepubliseer in Staatskennisgewing No. 982 kragtens Hoofstuk 6 van die Nasionale Omgewingsbestuurswet (WNOB) (Wet No. 107 van 1998, soos gewysig) Omgewingsimpakstudie (OIB) Regulasies (2014, soos gewysig) van die voorneme om 'n Aansoek om Omgewingsmagtiging (OM) in te dien vir die voorgestelde ontwikkeling van die Soyuz 4 Wind Energie Fasiliteit (WEF) binne die Ubuntu Plaaslike Munisipaliteit van die Noord-Kaap Provinsie. Die Soyuz 4 WEF-projekterrein beslaan ongeveer 14 200 ha en bestaan uit die volgende plaasgedeeltes: Plaas Allemansdam Nr. 17: Resterende Gedeelte en Gedeelte 1; Plaas Altringham Nr. 19; Plaas Nr. 18; Plaas Allemans Combuis Nr. 1: Resterende Gedeelte (van Gedeelte 0); Plaas Combuisfontein Nr. 142: Resterende Gedeelte (van Gedeelte 1).

Die aansoeker, Soyuz 4 (Pty) Ltd, stel die ontwikkeling van die Soyuz 4 WEF voor, wat sal bestaan uit tot en met 75 turbines met 'n maksimum naafhoogte van tot en met 160 m en 'n rotor deursnee van tot 200 m, met 'n totale fasiliteitsuitset van tot 480MW. Die verwagte WEF voetspoor is tot en met 150 ha.

Die WEF sal ook 'n transformator aan die basis van elke turbine insluit; beton turbine fondamente; turbine, hyskraan en lem se harde stande; tydelike lêgebiede wat die balkoprigting, berging en monteerarea sal akkommodeer; Battery Energieberging; bekabeling tussen die turbines, wat ondergronds geïlê moet word waar prakties; twee substasies op die perseel om die verbinding tussen die windplaas en die elektriseitsnetwerk te vergemaklik; toegangspaaie na die terrein en tussen projekkomponente, insluitend stormwaterinfrastruktuur.

Die ontwikkeling van die voorgestelde Soyuz 4 WEF aktiveer NEMA (Wet No. 107 van 1998, soos gewysig) OIB-regulasies (2014, soos gewysig) Noteringskennisgewing 1, 2 en 3 aktiwiteite, insluitend Noteringskennisgewing 2 Aktiwiteit 1 vir die ontwikkeling van fasiliteite of infrastruktuur vir die opwekking van grootskaalse hernubare energie; en vereis dus 'n Omvangbepaling en OIB-proses (Omgewings Impak Beoordeling Proses). Coastal and Environmental Services (Edms) Bpk., wat handel dryf as "CES", is aangestel om die vereiste Bestekopname en OIB-proses te onderneem. Die bevoegde owerheid vir hierdie aansoek om OM (Omgewings Magtiging) is die Nasionale Departement van Bosbou, Visserye en die Omgewing (DBVO/'DFFE').

Vir verdere informasie, registrasie as 'n Belanghebbende en/of Geaffekteerde Party (B&GP) of indiening van skriftelike kommentaar, kontak asseblief vir Me Robyn Thomson via pos, telefoon of e-pos: Posbus 8145, Nahoon (Oost London), 5110 | Tel: +27 (0)43 726 7809 | E-pos: ***reppp@cesnet.co.za*** * Sluit asseblief die projek verwysing in by alle korrespondensie: ***Soyuz 4 WEF.***

KENNISGEWING: POPIA ("Protection of Personal Information Act" – Beskerming van Persoonlike Inligtingwet Wet) Vrywaring. Alle Belanghebbende- en Geaffekteerde Party (B&GP)-databasisse moet vanaf 1 Julie 2021 aan die Wet voldoen. Indien u as 'n B&GP op die databasis wil registreer, benodig ons as die administrateurs van die Soyuz 4 WEF databasis u toestemming om deel te wees van hierdie databasis. As sodanig word u hiermee in kennis gestel dat u geregtig is om sodanige toestemming te weier en u kan so 'n reg uitoefen deur in enige stadium van die proses skriftelik van hierdie databasis te ontrek. Sou u kies om in hierdie groep aan te bly, sal dit aanvaar word dat u ingestem het om deel te wees van hierdie databasis en dat u persoonlike inligting (synde jou naam, affiliasie, kontakbesonderhede en skriftelike kommentaar) sigbaar is vir enige persoon wat in die projek belang stel soweel as in die publieke domein. In hierdie verband doen ons 'n beroep op alle lede van hierdie databasis om NIE van sodanige persoonlike inligting gebruik te maak vir watter rede ook al sonder om die toestemming van die betrokke persoon(e) te verkry nie.

CES

KENNISGEWING VAN AANSOEK VIR OMGEWINGS MAGTIGING VIR DIE SOYUZ 5 WIND ENERGIE FASILITEIT (WEF), UBUNTU PLAASLIKE MUNISIPALITEIT, NOORD KAAP PROVINSIE

Kennis geskied hiermee ingevolge Regulasie 41(2) gepubliseer in Staatskennisgewing No. 982 kragtens Hoofstuk 6 van die Nasionale Omgewingsbestuurswet (WNOB) (Wet No. 107 van 1998, soos gewysig) Omgewingsimpakstudie (OIB) Regulasies (2014, soos gewysig) van die voorneme om 'n Aansoek om Omgewingsmagtiging (OM) in te dien vir die voorgestelde ontwikkeling van die Soyuz 5 Wind Energie Fasiliteit (WEF) binne die Ubuntu Plaaslike Munisipaliteit van die Noord-Kaap Provinsie. Die Soyuz 5 WEF-projekterrein beslaan ongeveer 16 800 ha en bestaan uit die volgende plaasgedeeltes: Plaas Schramfontein Nr. 21: Resterende Gedeelte van Gedeelte 0; Gedeelte 1; Plaas Schramfontein Nr. 23: Gedeelte 4 (Beschuid Kuil); Plaas Lekkerviei Nr. 142; Plaas Gedertestfontein Nr. 134: Resterende Gedeelte; Plaas Draaifontein Nr. 24: Resterende Gedeelte van Gedeelte 2.

Die aansoeker, Soyuz 5 (Pty) Ltd, stel die ontwikkeling van die Soyuz 5 WEF voor, wat sal bestaan uit tot en met 75 turbines met 'n maksimum naafhoogte van tot en met 160 m en 'n rotor deursnee van tot 200 m, met 'n totale fasiliteitsuitset van tot 480MW. Die verwagte WEF voetspoor is tot en met 150 ha.

Die WEF sal ook 'n transformator aan die basis van elke turbine insluit; beton turbine fondamente; turbine, hyskraan en lem se harde stande; tydelike lêgebiede wat die balkoprigting, berging en monteerarea sal akkommodeer; Battery Energieberging; bekabeling tussen die turbines, wat ondergronds geïlê moet word waar prakties; twee substasies op die perseel om die verbinding tussen die windplaas en die elektriseitsnetwerk te vergemaklik; toegangspaaie na die terrein en tussen projekkomponente, insluitend stormwaterinfrastruktuur.

Die ontwikkeling van die voorgestelde Soyuz 5 WEF aktiveer NEMA (Wet No. 107 van 1998, soos gewysig) OIB-regulasies (2014, soos gewysig) Noteringskennisgewing 1, 2 en 3 aktiwiteite, insluitend Noteringskennisgewing 2 Aktiwiteit 1 vir die ontwikkeling van fasiliteite of infrastruktuur vir die opwekking van grootskaalse hernubare energie; en vereis dus 'n Omvangbepaling en OIB-proses (Omgewings Impak Beoordeling Proses). Coastal and Environmental Services (Edms) Bpk., wat handel dryf as "CES", is aangestel om die vereiste Bestekopname en OIB-proses te onderneem. Die bevoegde owerheid vir hierdie aansoek om OM (Omgewings Magtiging) is die Nasionale Departement van Bosbou, Visserye en die Omgewing (DBVO/'DFFE').

Vir verdere informasie, registrasie as 'n Belanghebbende en/of Geaffekteerde Party (B&GP) of indiening van skriftelike kommentaar, kontak asseblief vir Me Robyn Thomson via pos, telefoon of e-pos: Posbus 8145, Nahoon (Oost London), 5110 | Tel: +27 (0)43 726 7809 | E-pos: ***reppp@cesnet.co.za*** * Sluit asseblief die projek verwysing in by alle korrespondensie: ***Soyuz 5 WEF.***

KENNISGEWING: POPIA ("Protection of Personal Information Act" – Beskerming van Persoonlike Inligtingwet Wet) Vrywaring. Alle Belanghebbende- en Geaffekteerde Party (B&GP)-databasisse moet vanaf 1 Julie 2021 aan die Wet voldoen. Indien u as 'n B&GP op die databasis wil registreer, benodig ons as die administrateurs van die Soyuz 5 WEF databasis u toestemming om deel te wees van hierdie databasis. As sodanig word u hiermee in kennis gestel dat u geregtig is om sodanige toestemming te weier en u kan so 'n reg uitoefen deur in enige stadium van die proses skriftelik van hierdie databasis te ontrek. Sou u kies om in hierdie groep aan te bly, sal dit aanvaar word dat u ingestem het om deel te wees van hierdie databasis en dat u persoonlike inligting (synde jou naam, affiliasie, kontakbesonderhede en skriftelike kommentaar) sigbaar is vir enige persoon wat in die projek belang stel soweel as in die publieke domein. In hierdie verband doen ons 'n beroep op alle lede van hierdie databasis om NIE van sodanige persoonlike inligting gebruik te maak vir watter rede ook al sonder om die toestemming van die betrokke persoon(e) te verkry nie.

CES

KENNISGEWING VAN AANSOEK VIR OMGEWINGS MAGTIGING VIR DIE SOYUZ 6 WIND ENERGIE FASILITEIT (WEF), UBUNTU PLAASLIKE MUNISIPALITEIT, NOORD KAAP PROVINSIE

Kennis geskied hiermee ingevolge Regulasie 41(2) gepubliseer in Staatskennisgewing No. 982 kragtens Hoofstuk 6 van die Nasionale Omgewingsbestuurswet (WNOB) (Wet No. 107 van 1998, soos gewysig) Omgewingsimpakstudie (OIB) Regulasies (2014, soos gewysig) van die voorneme om 'n Aansoek om Omgewingsmagtiging (OM) in te dien vir die voorgestelde ontwikkeling van die Soyuz 6 Wind Energie Fasiliteit (WEF) binne die Ubuntu Plaaslike Munisipaliteit van die Noord-Kaap Provinsie. Die Soyuz 6 WEF-projekterrein beslaan ongeveer 17 800 ha en bestaan uit die volgende plaasgedeeltes: Plaas No. 16: Resterende Gedeelte van Gedeelte 3; Resterende Gedeelte van Gedeelte 0; en Gedeelte 4. Plaas 141: Resterende Gedeelte van Gedeelte 0. Plaas Wonderboom Nr. 13: Gedeelte 1; Gedeelte 2 (van Gedeelte 13); Plaas Nr. 148: Resterende Gedeelte van Gedeelte 0; Plaas Nr. 157; Plaas Nr. 156; Plaas Sterkfontein Nr. 12: Resterende Gedeelte van Gedeelte 1.

Die aansoeker, Soyuz 6 (Pty) Ltd, stel die ontwikkeling van die Soyuz 6 WEF voor, wat sal bestaan uit tot en met 75 turbines met 'n maksimum naafhoogte van tot en met 160 m en 'n rotor deursnee van tot 200 m, met 'n totale fasiliteitsuitset van tot 480MW. Die verwagte WEF voetspoor is tot en met 150 ha.

Die WEF sal ook 'n transformator aan die basis van elke turbine insluit; beton turbine fondamente; turbine, hyskraan en lem se harde stande; tydelike lêgebiede wat die balkoprigting, berging en monteerarea sal akkommodeer; Battery Energieberging; bekabeling tussen die turbines, wat ondergronds geïlê moet word waar prakties; twee substasies op die perseel om die verbinding tussen die windplaas en die elektriseitsnetwerk te vergemaklik; toegangspaaie na die terrein en tussen projekkomponente, insluitend stormwaterinfrastruktuur.

Die ontwikkeling van die voorgestelde Soyuz 6 WEF aktiveer NEMA (Wet No. 107 van 1998, soos gewysig) OIB-regulasies (2014, soos gewysig) Noteringskennisgewing 1, 2 en 3 aktiwiteite, insluitend Noteringskennisgewing 2 Aktiwiteit 1 vir die ontwikkeling van fasiliteite of infrastruktuur vir die opwekking van grootskaalse hernubare energie; en vereis dus 'n Omvangbepaling en OIB-proses (Omgewings Impak Beoordeling Proses). Coastal and Environmental Services (Edms) Bpk., wat handel dryf as "CES", is aangestel om die vereiste Bestekopname en OIB-proses te onderneem. Die bevoegde owerheid vir hierdie aansoek om OM (Omgewings Magtiging) is die Nasionale Departement van Bosbou, Visserye en die Omgewing (DBVO/'DFFE').

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KENNISGEWINGS

15.2 PROOF OF SIGNAGE

Signage has been erected on the eastern access road to the site. Please see proof below.

Soyuz 6 Site Notice photographs
Co-ordinates: -31.0437414, 23.596544

PLEASE NOTE THAT THE REMAINING PPP PROOFS WILL BE ADDED TO THE FINAL SCOPING REPORT

16 APPENDIX D | SPECIALIST STUDIES

Appendix D1 – Agricultural Impact Assessment

Appendix D2 – Avifaunal Monitoring and Impact Assessment

Appendix D3 – Bat Monitoring and Impact Assessment

Appendix D4 – Botanical Impact Assessment

Appendix D5 – Faunal Impact Assessment

Appendix D6 – Freshwater Impact Assessment

Appendix D7 – Heritage Impact Assessment

Appendix D8 – Noise Impact Assessment

Appendix D9 – Paleontological Impact Assessment

Appendix D10 – Socio-economic Impact Assessment

Appendix D11 – Visual Impact Assessment