SiVEST SA (PTY) LTD

PROPOSED CONSTRUCTION OF THE KOUP 1 WIND ENERGY FACILITY AND ASSOCIATED GRID INFRASTRUCTURE, NEAR BEAUFORT WEST, WESTERN CAPE PROVINCE, SOUTH AFRICA

CULTURAL LANDSCAPES ASSESSMENT

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EXECUTIVE SUMMARY

Introduction

Hearth Heritage was appointed by SiVEST on behalf of Genesis Enertrag Koup 1 (Pty) Ltd. to undertake a Cultural Landscape Assessment (CLA) which would form part of the Heritage Impact Assessment (Undertaken by PGS Heritage (Pty) Ltd) which will serve to inform the Environmental Impact Assessment Process for the proposed Koup 1 Wind Energy Facility, located approximately 55kms south of Beaufort West in the Western Cape Province and is within the Beaufort West and Prince Albert Local Municipalities, in the Central Karoo District Municipality. The proposed WEF is located outside of a REDZ.

Description

The proposed Koup 1 Wind Energy Facility is located approximately 50km south of the town of Beaufort West in the Western Cape Province. The area is characterised by low relief, gently rolling to hilly terrain between 1000 to 1100 m amsl. The highest points are koppies that lie along low, rocky, west-east trending ridges. Dramatic blue and grey vistas of the Nieuweveld Mountains to the north and Swartberg Mountains to the south are visible from these ridges and frame the lower lying regional area giving it an expansive but contained sense of place. Most of the landscape is clothed in karroid bossieveld vegetation, with trees mainly confined to shallow, intermittent-flowing, dendritic drainage lines, and shallow, gravelly soils. Historic farmsteads are characteristically located on the northern slopes of these ridges and are often associated with complex configurations of impressive stone packed stock kraals. The site is accessed via the regional N12 scenic route, a historic route linking Beaufort West with the towns of De Rust and Outdshoorn via scenic Meiringspoort Pass, and the coastal town of George further south. The north-south orientated N12 intersects the characteristic east west ridges with shallow poorts, culminating in the Meiringspoort Pass that winds through the Groot Swartberg mountain range located within the Swartberg Nature Reserve. This road have carried inhabitants and travellers between historic towns, farmsteads and further regional destinations since at least the late C18th. Views and vistas of the distant mountains and destinations give significance to the experience of the landscape. The history of the area is one of contact, conflict and survival and is an example of a long history of symbiotic relationship between man and nature.

The Koup region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock farming with limited farmstead crop cultivation. The vastness and relative homogenous nature of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning department to consider this application in terms of other renewable energy developments that are planned/proposed for the Koup area, notably the proposed RE developments included in the cumulative impact section of this report.

Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.
Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).

The findings of this report, coupled with the proposed layout for development of wind turbines, which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site if the report's recommendations are followed. The mitigating recommendations in this report consider the ecological, aesthetic, historic and socio-economic value lines that underpin the layers of significance that combine to create the character of the place and the cultural landscape of the Koup. These recommendations include road and farmstead complex buffers which incorporate cultivated areas and graves, steep slope and ridgeline no-go areas as well as consideration of the unique land form of the site, CBA and ESA no-go areas, as well as mechanisms to support the non-landowner residents that live on the site in being bale to continue their indigenous land use patterns, knowledge and social systems. These mitigations will reduce the impact on the surrounding landscape and heritage resources but due to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.

Heritage Indicators

The conclusion of this CLA study has culminated in the map (***Figure 1***) showing location of proposed turbines and WEF infrastructure with the following heritage indicators and development buffers:

- A 1000m buffer to either side of the N12 for turbine and infrastructure placement (pink buffer);
- 300m buffer to either side of identified significant historic farm roads (pink) for turbine placement, substation and laydown area (buffer not shown in map, only roads identified);

- 800m buffer around historic farmsteads (red circles) for turbine placements (single turbines currently proposed for the edges of some of these buffers are acceptable); and
- 50m outer boundary buffer for roads and infrastructure around farmsteads including cultivated areas and graves – integrity of farmstead complex as a whole should be retained and no WEF roads running through farmstead complexes;
- 200m freestanding graded heritage structure buffer for new roads and infrastructure;
- 100m buffer from cemetery or unmarked burial for all development;
- existing roads to be used with minimal upgrade as far as possible;
- no-go areas on mountain ridges and steep slopes (over 10%) for all infrastructure;
- riverine corridors 100yr flood line buffer (ecological) or 100m buffer (archeological) whichever is further (buffers not indicated);
- CBA and ESA no-go areas for all development (green shading);
- Koup poort buffer (light blue shading) included in the 300m farm road buffer; and
- a preconstruction micro-survey for turbines, access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.

Further, the following changes to the current proposed layout is recommended:

- Turbine 11 must be relocated outside of the historic farmstead buffer;
- the proposed substation should be located to the north of the farm entrance road;
- the laydown area and substation should be located outside the 300m farm road buffer without impacting on the riverine corridor flood line and slopes over 3%; and
- new access roads must be relocated to avoid slopes over 10% and visually sensitive slopes impacting on the views from the historic farm roads.

Further heritage indicators and recommendations for construction/ decommissioning and operational phases unsuitable for mapping have been made in the CLA (Section 12 on page 65) and are necessary for the identified negative impacts to be reduced from very high to medium negative impact of the proposed Koup 1 WEF and associated infrastructure on the cultural landscape.

Conclusion and Impact Statement

From this study it is recommended that only turbine 11 is not feasible in the current proposed location for the proposed Koup 1 WEF when taking into consideration impacts to cultural landscapes. The substation and laydown area locations require some layout alteration to accommodate the farm road buffer. The access roads need to avoid slopes over 10% and visually sensitive slopes impacting on the historic farm roads. The collector substation for proposed Gridline Option 2 requires relocation out of the N12 scenic road buffer and the CBA. With these buffers in place and all other recommendations followed, the overall

impact to the cultural landscape for the proposed Koup 1 WEF and associated grid connection and infrastructure can be reduced from **high to moderate**.

There are no fatal flaws and the development can proceed with CLA recommendations and mitigation in place.

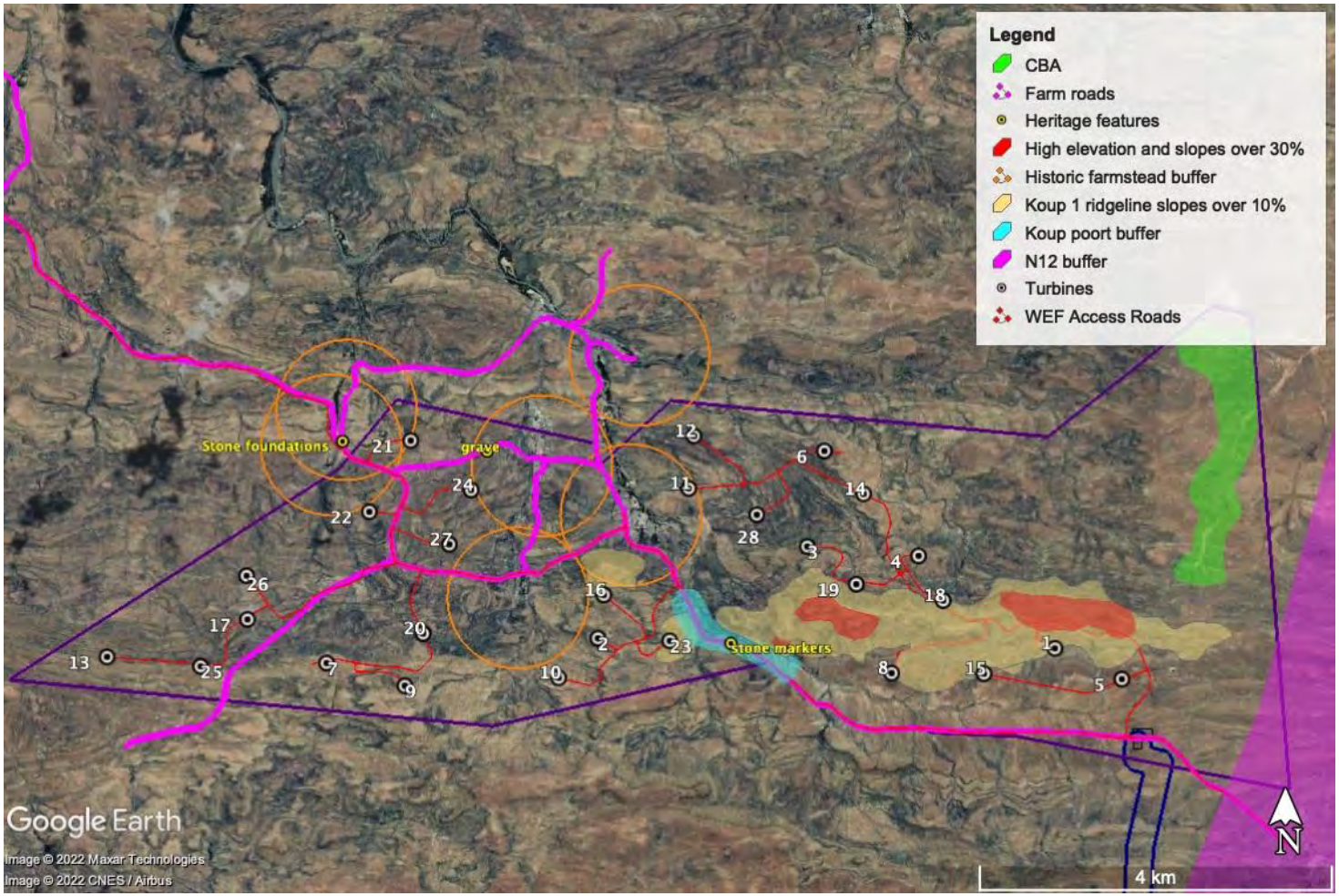

Figure 1: Cultural Landscapes Assessment heritage indicators and buffers map for proposed Koup 1 WEF development (Note: 300m buffer for pink farm roads not indicated; 100m/ flood line riverine corridor and ESA buffers not indicated).

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) - REQUIREMENTS FOR SPECIALIST REPORTS (APPENDIX 6)

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
1. (1) A specialist report prepared in terms of these Regulations must contain- a) details of- i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	1.2
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	
c) an indication of the scope of, and the purpose for which, the report was prepared;	1.1
(cA) an indication of the quality and age of base data used for the specialist report;	1.3
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	12
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	1.3.2
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	1.3
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	10
g) an identification of any areas to be avoided, including buffers;	12;15; Figure 63
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	**Figure 60**; Figure 63
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	2
j) a description of the findings and potential implications of such findings on the impact of the proposed activity, (including identified	10;12

alternatives on the environment) or activities;	
k) any mitigation measures for inclusion in the EMPr;	12;15
l) any conditions for inclusion in the environmental authorisation;	12;15
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	12;15
n) a reasoned opinion- i. (as to) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	15
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	1.3.6
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	1.3.6
q) any other information requested by the competent authority.	
2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	

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Glossary of Terms

Cultural Landscapes Terminology

"perceptual qualities" Aspects of a landscape which are perceived through the senses, specifically views and aesthetics.

"cultural landscape" A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992). Includes and extends beyond the study site boundaries.

"cultural landscape area" These are single unique areas which are the discrete geographical areas of a particular landscape type. Each will have its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type.

"study site" The study site is assumed to include the area within the boundaries of the proposed development

"characteristics" elements, or combination of elements, which make a particular contribution to distinctive character.

"elements" individual components which make up the landscape, such as trees and fences.

"landscape character" A distinct, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

"landscape character assessment" This is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment.

"sense of place" The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

"scenic route" A public street designated as a scenic drive by a governing body in recognition of the high visual amenity alongside that public street, including background vistas of a mountain, open country, a coastline or a town; usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

"cultural significance" Aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

"development" Any physical intervention, excavation or action, other than that caused by natural forces, which may result in a change in the appearance or physical nature of a site or influence its stability and future well-being, including

(a) the construction, alteration, demolition, removal or change of use of a site or a structure on the site;

(b) the carrying out of any works on, over or under the site;

(c) the construction or putting up for display of signs or notice boards;

(d) any change to the natural or existing condition or topography of land; or

(e) any removal, physical disturbance, clearing or destruction of trees or vegetation or the removal of topsoil;

"heritage resource" Heritage resource as defined in section 1 of the National Heritage Resources Act (25 of 1999)

"cultural heritage resource" Places, objects and practices of cultural significance

"drift" a watercourse crossing often associated with shallower areas that may be dry at times of the year

“tangible cultural heritage”	Physical heritage, such as buildings and objects, as opposed to intangible heritage
“intangible cultural heritage”	The practices, representations, expressions, knowledge, skills, as well as the instruments, objects, artefacts and cultural spaces associated therewith, that communities, groups and, in some cases, individuals recognise as part of their cultural heritage; – something considered to be a part of heritage that is not a physical object or place, such as a memory, tradition, language, belief or a cultural practice, (as opposed to tangible heritage)
“*kraal*”	Livestock enclosure common throughout the area.
“*krans*”	Cliff
“*legplaats*”	Stock post
“*matjieshuis*”	Mat or reed house
“*poort*”	portal usually associated with a gap between two higher elevations which separates two distinct landscapes, often related to a pass
“skerm”	Circular enclosures constructed out of dried bushes
“trekboer”	Semi-nomadic subsistence farmers who moved out of the Cape Colony
“werf”	Farmyard
“koup”	tail fat (*stertvet)* - referring to the fat-tailed sheep of the khoekhoen pastoralists who occupied the area before and during the arrival of the *trekboere*

List of Abbreviations

AIA	Archaeological Impact Assessment
BA	Basic Assessment
BAR	Basic Assessment Report
CHG	Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa (May 2017)
CL	Cultural Landscape
CLA	Cultural landscape area
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
IKS	Indigenous Knowledge Systems
MW	Mega Watts
NCW	Not Conservation Worthy
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act (25 of 1999)
PHRA	Provincial Heritage Resources Authority
PPP	Public Participation Process
PV	Photovoltaic
REDZ	Renewable Energy Development Zone
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SEA	Strategic Environmental Assessment
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VIA	Visual Impact Assessment
WEF	Wind Energy Facility
WHC	World Heritage Convention

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CULTURAL LANDSCAPE ASSESSMENT

1. INTRODUCTION

Genesis Enertrag Koup 1 Wind (Pty) Ltd (hereafter referred to as “Genesis”), has appointed SiVEST Environmental (hereafter referred to as “SiVEST”) to undertake the required EIA / BA Processes for the proposed construction of the Koup 1 Wind Energy Facility (WEF) and associated grid connection infrastructure near Beaufort West in the Western Cape Province of South Africa.

The overall objective of the development is to generate electricity by means of renewable energy technology capturing wind energy to feed into the National Grid.

It is anticipated that the proposed Koup 1 WEF will comprise twenty-eight (28) wind turbines with a maximum total energy generation capacity of up to approximately 140MW. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. A Battery Energy Storage System (BESS) will be located next to the onsite 33/132kV substation. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks.

In terms of the Environmental Impact Assessment (EIA) Regulations, which were published on 04 December 2014 [GNR 982, 983, 984 and 985) and amended on 07 April 2017 [promulgated in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017], various aspects of the proposed development are considered listed activities under GNR 327 and GNR 324 which may have an impact on the environment and therefore require authorisation from the National Competent Authority (CA), namely the Department of Environment, Forestry and Fisheries (DEFF), prior to the commencement of such activities. Specialist studies have been commissioned to assess and verify the project under the new Gazetted specialist protocols.

1.1 Terms of Reference

The aim of the study is to identify the cultural landscape (CL) elements of the proposed development area and to assess the impact of the proposed development on those elements. This report aims to assist the developer, Genesis Enertrag Koup 1 (Pty) Ltd (hereafter referred to as “Genesis”), in managing the identified cultural lansdcape elements in a responsible manner, to protect, conserve, and develop them within the framework provided for by the National Heritage Resources Act (25 of 1999) (NHRA).

1.2 Specialist Credentials

Emmylou Rabe Bailey, director of Hearth Heritage consultancy (est 2009), has over 15 years of experience in the heritage field, in the public and private sectors. Emmylou holds an MA in Archaeology and Heritage Conservation from the University of Leicester, UK (2008), specialising in the assessment, conservation and representation of archaeological resources and cultural landscapes. Emmylou is an Accredited Professional Heritage Practitioner and Executive Committee member with the Association of Professional Heritage Practitioners (APHP) and registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist. She also sits on Heritage Western Cape Council and the HWC Archaeology, Palaeontology and Meteorites Permitting Committee as well as the ICOMOS International Scientific Committees for Archaeological Heritage Management and Cultural Landscape as an Expert Member.

1.3 Assessment Methodology

1.3.1 Desktop analysis and literature review.

- Review of Desktop Beaufort West Heritage Survey and Beaufort West Municipal SDF.
- Review of Central Karoo District Spatial Development Framework.
- Review of relevant Archaeological Impact Assessment (AIA), Heritage Impact Assessment (HIA), Visual Impact Assessment (VIA) and Socio-economic Impact Assessment reports (SEIA) on the proposed Koup 1 and adjacent Koup 2 proposed WEFs as well as other relevant assessment reports from the surrouding area;
- Review of relevant academic literature and articles on cultural landscape assessment;
- Review of relevant academic literature and articles on the cultural heritage of the regional study area;
- Review of relevant policies and legislation on cultural landscapes assessment, scenic drives and route assessment and heritage assessment in EIA process;
- Review of historic and current maps of the study area and surrounds;
- Review of REDZs Strategic Environmental Assessment (SEA) reports (DEA, 2015); and

- Review of relevant international cultural landscapes best practice.

1.3.2 Preliminary field survey

The field survey of cultural landscape elements was conducted by a cultural landscapes specialist (archaeologist / anthropologist / heritage specialist) over 4 days from 22-24 June 2021 (mid-winter). Survey was conducted in a vehicle on existing farm access roads and on foot where no vehicle access was possible. Cultural heritage resources and cultural landscape elements falling within and adjacent to the proposed development footprint were identified, mapped and photographed where appropriate. The season for field work did not impact the research for this study.

1.3.3 Recording

Recording and documentation of relevant cultural heritage and cultural landscape elements, the assessment of resources in terms of the specialist requirements for CLA criteria, report writing, mapping and recommendations.

The significance of the cultural landscape is based on the examination of the

- processes (spatial pattern, land uses, response to natural features and cultural traditions);
- components (circulation, boundaries, vegetation, structural types, cluster arrangements, archaeological types, small-scale elements); and
- perceptual qualities (views and aesthetics), which are then utilized to identify and assess the relationships between the patterns of human use, the natural environment and cultural beliefs and attitudes.

Evaluation of provisionally identified heritage elements' significance according to World Heritage Convention Operational Guidelines (2017) and National Heritage Resources Act (NHRA) (Act 25 of 1999) as is required as part of the BA process.

1.3.4 Grading

S.7(1) of the NHRA provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

Heritage Western Cape (2016), uses a system in which resources of local significance are divided into Grade IIIA – high significance, Grade IIIB – medium significance and Grade IIIC - low local or contextual

significance, with a Not Conservation Worthy (NCW) grading for sites of very low or no significance and generally not requiring mitigation or other interventions).

It should be noted that without further research and investigation of the intangible and living heritage found at the Koup 1 and 2 study site or surrounding area, a valuable and true assessment of the significance of the heritage resources and elements is not possible, and any grading assigned is subject to further work to confirm the proposed gradings. Notwithstanding, this report has drawn from other research to inform gradings and is confident that the proposed gradings herein have considered the most common significance assignments.

1.3.5 Sensitivity mapping for cultural landscapes (SEA, 2015)

Landscape sensitivity was determined as part of this study through the identification of natural, scenic and cultural resources which have aesthetic, social and economic value to the local community, the region, and society as a whole. The resources considered include features of topographic, geological or cultural interest, together with landscape grain or complexity. Protected landscapes, such as national parks, nature reserves, game parks or game farms, as well as heritage sites, add to the cultural value of an area and were thus considered as essential criteria in the determination of landscape sensitivities. Landscape sensitivity was further determined by taking into account existing receptors in the area including settlements, national roads, arterial roads, scenic routes, and tourist destinations such as guest farms and resorts.

1.3.6 Community engagement

Limited interviews with tenants and labourers on the properties proposed for development and land owners around the proposed development were done as part of the cultural landscape assessment to identify any values associated with identified heritage resources and to ascertain whether any meaningful intangible heritage resources are associated with any of the built structures or natural features. Further research/ other studies beyond the brief of this BA would be required to determine the significance of the intangible or living heritage of the Koup cultural landscape. The findings of this report must be shared with identified interested and affected parties in the EIA public particpation process in order to further ascertain any intangible cultural resources that may exist on the landscape that have not been identified. Notably it is critical that the non-landowner residents on and surrounding the properties proposed for development also be included as I&APs in the process.

2. ASSUMPTIONS AND LIMITATIONS

Not detracting in any way from the comprehensiveness of the fieldwork and study undertaken, it is necessary to realise that the cultural landscape elements identified during fieldwork do not necessarily

represent all the possible elements present in the area. Various factors account for this, including the layered histories associated with the area, specifically in terms of intangible and living heritage resources associated to the cultural landscape. Fieldwork was thorough enough for the purpose of this study, to pick up on the sense of place and character of the area, in order to assess impact of the development on the cultural landscape and propose mitigation measures.

The following identified assumptions should be noted:

- That the reports and information provided to Hearth Heritage by the client and EAP are true and correct at the time of submission.
- That the development infrastructure will be removed and rehabilitaion of the landscape completed as per the EMPr for these developments in the decommissioning phase and not recommissioned.
- That the status quo of the landscape was ‘as usual’ during the fieldwork period and that residents or labourers, stock or other relevant cultural elements were not altered for the survey period.

The following identified limitations should be noted:

- No previous specialist cultural landscapes research for the immediate area was available, however HIA studies in the area have been done and were consulted for information. Similarities to landscape character and elements in the region to other areas where CLA studies have been done, allowed for use of these studies in analysis and recommendations for development in this report (Jansen and Franklin, 2020).
- No stakeholder participation was conducted to determine intangible or living heritage resources for the purposes of the cultural landscape assessment.
- Due to the historical layering of the landscape and associated history and memory of conflict, disposession and disempowerment, the values attributed to the landscape and heritage resources are varied and do not necessarily align to give a definitive single significance to the site. Perceptions of sense of place vary over time and place and from one individual to the next depending on their relationship to the landscape and the proposed development. Without a detailed and extensive consultation process with all potential stakeholders, including non-landowners (labourers, tourists, youth), the full significance of the cultural landscape and impact of the proposed development on it, cannot be accurately determined. The depth and complexity of values assigned to heritage resources in this landscape is beyond the scope of this report for the BAR, but should be further developed in the EIA process through stakeholder engagement by qualified heritage specialists to determine the full impact of the proposed development on the cultural landscape and inform mitigation accordingly.
- At the time of undertaking the visual study no information was available regarding the type and intensity of lighting that will be required for the proposed WEF and therefore the potential impact of lighting at night was not assessed at a detailed level. However, lighting requirements are relatively similar for all WEFs and as such, general measures to mitigate the impact of additional light sources on the ambiance of the nightscape were provided in the VIA (Schwartz, 2021).

3. TECHNICAL DESCRIPTION

3.1 Project Location

The proposed WEF and associated grid connection infrastructure is located approximately 55km south of Beaufort West in the Western Cape Province and is within the Beaufort West and Prince Albert Local Municipalities, in the Central Karoo District Municipality (**Error! Reference source not found.**).

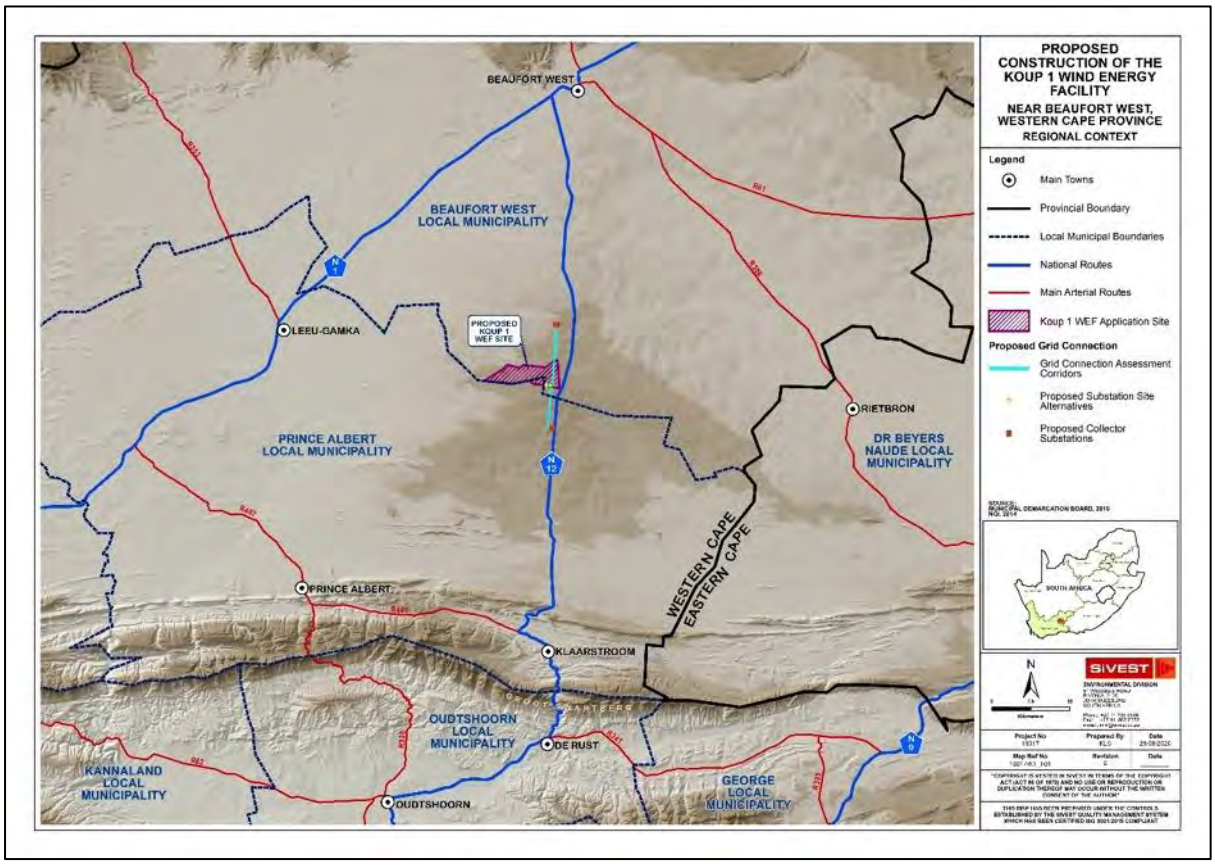

Figure 2: Regional Context Map

3.1.1 WEF

The WEF application site as shown on the locality map below (**Figure *3***) is approximately 4279.398 hectares (ha) in extent and incorporates the following farm portions:

- The Farm Riet Poort No 231
- Portion 11 Of The Farm Brits Eigendom No 374
- Portion 15 Of The Farm Brits Eigendom No 374
- Portion 5 Of Farm 380
- Portion 10 Of Farm 380
- Portion 11 Of Farm 380

A smaller buildable area (2445.667 ha) has however been identified as a result of a preliminary suitability assessment undertaken by Genesis and this area is likely to be further refined with the exclusion of sensitive areas determined through various specialist studies being conducted as part of the EIA process.

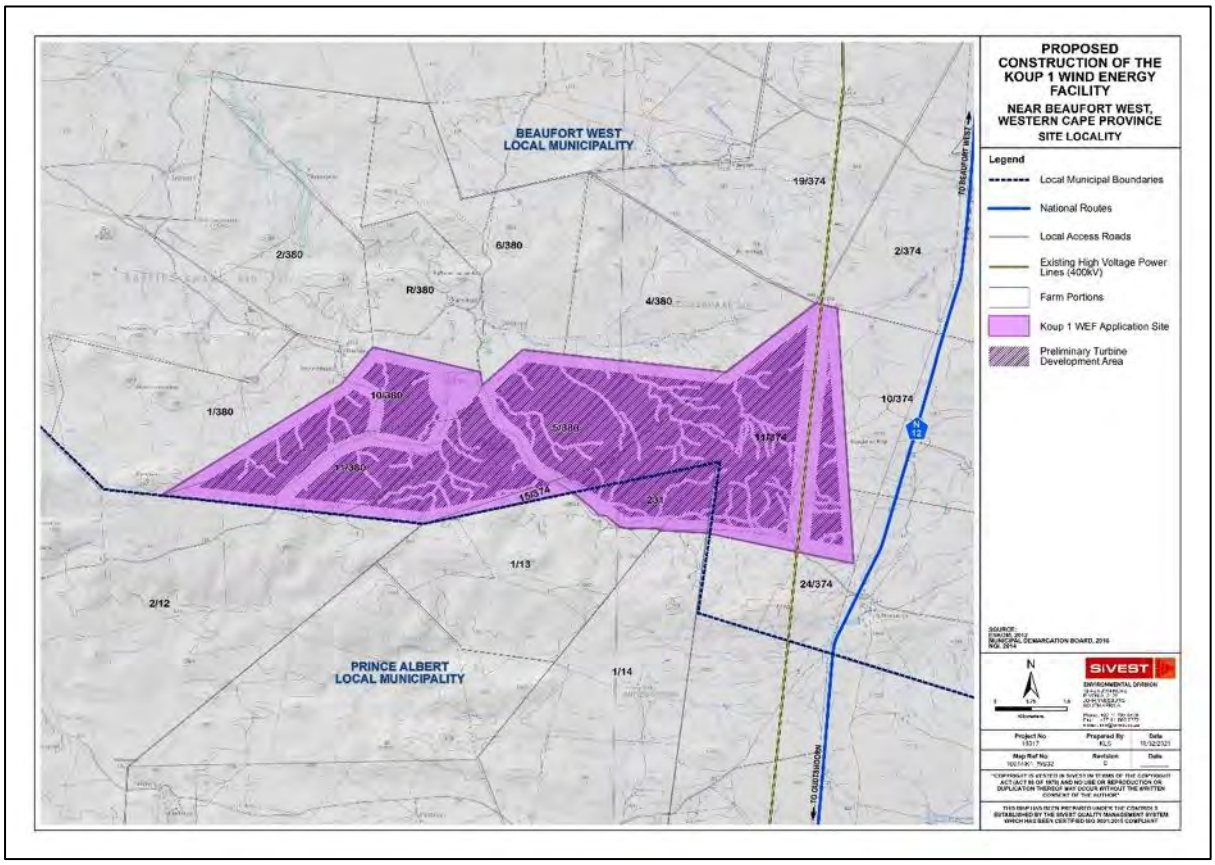

Figure 3: Koup 1 WEF Site Locality

3.1.2 Grid Connection

At this stage, it is proposed that a 132kV overhead power line will connect the Koup 1 WEF on-site switching substation / collector to the national grid either by way of an off-site collector substation, or via a direct tie-in to existing 400kV transmission lines that traverse the Koup 1 WEF project site (**Figure *4***).

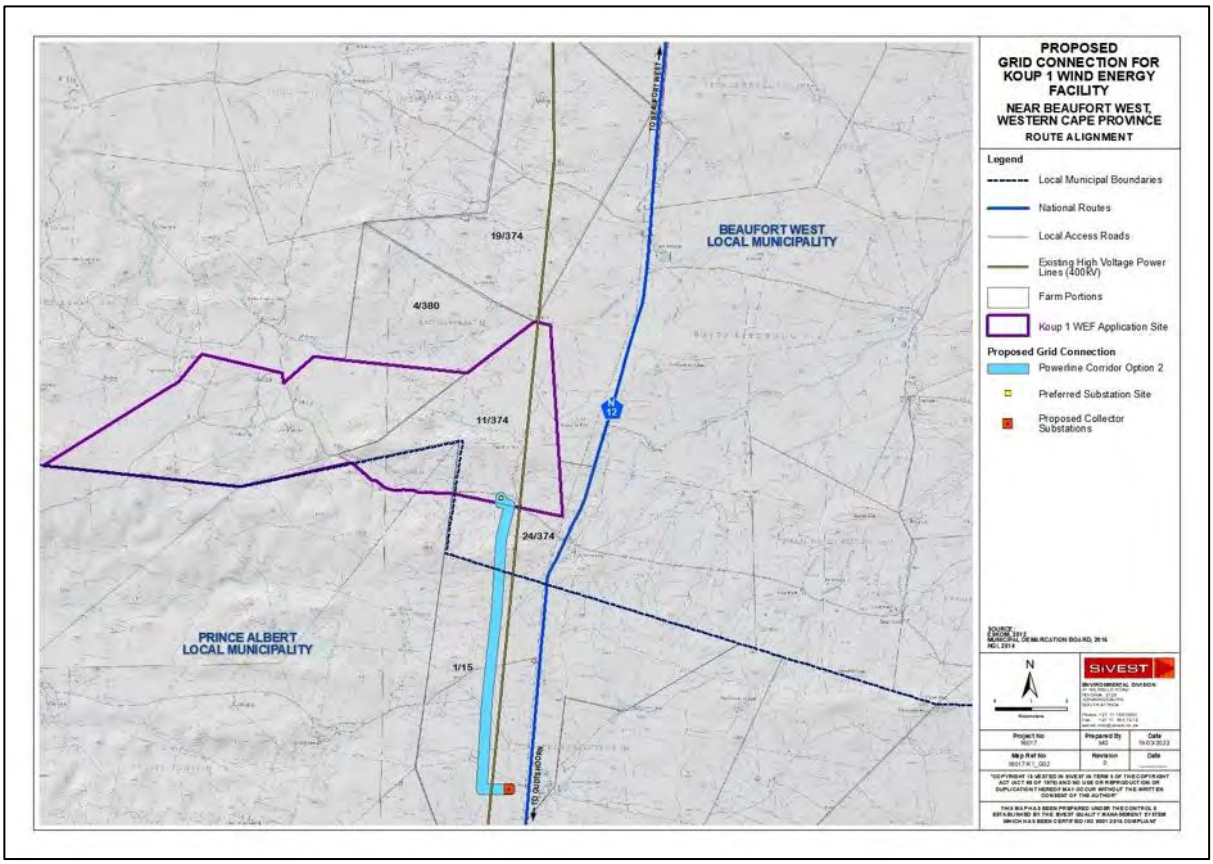

Figure 4: Proposed 132kV Power Line Route Alignment

3.2 Project Description

It is anticipated that the proposed Koup 1 WEF will comprise twenty-eight (28) wind turbines with a maximum total energy generation capacity of up to approximately 140MW. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. A Battery Energy Storage System (BESS) will be located next to the onsite 33/132kV substation. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks.

3.2.1 Wind Farm Components

- Up to 28 wind turbines, each between 5.6MW and 6.6MW, with a maximum export capacity of approximately 140MW. This will be subject to allowable limits in terms of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The final number of turbines and layout of the WEF will, however, be dependent on the outcome of the Specialist Studies conducted during the EIA process;
- Each wind turbine will have a hub height and rotor diameter of up to approximately 200m;

- Permanent compacted hardstanding areas / platforms (also known as crane pads) of approximately 90m x 50m (total footprint of approx. 4 500m2) per turbine during construction and for on-going maintenance purposes for the lifetime of the proposed development;
- Each wind turbine will consist of a foundation of up to approximately 15m x 15m in diameter. In addition, the foundations will be up to approximately 3m in depth;
- Electrical transformers adjacent to each wind turbine (typical footprint of up to approximately 2m x 2m) to step up the voltage to 33kV;
- One (1) new 33/132kV on-site substation and/or combined collector substation, occupying an area of approximately 1.5 ha . The proposed substation will be a step-up substation and will include an Eskom portion and an IPP portion, hence the substation has been included in the WEF EIA and in the grid infrastructure BA (substation and 132kV overhead power line) to allow for handover to Eskom. Following construction, the substation will be owned and managed by Eskom. The current applicant will retain control of the low voltage components (i.e. 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will likely be ceded to Eskom shortly after the completion of construction ;
- The wind turbines will be connected to the proposed substation via medium voltage (33kV) cables. Cables will be buried along access roads wherever technically feasible.
- A Battery Energy Storage System (BESS) will be located next to the onsite 33/132kV substation. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks;
- Internal roads with a width of between 8m and 10m will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via an existing gravel road from the N12 National Route;
- One (1) construction laydown / staging area of up to approximately 2.25ha. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town;
- One (1) permanent Operation and Maintenance (O&M) building, including an on-site spares storage building, a workshop and an operations building to be located on the site identified for the construction laydown area.
- A wind measuring lattice (approximately 120m in height) mast has already been strategically placed within the wind farm application site in order to collect data on wind conditions;
- No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1-1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height; and
- Water will either be sourced from existing boreholes located within the application site or will be trucked in, should the boreholes located within the application site be limited.

3.2.2 Grid Components

The proposed grid connection infrastructure to serve the Koup 1 WEF will include the following components:

- One (1) new 33/132kV on-site substation and/or collector substation, occupying an area of up to approximately 1.5 ha. The proposed substation will be a step-up substation and will include an Eskom portion and an IPP portion, hence the substation has been included in both the EIA for the WEF and in

the BA for the grid infrastructure to allow for handover to Eskom. The applicant will remain in control of the low voltage components (i.e. 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will likely be ceded to Eskom shortly after the completion of construction; and

- One (1) new 132kV overhead power line connecting the on-site and/or collector substation either to an off-site collector substation, or via a direct tie-in to the existing 400kV overhead power lines and thereby feeding the electricity into the national grid. Power line towers being considered for this development include self-supporting suspension monopole structures for relatively straight sections of the line and angle strain towers where the route alignment bends to a significant degree. Maximum tower height is expected to be approximately 25m.

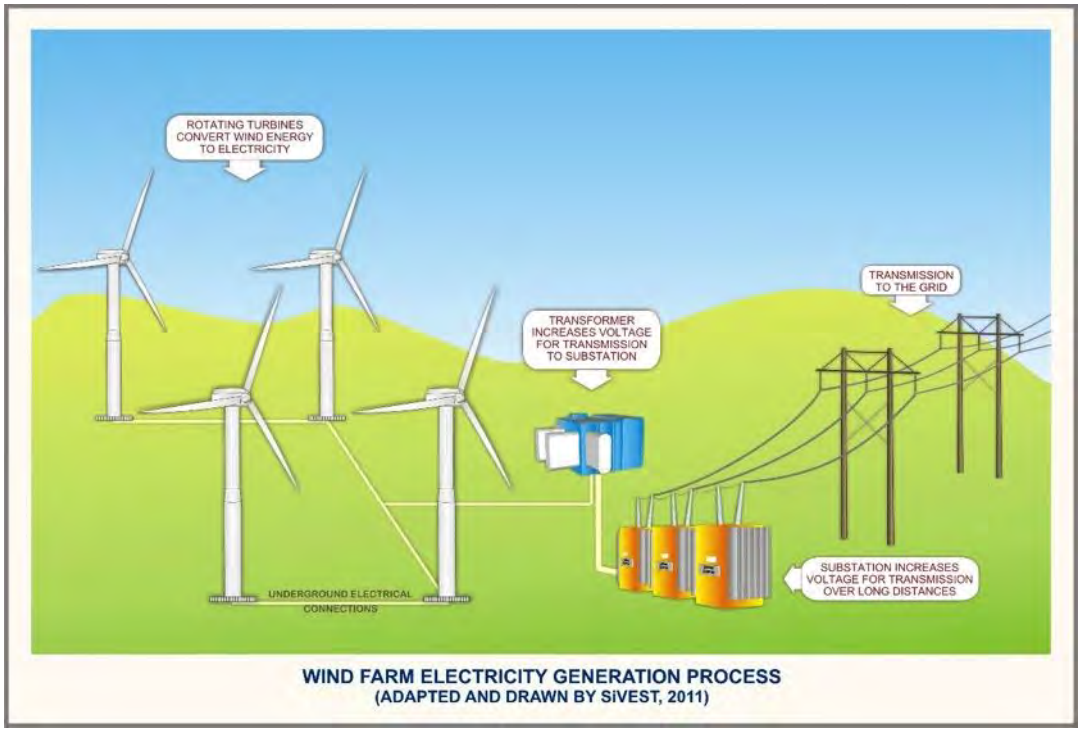

Figure 5: Conceptual WEF electricity generation process showing electrical connections (VIA, 2021)

3.3 Layout alternatives

3.3.1 Wind Energy Facility

Design and layout alternatives will be considered and assessed as part of the EIA. These include alternatives for the Substation locations and also for the construction / laydown area. The proposed site alternatives are shown in **Error! Reference source not found.** below.

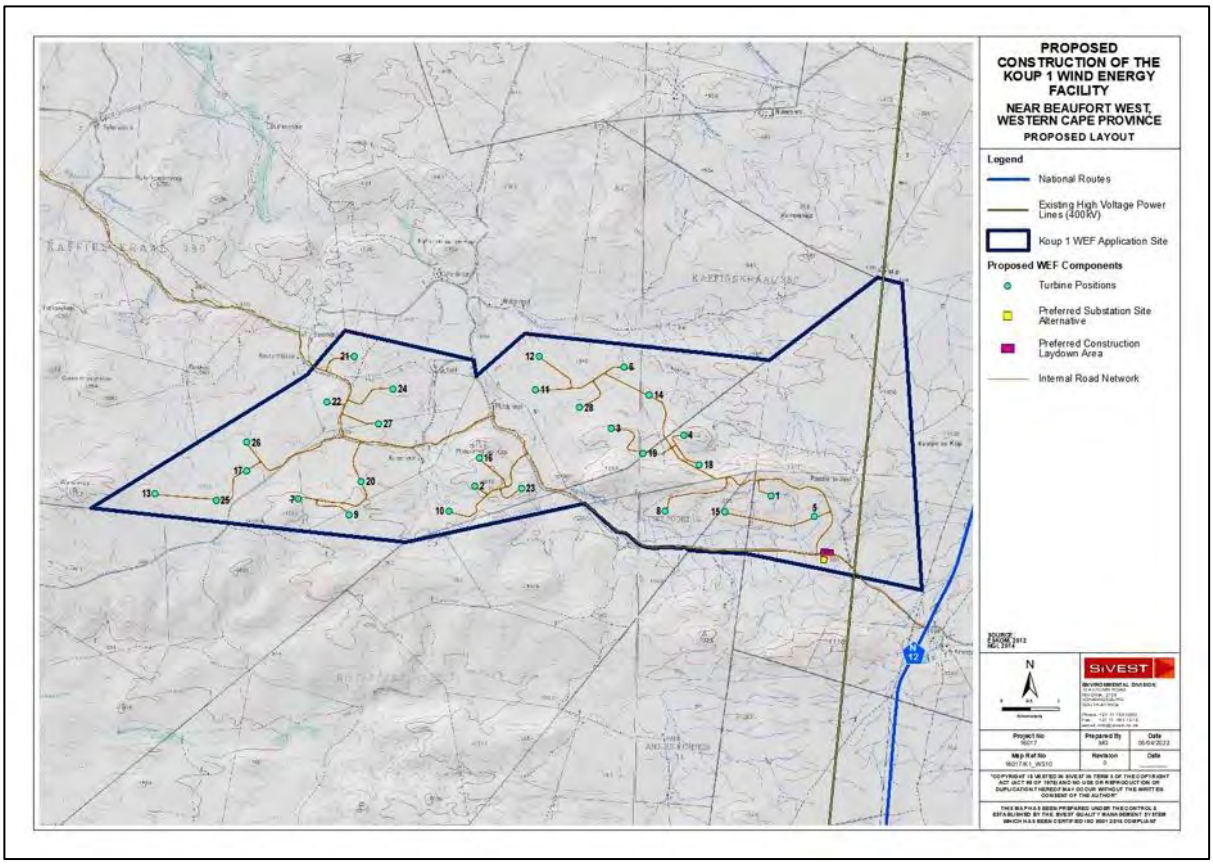

Figure 4: Proposed layout for Koup 1 WEF

3.3.2 Grid Components

The grid connection infrastructure proposals include two (2) switching and collector substation site alternatives and three (3) power line route alignment alternatives (Figure 3). These alternatives will be considered and assessed as part of the BA process and will be amended or refined to avoid identified environmental sensitivities.

All three (3) power line route alignments will be assessed within a 300m wide assessment corridor (150m on either side of power line). These alternatives are described below:

- Power Line Corridor Option 1 is approximately 1.3km in length, linking either substation / collector Option 1 or Option 2 to the existing 400kV transmission lines.
- Power Line Corridor Option 2 is approximately 9.9km in length, linking either substation / collector Option 1 or Option 2 to a proposed Collector Substation to the south, adjacent to the existing 400kV transmission lines.
- Power Line Corridor Option 3 is approximately 12.9km in length, linking either substation / collector Option 1 or Option 2 to a proposed Collector Substation to the north, adjacent to the existing 400kV transmission lines.

3.3.3 No-go Alternative

The ‘no-go’ alternative is the option of not undertaking the proposed WEF and / or grid connection infrastructure projects. Hence, if the ‘no-go’ option is implemented, there would be no development. This alternative would result in no environmental impacts from the proposed project on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report.

4. LEGAL REQUIREMENTS AND GUIDELINES

4.1 STATUTORY FRAMEWORK: National Heritage Resources Act (25 of 1999)

The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resources Management those resources specifically impacted on by development as stipulated in Section 38 of NHRA. This study falls under s38(8) and requires comment from the relevant heritage resources authority, Heritage Western Cape Provincial Heritage Authority.

The identification and evaluation of cultural landscapes for this Basic Assessment Report (BAR) has been conducted according to the NHRA. While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and ”landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998), as amended (NEMA), the project is subject to a BA. The present report provides the cultural landscapes assessment component. Heritage Western Cape is required to provide comment on the proposed project in order to facilitate final decision making by the DEA. The relevant sections of legislation are included here to emphasize the detail and definitions on what qualifies as cultural landscapes, intangible heritage and living heritage.

4.1.1 NHRA definitions of terms applicable to assessment of cultural landscape:

Heritage resources are protected under the NHRA. As part of this assessment, resources were, as far as possible, assigned sensitivity ratings according to Section 3(3) of this act, which provides a guideline for evaluating the cultural significance of heritage resources according to the following criteria:

(a) its importance in the community or pattern of South Africa’s history;

(b) its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;

(c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
(d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
(e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
(f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
(g) its strong or special association with a particular community or cultural group for social cultural or spiritual reasons;
(h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
(i) sites of significance relating to the history of slavery in South Africa.

Cultural heritage values (significance) as outlined in the NHRA, refers to qualities and attributes possessed by places or objects: these values can be aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance; for the past, present and future generations. These values may manifest themselves in places and physical features but can also be associated with intangible qualities such as people's associations with or feelings for a place or item or other elements such as cultural practices, knowledge, songs, legends and stories.

4.1.2 Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa, May 2017 (Gazetted Dec 2017)

This guide is meant for those who work in Protected Areas and manage cultural heritage resources. The guide should be used together with the National Heritage Resource Act, 1999 (Act No 25 of 1999) (NHRA), the National Environmental Management Act: Protected Areas Act, 2003 (Act No. 57 of 2003), the South African Heritage Resources Agency (SAHRA) and Provincial Heritage Resources Agency (PHRA) Guidelines on Norms and Standards. In lieu of minimum standards guidelines for cultural landscapes assessment specifically in South African legislation, the CHG offers cultural heritage survey guidelines and assessment tools that can be used for the purposes of CLA's in the EIA process.

Tools for inventories of different categories of cultural heritage resources

- Intangible Cultural Heritage
  - Types: a) Elements of folklore and traditional crafts
    b) Elements of oral tradition
- Cultural Landscapes
  - Characteristics: a) processes – spatial pattern, land uses, response to natural features and cultural traditions
    b) components – circulation, boundaries, vegetation, structural types, cluster arrangements, archaeological types, small-scale elements

c) perceptual qualities – views and aesthetics

4.2 Spatial Development Frameworks and Heritage Surveys

The Western Cape Provincial Government: Heritage and Scenic resources: Inventory and Policy Framework for the Western Cape, September 2014 Version 5 by Winter & Oberholzer, identifies and grades the scenic resources within the Western Cape. The aim of the framework study was so that cultural and scenic resources of significance could be identified and rated so that they could be included in all Spatial Development Frameworks (SDF's) in order to avoid inappropriate planning applications. The Winter & Oberholzer (2014) study focuses on the regional level. The Central Karoo District Municipal Spatial Development Framework (2019) recognises the landscape character, scenic assets and built environment heritage resources of the region as "excellent scenic" and "sense of place, heritage and tourism assets… in its landscape quality". Further it emphasizes the need to protect the sensitive biodiversity and water catchment conservation areas in the region. The Beaufort West Municipal Spatial Development Framework (2013, CNdV Africa) recognises the need for sensitivity in scale for wind farm developments on the local area and does a rudeminatary inclusion of the Desktop Beaufort West Heritage Survey by Abrahamse with Bridgman (2013), which considered the built environment and cultural landscape of the Beaufort West municipality.

4.3 Scenic Routes

A scenic route is usually a public street designated as a scenic drive by a governing body in recognition of the high visual amenity alongside that public street, including background vistas of a mountain, open country, a coastline or a town; usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail. Although not directly stipulated in the NHRA, "scenic routes" are considered as a category of heritage resource in the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for involving heritage specialists in the EIA process, and Baumann and Winter (2005) comment that the visual intrusion of development on a scenic route should be considered a heritage issue. The Central Karoo SDF and the Beaufort West SDF recognise the N12 as an important scenic route with significant viewsheds that need to be protected from insensitively-scaled development.

4.4 World Heritage Convention

The United Nations Educational, Scientific and Cultural Organization (UNESCO) Operational Guidelines for the World Heritage Convention (2017) define Cultural Landscapes as:

Cultural properties that represent the "combined works of nature and of man". They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal. Cultural landscapes should be selected based on their representation in terms of a clearly defined geo-cultural region and also for their capacity to illustrate the essential and distinct

elements of such regions. Cultural landscapes often reflect the specific techniques of sustainable land use, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature.

Cultural landscapes fall into three main categories, namely:
(i) The most easily identifiable is the clearly defined landscape designed and created intentionally by man. This embraces garden and parkland landscapes constructed for aesthetic reasons which are often (but not always) associated with religious or other monumental buildings and ensembles.
(ii) The second category is the organically evolved landscape. This results from an initial social, economic, administrative, and/or religious imperative and has developed its present form by association with and in response to its natural environment. Such landscapes reflect that process of evolution in their form and component features. They fall into two sub-categories:
- a relict (or fossil) landscape is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period. Its significant distinguishing features are, however, still visible in material form.
- a continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress. At the same time, it exhibits significant material evidence of its evolution over time.
(iii) The final category is the associative cultural landscape. The inscription of such landscapes on the World Heritage List is justifiable by the powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent.

5. RENEWABLE ENERGY AND CULTURAL LANDSCAPES

While it is recognised that renewable energy is required to address the effects of climate change and has the potential to contribute to socio-economic development in rural areas, wind and solar photovoltaic (PV) facilities must be sited and designed in a manner that minimises the impact on South Africa's rich cultural resources and landscapes. Renewable energy facilities, including supporting infrastructure such as power lines, can be perceived as industrial structures, which have the potential to impact negatively on sensitive landscapes. The natural and cultural landscape characteristics generally encompass visual, scenic, aesthetic and amenity values, which contribute to the overall 'sense of place' of an area. Wind turbines in particular are tall structures that can be visible from long distances and have a high potential to impact on landscapes and visual resources. According to the Scottish Natural Heritage Guideline[1] the visual impact of a wind farm depends on the distance from which it is viewed, weather conditions, turbine siting and the landscape context. Several guidance documents have provided generic categories for the degrees of visibility and visual impact related to distance. Table 1 was adapted from the Scottish Planning Advice Note

[1] Scottish Natural Heritage (2014) Siting and Designing Wind Farms in the Landscape. Available from: http://www.snh.org.uk/pdfs/strategy/renewables/Guidance_Siting_Designing_wind_farms.pdf

452 and offers general guidance on the effect of distance on the perception of a wind farm in an open landscape. Although the document does not clearly specify the turbine size this table refers to, the document mentions turbines with tower heights of more than 70 metres (m) and rotor diameters of more than 80 m. Turbines have since increased in size and can now reach hub heights of 120 and rotor diameters of 130 m, resulting in a wind farm in some conditions being visible from a distance of up to 50 kilometres (km) away. Even though the below table considers smaller turbines than what is generally proposed in South Africa, it still places the potential visual impacts of wind farms into perspective. The cumulative impacts of renewable energy development on the landscape are of specific concern. According to the Scottish Natural Heritage Guideline, cumulative impacts may be perceived when more than one facility is visible from one viewpoint, when several facilities are seen during a single journey, and when there is a gradual increase in the number or size of facilities over time.

Table 1: General perception of wind farm in an open landscape (Scottish Planning Advice Note 45: Renewable Energy Technologies)

Distance from turbine	Perception
<2 km	Likely to be a prominent feature
2 – 5 km	Relative prominence
5 – 10 km	Only prominent in clear visibility – seen as part of the wider landscape
15 – 30 km	Only seen in very clear visibility – a minor element in the landscape

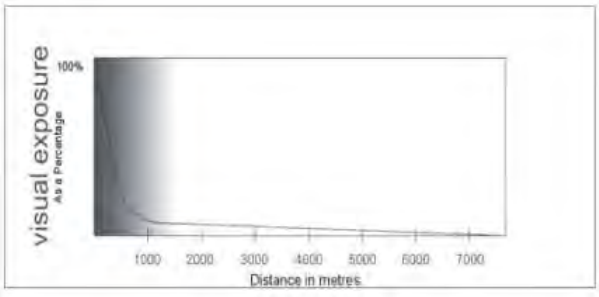

Figure 6: The rate at which the visual impact of an object dimishes over distance.

6. CULTURAL LANDSCAPES AS CONCEPT

At its core the concept of cultural landscapes unites the products of 'natural' ecological processes and the products emerging from the processes of transformation of the 'natural' site by people in constructing their 'built' world (Jansen and Franklin, 2020). Cultural landscapes can be interpreted as complex and rich extended historical records conceptualised as organisations of space, time, meaning, and communication moulded through cultural process. The connections between landscape and identity and, hence, memory are fundamental to the understanding of landscape and human sense of place. Cultural landscapes are the interface of culture and nature, tangible and intangible heritage, and biological and cultural diversity. They represent a closely woven net of relationships, the essence of culture and people's identity. They are symbolic of the growing recognition of the fundamental links between local communities and their heritage,

human kind, and its natural environment. In contemporary society, particular landscapes can be understood by taking into consideration the way in which they have been settled and modified including overall spatial organisation, settlement patterns, land uses, circulation networks, field layout, fencing, buildings, topography, vegetation, and structures. The dynamic and complex nature of cultural landscapes can be regarded as text, written and read by individuals and groups for very different purposes and with very many interpretations. The messages embedded in the landscape can be read as signs about values, beliefs, and practices from various perspectives. Most cultural landscapes are living landscapes where changes over time result in a montage effect or series of layers, each layer able to tell the human story and relationships between people and the natural processes.

The significance of the landscape reflects not just the sum of the individual parts, but rather landscapes as an integral whole. It is the nature of the relationship between features, and between these features and the broader landscape setting (context) that is important. What is also important is an understanding about how these landscapes have been produced. In other words, it is essential that the physical informants and historical events that have given structure and form to the landscape features are understood and appropriately interpreted with regard to heritage significance (Jansen and Franklin, 2020).

7. DESCRIPTION OF THE RECEIVING ENVIRONMENT

7.1 THE REGIONAL KOUP CULTURAL LANDSCAPE

The proposed Koup 1 Wind Energy Facility is located approximately 50km south of the town of Beaufort West in the lower Karoo bioregion of the Western Cape Province. The area is characterised by low relief, gently undulating terrain between 1000 to 1100m amsl. The highest points are koppies that lie along low, rocky, east-west trending ridges. Dramatic blue and grey vistas of the Nieuweveld Mountains to the north and Swartberg Mountains to the south are visible from these ridges and frame the lower lying regional area giving it an expansive but contained sense of place. Most of the landscape is clothed in Gamka Karoo (NKI 1) type karroid bossieveld vegetation of the Nama Karoo biome, with trees mainly confined to shallow, intermittent-flowing, dendritic drainage lines, and shallow, gravelly soils overlaying the Abrahamskraal and Middleton geological formations. The area is described by Winter and Oberholzer in their Heritage and Scenic Resources: Inventory and Policy Framework for the Western Cape (2013) as follows:

> Between the Swartberg Mountain range in the south of the Great Karoo and the Nuweveld Mountains forming part of the “Great Escarpment” to the north, lies an extensive plain known as “Die Vlakte” This vast semi-desert area is composed of the Beaufort Group rocks consisting of shales, mudstone, sandstone and tillite. The only relief is provided by the ridges of dolerite, and the koppies capped by dolerite cills. This is a sparsely populated area with settlements far apart, including the towns of Laingsburg, Merweville, Prince Albert, Beaufort West and Murraysburg. Agriculture is restricted to sheep and game farming. Given the pre-historic nature of the Central Karoo, the area is of great

palaeontological interest (fossils), as well as archaeological sites, such as at Nelspoort, near Beaufort West. During early colonial times much of the game, and consequently the San inhabitants, had all but been eliminated by the stock farmers expanding their grazing areas. Evidence of the Anglo-Boer War in the early 1900s still remains in the form of gravesites and blockhouses along the railway line, and places such as Matjiesfontein and Prince Albert were used as garrisons by the British. Matjiesfontein and the isolated Gamkaskloof have Provincial Heritage Site status. Mountain passes and "poorts" of scenic and heritage significance include the Swartberg Pass (Provincial Heritage Site), Gamkaskloof Pass, Meiringspoort, Seweweekspoort (all in the Swartberg range), as well as Molteno Pass in the Nuweveld range. The Karoo National Park near Beaufort West is a protected landscape incorporating the Great Escarpment.

Figure 7: Winter and Oberholzer (2013) section of the Central Karoo District showing "Die Vlakte" in which the proposed Koup WEF site is located.

The CSIR assessment report on risks and opportunities for Shale Gas Development in the Central Karoo (2016) described the effects of the arid nature of the area as follows:

> The Karoo is an arid ecosystem characterised by low, unpredictable rainfall and episodic drought events (Hoffman & Cowling, 1990). This has important implications for the dynamics of vegetation within the region. Concepts such as succession and gradual, stepwise and predictable changes in vegetation composition do not apply well in arid ecosystems, and instead ecologists have recognised the event-driven, non-linear dynamics of arid systems such as the Karoo (Milton & Hoffman, 1994; Wiegand & Milton, 1996). Recognition is given under this concept to the unpredictable nature of such systems and their ability to switch quickly from one state to another in response to climatic or biotic events, without the need to pass gradually through intermediate stages. This has important implications for physical disturbance in the Karoo and the ability of humans to repair these impacts (Visser et al., 2004). Many of the shrub species present are long-lived (hundreds of years) and recruitment occurs infrequently in response to rare sequences of rainfall and climate conditions (Wiegand & Milton, 1996). As such, it can be very difficult to re-establish the dominant shrub species in disturbed areas as recovery does not occur spontaneously and active rehabilitation is often met with poor success (Carrick & Kruger, 2007; Visser et al., 2004).

Historic farmsteads are characteristically located near water sources, confluences or springs, on the northern slopes of the ridges and are often associated with complex configurations of impressive stone packed stock kraals, some of which are higher and larger than the usual sheep kraals in the area (it has been suggested that the location of these large kraals adjacent to known historic routes could indicate that they were for horses used for transport rather than sheep), and the quintessential karoo landmark, the windpump. Adjacent to the farmsteads there are often subsistence crop gardens with small orchards. The names of places and farms are testament to the relationship between man and nature, with illustrative Afrikaans and Dutch names describing the interpretation and representation of the area by the first European settlers to the region. Given the form of the indigenous vegetation, clusters of tall trees are indicative of human transformation and usually habitation. A lack of tall woody species and therefore suitable timber products in the area, prenecessitated the use of stone, which can be found in abundance, for the construction of buildings and kraals. Stone is also used in other elements such as road markers and fence anchors. Many farm buildings and their associated agricultural structures in the area contain elements greater than 60 years of age and fall with the general protection of the NHRA. The history of the area is one of contact, conflict and survival and is an example of a long history of symbiotic relationship between man and nature.

The site is accessed via the national N12 road, a historic route linking Beaufort West with the towns of De Rust and Outdshoorn via scenic Meiringspoort Pass, and the coastal town of George further south. The north-south orientated N12 intersects the characteristic east west ridges with shallow poorts, often the location of historic farmsteads, such as Amospoortjie, Trakaskuilen and Amandelhoogte, culminating in the Meiringspoort Pass that winds through the Groot Swartberg mountain range located within the Swartberg Nature Reserve. This road has carried inhabitants and travellers between historic towns, farmsteads and further regional destinations since at least the late C18th. Views and vistas of the distant mountains and destinations give significance to the experience of the landscape. The N12 has been recognised as a scenic route in the district and municipal SDFs for the area.

Sheep, cattle and other livestock farms exist alongside game farms and other game reserve areas populated with game species. The reintroduction of wildlife into the landscape through nature and game reserves echoes place names like *Zeekoe gat* (Hippopotamus hole) on historic maps which testify to these species dominating the landscape in the past. Previous agricultural activities have been replaced and/ or supported by conservation and game initiatives aimed at the tourist market, relying on the wilderness sense of place. The result is a landscape with an overwhelmingly rural and natural sense of place, wide open spaces and distant vistas of surrounding mountain horizons, recalling the historic landscape of conflict, survival and conquest, criss-crossed with wire fencing demarcating parcels of custodianship of people over the land and its inhabitants. This scenic beauty and natural sense of place has been celebrated in no less than three national parks being proclaimed in the Koup region, the Karoo National Park, the Gamkapoort Nature Reserve and the Swartberg Nature Reserve, not to mention the various private nature reserves in the area.

Recent industrial development in the area has started altering the largely historic cultural landscape by introducing new linear power line elements and their associated infrastructure. Although their height surpasses any natural or cultural elements, the linear orientation of these lines, in most part adjacent to the road, do not cross the viewshed as one travels along the N12. Together with their light form and static nature, this reduces their visual impact. The associated infrastructure is more intrusive as the height, scale and angular form is more in conflict with the natural undulating horizontal lines of the surrounding landscape. These elements are currently relatively low scale and do not overwhelm the sense of place, but should be considered as part of the cumulative impact of the new renewable energy developments in the region.

Figure 4: Regional Koup landscape with Nieuweveld Mountain range on the horizon and typical farmstead landscape planting and fencing in foreground.

7.2 REGIONAL RENEWABLE ENERGY DEVELOPMENT

The Koup region is not located within a SEA identified REDZ zone or in one of the SEA strategic transmission corridors. Currently there are no operational renewable energy projects in the Koup region, however there are applications for both wind and solar energy developments within a 35km radius from the Koup WEF application site. Various electric grid connections and transmission lines are currently in operation along the N1 and the N12. Although their height surpasses any natural or cultural elements, the linear orientation of these lines, in most part adjacent to the road, do not cross the viewshed as one travels along the N12. Together with their light form and static nature, this reduces their visual impact. The associated infrastructure is more intrusive as the height, scale and angular form is more in conflict with the natural undulating horizontal lines of the surrounding landscape. These elements are currently relatively low

scale and do not overwhelm the sense of place, but should be considered as part of the cumulative impact of the new renewable energy developments in the region.

Table 2: Existing and Proposed Renewable Energy Projects within 35km of Site

Project	DEA Reference No	Technology	Capacity	Status of Application / Development
Proposed Beaufort West Wind Farm	12/12/20/1784/1	Wind	140 MW	Approved
Proposed Trakas Wind Farm	12/12/20/1784/2	Wind	140 MW	Approved
Proposed Wind and Solar Facility on the Farm Lombardskraal 330	14/12/16/3/3/2/406	Solar	20 MW	EIA in Process
Proposed Leeu Gamka Solar Power Plant	12/12/20/2296	Solar		Withdrawn/Lapsed
Kwagga Wind Energy Facility 1 (Pty) Ltd	Pending	Wind	279 MW	EIA in Process
Kwagga Wind Energy Facility 2 (Pty) Ltd	Pending	Wind	341 MW	EIA in Process
Kwagga Wind Energy Facility 3 (Pty) Ltd	Pending	Wind	204.6 MW	EIA in Process
Proposed Koup 2 WEF	TBA	Wind	140 MW	EIA in Process

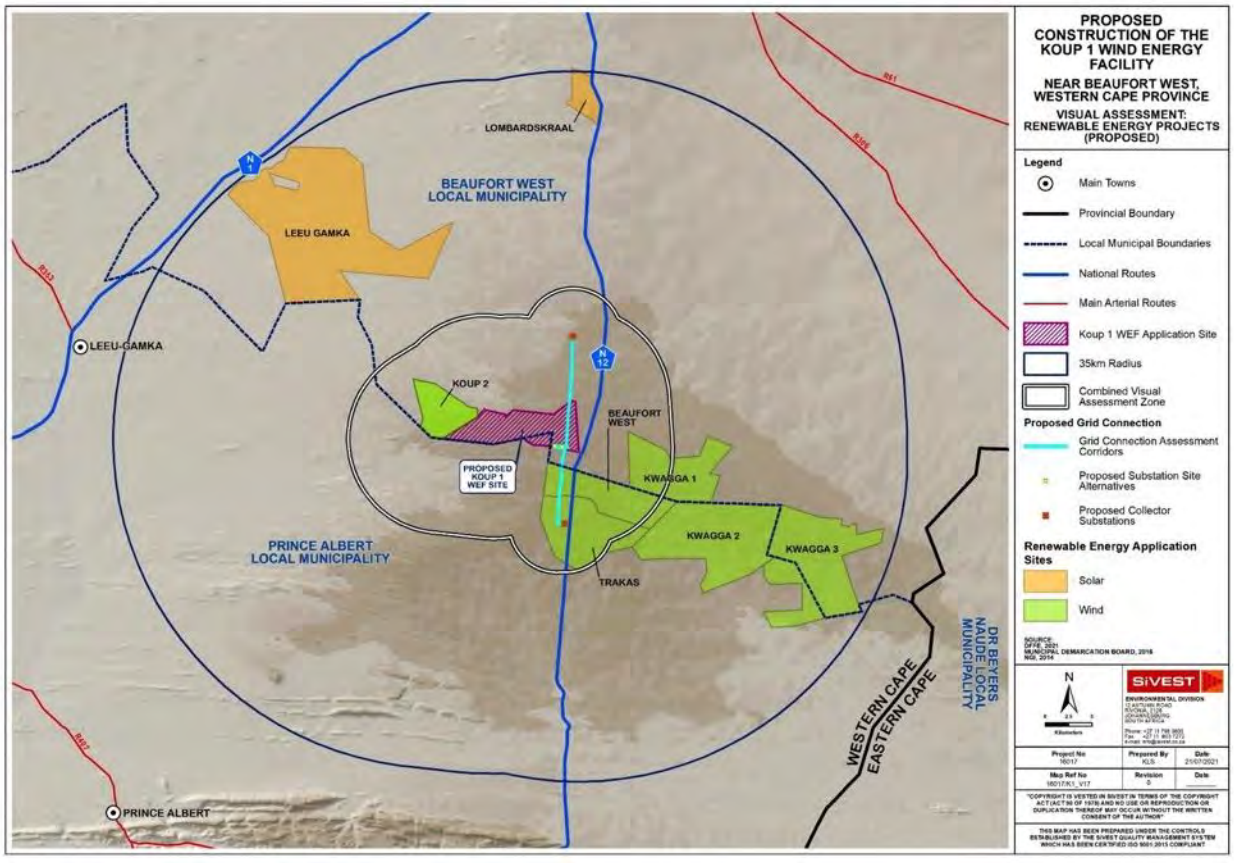

Figure 8: Renewable energy application sites in process in the surrounding area. The solar parks RE application for Leeu Gamka has been withdrawn/ lapsed which reduces the development extent on the western side of the N12.

It must be noted that the focus of heritage studies in the area has been on the material and tangible aspects of the landscape as identified in the NHRA. Cultural landscape assessments would ideally include consideration of intangible heritage associated to the tangible resources identified and a public participation process dealing with issues regarding inter alia intangible heritage, indigenous knowledge systems, oral histories, language and lifeways of the people who inhabit and use the landscape.

8. HISTORICAL BACKGROUND TO THE REGION

Information from the desktop Heritage Survey for the Beaufort West Municipality (Abrahamse, 2013) and research on the history of the area by Schulz (2014) is included in this section.

Despite the low rainfall and paucity of water typical of this region, the Koup area once supported large grassy flatlands, and indigenous pastoralist and hunter-gatherer groups migrated across the region in a transhumant pattern according to seasonal climate changes in order to hunt game or to graze their livestock. The Koup was one of the last refuges of the hunter-gatherer San/ Bushmen groups with the expansion of the Cape colony; the name of the region attesting to this in its origins. The Koup[2] and Nieweveld were regional names given to the Karoo interior prior to the establishment of towns Graaff Reinet and Beaufort West. The first European settlers, the trekboers, moved inland from the Cape in the early 1700s, as arable land closer to Cape Town became scarce and to escape the perceived overbearing control of the Dutch landdrosts (Figure 9). The first official land grants had to be large enough to support stock farming (mostly sheep) within this semi-arid region, and thus the first farmers were given loan farms of 300 morgen each. As a result, the area remained sparsely populated, although it hosted parties of hunters who moved through the region periodically in search of big game. In these conditions, the farmers had to be completely self-sufficient due to their distance from any towns or law officials.

[2] Also spelt 'Coup', 'Ghaup' and 'Gouph' in early written records. 'Koup' has been suggested to mean tail fat or 'stertvet' most likely related to the local fat-tailed sheep, the livestock of indigenous pastoralists.

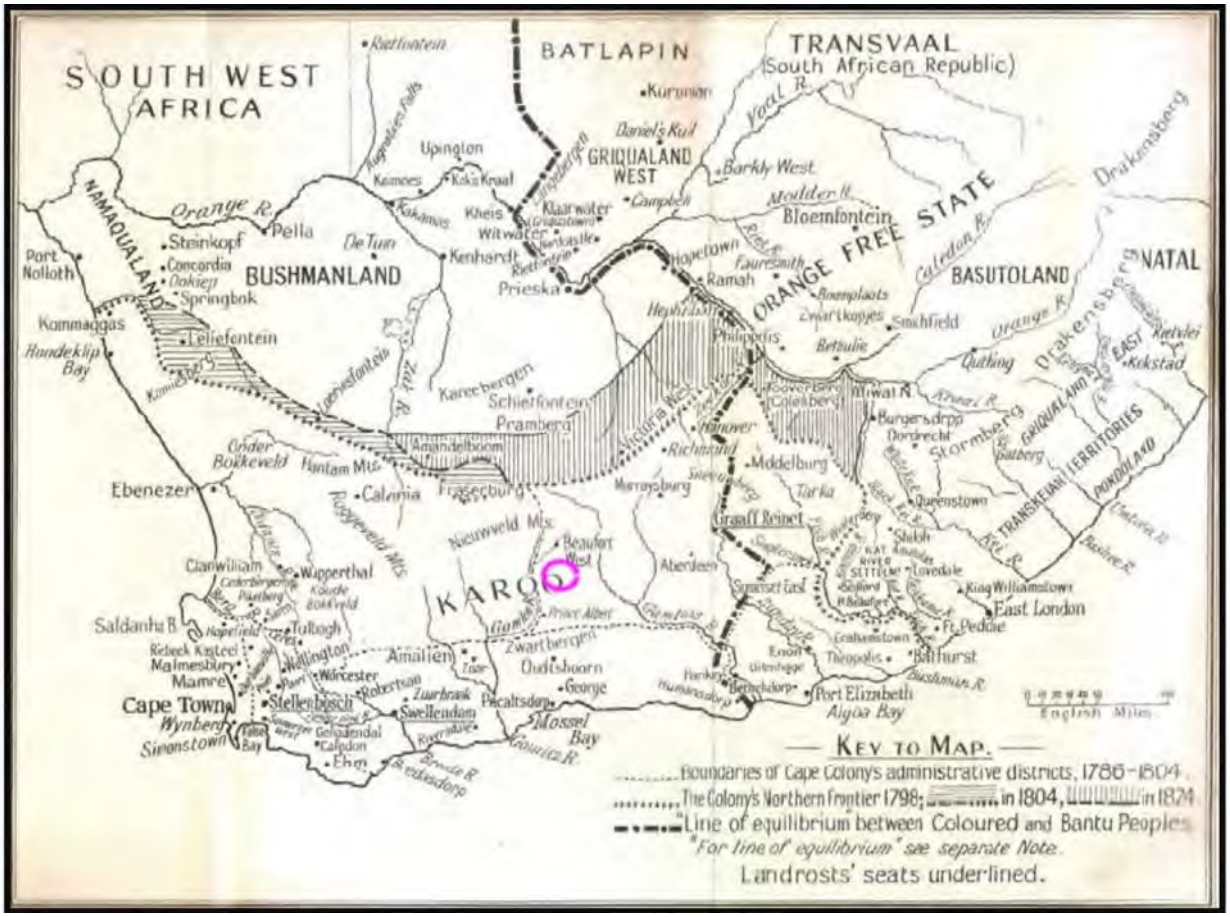

Figure 9: C19th Cape Frontier map (Marais, 1935) showing approximate location of Koup WEF (pink).

The sparsely populated countryside provided a gateway for dangerous runaways and for gun running, and the local Khoi and San people continually struggled against the inhabitation of land, already under environmental and population stress even before colonial introduction. By the latter part of the 18th century land ownership of the Koup and Nieweveld was bitterly contested between indigenous groups and colonial settlers and these border conflicts are historically significant. Formal recorded commando attacks on nomadic groups living in the Roggeveld and "Coup" began in 1770 and continued until 1799. Conflict zones appear to have been on farms, areas near to the higher mountain ranges and along the wagon routes. There is a possibility that material evidence may still be found on or in the ground relating to this period.

This situation continued until 1818, and this region remained part of an ill-defined edge to the Cape Colony's zone of settlement and the hinterland beyond. Part of the problem was that the illegal activities and conflicts between the settlers and the Khoi and San had to be controlled from the landdrosts at Tulbagh in the west or Graaff-Reinet in the east – with a full 600 kilometers between them (Fransen, 2006:170). Needless to say the rule of law did not extend very far into this region. Complaints and petitions streamed back to the Cape, begging the governor to investigate the problems and address the issue of security within the frontier zone (Baird: 2007: 29). Although encouraged to expand by the Dutch overseers, support and control for those affected by this

expansion into the interior had devastating negative impacts on the local inhabitants and ultimately led to many of the socio-political conflicts still of concern today.

Figure 10: Excerpt of 1809 map showing approximate location of proposed Koup WEF (yellow).

Figure 11: Excerpt of the Burchell's 1822 map of Southern Africa showing approximate location of proposed Koup WEF (pink).

In the early years of the 19th Century after the British Occupation at the Cape, it was decided to create a new "sub-landdrost" between Tulbugh and Graaff-Rienet in order to address some of the violence and unrest in this region. A landdrost, an institution of Dutch origin, was a post created in the newly-settled districts of the colony that extended rights to collect tax, police, prosecute and carry out sentences to a local representative of the government authority. When the two landdrosts from Tulbagh and Graaff-Reinet – J.H. Fisher and Andries Stockenstrom – were sent to select a suitable site for the new landdrost, they chose an area of one of the first treckboers to the area, Abraham de Clercq's farm, Hooyvlakte, with its permanent source of water, upon which to locate the new town. His farm had five springs on it, and both the Gamka and Kuils rivers ran through the land, which as a result was extremely fertile: Baird writes that de Clercq was able to cultivate orchards and vineyards – something that would have been unachievable on most other farms in the region due to the aridity of the area and the reliance on groundwater (2007: 29). Once Beaufort West was established as a town, it remained very isolated within the region. Even in 1900, Beaufort West was fairly isolated from the surrounding church and mission towns that had been established in the Cape Colony.

Beaufort West was to constitute the first proper town within the area, and the first town to gain municipal status within South Africa. The other settlements of any note within the region often developed first as stop-over areas for hunters and transport riders, and slowly developed into settlements, or were established as church towns, or *kerkdorpe*. A key moment in the development of the towns within the region was the outbreak of the Anglo-Boer War, which was fought across the Karoo landscape and had an effect on all of its urban nuclei.

Within the Prince Albert Municipality, Leeu Gamka is an important town to consider when understanding the urban development of the wider region as it formed the primary gateway into the area from the south and the wider Koup region. Leeu Gamka had its beginnings as a rest stop on the wagon route across the Karoo, as it was one of the few outspans along the long route north that offered drinkable water: two streams converged at that point, the Leeu and the Gamka. It soon became the choice stopover for adventurers, explorers, missionaries, settlers and trekboere within the area, and was said to offer a good camping area near a grove of sweet thorn trees (Central Karoo Regional Tourism Board, 1997). The first farmers received land grants in the area in the early 1800s. The area was also noted for its abundance of game. Early travellers often wrote of lions, and the last Cape Lion is though to thave been shot at Leeu Gamka by explorer Robert Gordon in 1842. The trend towards linear developments of connection and communication between the region and further afield evolved with the railway line in the 1870s. The railway line reached Leeu Gamka in 1879 and a stone station building, railway single quarters and a hotel were built. In 1880 a telegraph line was laid alongside the railway tracks, and the connection of the settlement to the outside work was greatly increased.

The vast and spectacular Swartberg Mountain range to the south of the arid Koup rises just west of historical Matjiesfontein and stretches eastwards for almost 300kms up to the Camdaboo plains. It is best known for its mountain passes built in the mid nineteenth century by master road builders such as Thomas Bain, who designed the Swartberg Pass (opened in 1888 and proclaimed a PHS in 1988) linking Prince Albert and Oudtshoorn. The Seweweekspoort links Laingsburg with the Klein Karoo and Meiringspoort, along the N12, linking Beaufort West with De Rust and Oudtshoorn. Swartberg Pass was constructed to supplement Meiringspoort, which often became flooded and unpassable for weeks or months following heavy rains, which severed the significant connection between the Central Karoo and the south coast. Swartberg Pass retains historic elements including the hand-packed stone retaining walls, an old prison and a toll hut and is known as one of the most spectacular scenic drives in the country.

The final flourish of development in the Koup area was related to the nearby discoveries of gold in between 1871 and 1891, on the farms Spreeufontein and Klein Waterval around 50kms from Prince Albert. This interest didn't last long though as the source of gold was found to be unsustainable and mining ended shortly after. British army camps were established in the Beaufort West region soon after the outbreak of the Anglo-Boer war in 1899. Leeu Gamka's hotel and railway quarters were used as a hospital and convalenscent home, resulting in many war graves and other military structures, such as blockhouses, being located in the area.

The development of the area stagnated after this, returning mainly to stock farming (mainly sheep, best suited to this environment and the farm sizes) and, more recently, game. Tourism is a main drawcard for the region, being recognised and appreciated as a place of natural arid beauty and dramatic landscape. Most recently the main new development in the region is related to mining and national electric grid connections and associated renewable energy developments, for which there are a multitude of proposed projects currently in process.

9. REGIONAL CULTURAL LANDSCAPE ELEMENTS

1. “A magnificent natural setting” (Abrahamse, 2013) of arid plains with gently undulating ridges and koppies, framed by the dramatic mountain ranges of the Nieuweveld and Swartberg. This landscape element is the main drawcard for tourism to the area and a national narrative of identity for many South Africans. This scenic beauty and natural sense of place has been celebrated in no less than three national parks being proclaimed in the Koup region, the Karoo National Park, the Gamkapoort Nature Reserve and the Swartberg Nature Reserve, not to mention the various private nature reserves in the area.

2. Some of the world’s most significant geological and palaeontological sites are located in the Great Karoo, specifically between Beaufort West and Nelspoort, and include ancient rock formations and Late Permian fossils which record the evolution from reptiles to mammals.

Figure 12: Karoo National Park fossils (Winter and Oberholzer, 2014)

3. The distinct remoteness of the semi-arid Karoo provided a refuge for the displaced San and later the Khoekhoen. The remote settings of mission settlements are associated with the role of religion and an emphasis on social engineering and self-suffiency (Winter and Oberholzer, 2014). This remote desert wilderness is an essential element to the Central Karoo cultural landscape’s sense of place.

4. Low shrubby vegetation dominates the landscape allowing for distant views of mountain ranges, with taller clusters of trees marking historic points such as cemeteries or farmsteads. Many of the endemic species hold medicinal value for local communities, making these signficant as cultural resources.

5. Although not immediately apparent on travelling through the landscape, significant stone age archaeology, which includes petroglyphs and rock engravings, is common in the area; material cultural remnants of the prehistoric inhabitants of the landscape who lived in intimate dependence on and

knowledge of the natural environment, shaping it and being shaped by it over time. This relatively undisturbed area is rich in archaeology, especially near dolorite outcrops due to the presence of underground water and includes stone tool scatters, rock engravings and herder kraals.

Figure 13: Nelspoort rock engravings near Beaufort West (Winter and Oberholzer, 2014).

6. *Poorts* and *drifts* which navigate the topography of ridges and riverine corridors. These natural crossing points, gaps between the mountain ranges, ridges and undulating hills, and shallower sections of river, have been used by animals and people as the places to traverse the landscape to water, forage, safety or settlements for centuries. These places, acting as funnels of movements across the landscape, therefore, may hold the material scatter of those who passed over them and, where identified historic tracks are still used, these are heritage elements of land use and one of the ways in which the landscape would have determined the movement and, therefore, settlement and interaction of people on the landscape.

7. Scenic historic movement routes, tarred, gravel and rail, connect the regional towns over the Central Karoo landscape with distant dramatic viewscapes of mountain ranges. These movement routes and patterns to access have informed the settlement patterns of the region. Many of the roads and farm tracks in the study site as well as surrounding area are visible on maps dating back to the 18th and 19th centuries. As a landscape that maintains a dominant characteristic of survival, conflict and change, the roads and paths that cross this landscape are an essential element, connecting the significant points, places of refuge and conflict, trade and subsistence, to each other in a challenging space over time.

8. A combination of the *poort* and scenic historic route elements, the historic Swartberg Pass, is an identified historic scenic route and declared Provincial Heritage Site. Further east on the N12 lies Meiringspoortpass, which predates the Swartberg Pass, and connects Beaufort West with De Rust and Oudtshoorn. Other passes in the region include the Gamkasloof Pass, Seweweekspoort in the Swartberg and the Molteno Pass in the Nuweveld range to the north. Historic mountain passes provided access between coastal plains and the remote interior, and their gateway conditions are typically associated with historical patterns of settlement (Winter and Oberholzer, 2014).

Figure 14: Swartberg Pass PHS (left) and Meiringspoort (right) (Winter and Oberholzer, 2014)

9. Historic farmsteads with their associated agricultural structures and linking farm roads. Many of the farm werfs include historic structures, built in the regional architecture of packed local stone, now converted into dwellings or sheds. These farmsteads are mostly situated at points of lower elevation, nestled against the hills and ridges where the soils are more suitable for agriculture, and where nearby springs or other water sources supply water for livestock and limited cultivation of crops. Amandelhoogte and Vlieefontein have been identified as “significant Cape farmsteads” in Abrahamse’s Beaufort West Municipal Heritage Survey (2013).

10. Stone walls and kraals dot the landscape as remnants of stock keeping, road building and fortifications in the area.

11. Agricultural landscape with livestock, mostly sheep and cattle; fencing and associated structures line and dot the landscape. These are evidence of the human landscape modifications and patterns of land use over millennia, including seasonal grazing and pastoral uses.

12. Game and nature reserves with live game and associated high fencing, drawing tourists to the region for game viewing and hunting. Game hunting has been continuous on this landscape for millenia since pre-historic inhabitants to the most recent tourist hunters, and attests to the ongoing relationship between humans and the environment in this region. Although a sense of wilderness is experienced when travelling within these reserves, the height of the fences and their increased occurrence does detract from the ‘wild’ sense of place when travelling the roads around them.

13. Historic town settlements and landscapes, such as Beaufort West, Prince Albert and Leeu-Gamka, associated to significant events in South Africa’s history of survival, conflict and nation-building, including many provincial heritage sites which mark people and places of value to our national estate. Matjiesfontein and the isolated Gamkaskloof Cultural Landscape have Provincial Heritage Site status.

Figure 15: Beaufort West, early C20th (Winter and Oberholzer, 2014)

14. Military posts and forts, historic and current, constructed of local stone; material remains to the frontier zone of conflict and survival that dominated this landscape for so long. Evidence of the Anglo-Boer War in the early 1900s still remains in the form of grave sites and blockhouses along the railway line, and places such as Matjiesfontein and Prince Albert were used as garrisons by the British.
15. Uranium mining sites dot the region around Beaufort West. Historic gold and diamond prospecting in the region add an additional cultural layour to this element.
16. Industrial elements of transmission lines and associated infrastucture are evident along the N12 and N1. Due to their limited scale and massing along the N12 currently, they do not overwhelm or detract from the rural and historic sense of place in the area.

10. THE KOUP 1 CULTURAL LANDSCAPE

10.1 Landscape Elements

The cultural landscape is a composition of a series of natural layers that have both informed and been formed by the patterns of human use and habitation on that place over time. The nature and shape of the landscape has informed the way in which it has been used, in turn ascribing cultural values to the these place-specific features. Through unpacking the layers, landscape character units can be identified which need to be carefully considered in proposed alterations to the landscape.

10.1.1 Geology and soils

The geology of the area dictates the soil structure, which in relation to climate will determine the capacity for the land to be used by humans for agriculture. Geology will also determine what raw materials are available for use in building structures or other land management practices.

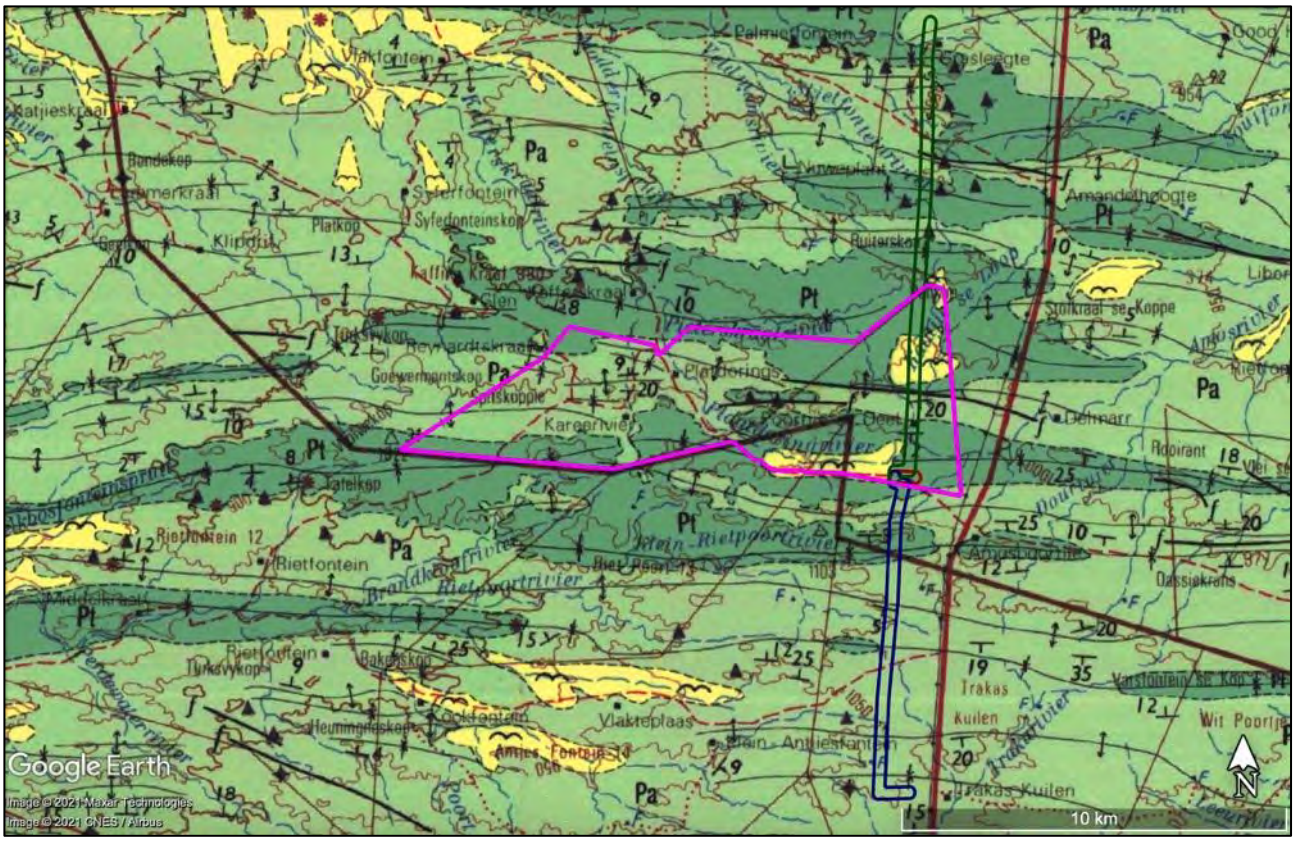

Figure 16: Excerpt from 1:250 000 Geological series map (3222, Beaufort West) showing locality of Koup 1 WEF development (outer boundary in pink, grid connections in green, blue and red) over Abrahamskraal and Teekloof Formations of the Late Permian Beaufort Group.

The project site is underlain by the Teekloof and Abrahamskraal Formations of the Adelaide Subgroup within the Later Permian Beaufort Group (**Figure 16**), an internationally recognised rock succession with fossil evidence of the world's largest extinction event (Johnson et al, 2006). The Early Jurassic dolorite intrusions associated with the Abrahamskraal formation do not occur this far south within the Main Karoo Basin. The Abrahamskraal and Teekloof Formations are known to be rich in fossil material. The mudstone, widely available in the area, has been used extensively in the built forms evident on site and in the region as a whole (**Figure 17**).

Figure 17: Examples of use of local mudstone for fence anchoring (left) and Kareerivier homestead (right)

According to Cape Farm Mapper (accessed 28 June 2021) the project site is classed as Glenrosa and/ or Mispah form soils with lime generally present in the entire landscape and with moderate soil erodibility. The land type is Fc164 over the majority of the site with Fc162 present in the northeast corner. Both these land types are considered “unavailable for agriculture”.

The climate capability of the project site is low to moderate for the entirety. Correspondingly, the land capability of the Koup 1 project site is considered very low to low for the majority of the higher elevations of the site to moderate and high in the low lying riverine corridors (**Figure** 16). This corresponds to the existing small-scale crop cultivation that can be seen in the riverine areas, usually near or adjacent to homesteads (**Figure 18**). Stock and game farming are thus well suited to the larger area, with the use of the land for sensitive conservation and eco-tourism facilities sustainable and economically viable.

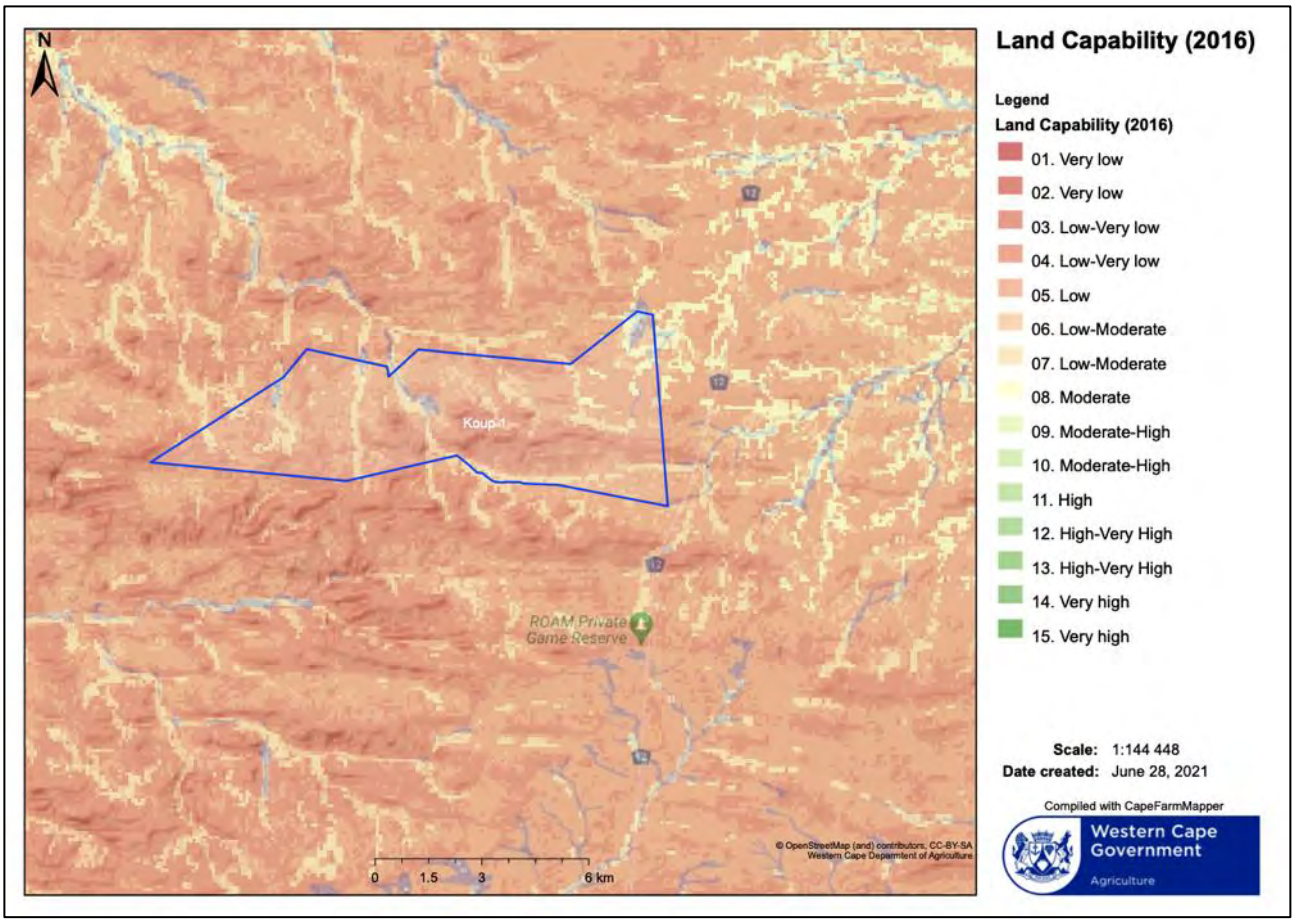

Figure 16: Land capability map for Koup 1 area (Cape Farm Mapper, 28 June 2021)

Figure 18: Examples of small scale subsistence crops at Arbeid (left) and Kareerivier (right)

10.1.2 Landform

Landform describes the topography of the area. The contours of the study area can be intepreted to identify slope gradient, with anything steeper than 25% slope being the steepest (like mountain slopes) and anything less than than 10% slope representing a flatter area (like alluvial plains). Steep gradients and

higher relative elevations increase the potential visual impact of a WEF development on the surrounding landscape.

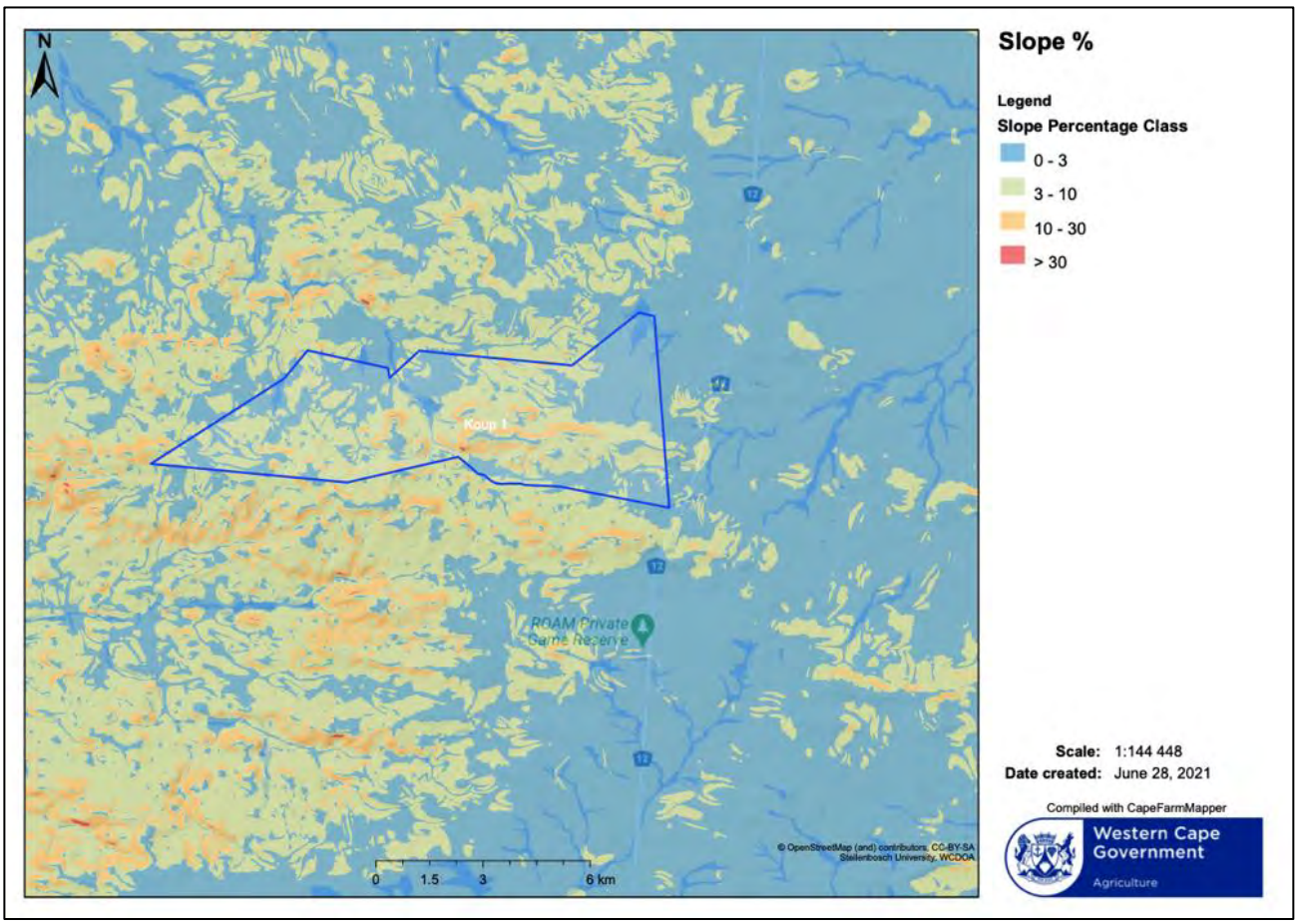

Figure 19: Slope classification (%) of the Koup 1 project site and surrounds (Cape Farm Mapper, 28 June 2021)

The area is characterised by low relief, gently undulating terrain between 1000 to 1100masl. The highest points are koppies that lie along low, rocky, east-west trending ridges. The majority of the project site consists of relatively flat terrain with a slope gradient of less than 10%. East-west trending ridges of 10-30% slope gradient dominate the central portion of the site, with two visually significant higher koppies over 30% slope gradient (**Figure 19** and **Figure 20**). Both these koppies create defining topography on the landscape and influence the sense of place as one travels through it. These koppies are of relatively low elevation on the landscape and are only experienced at a hyper local scale; from a distance these undulations largely disappear into the expansive flat plains of the Koup.

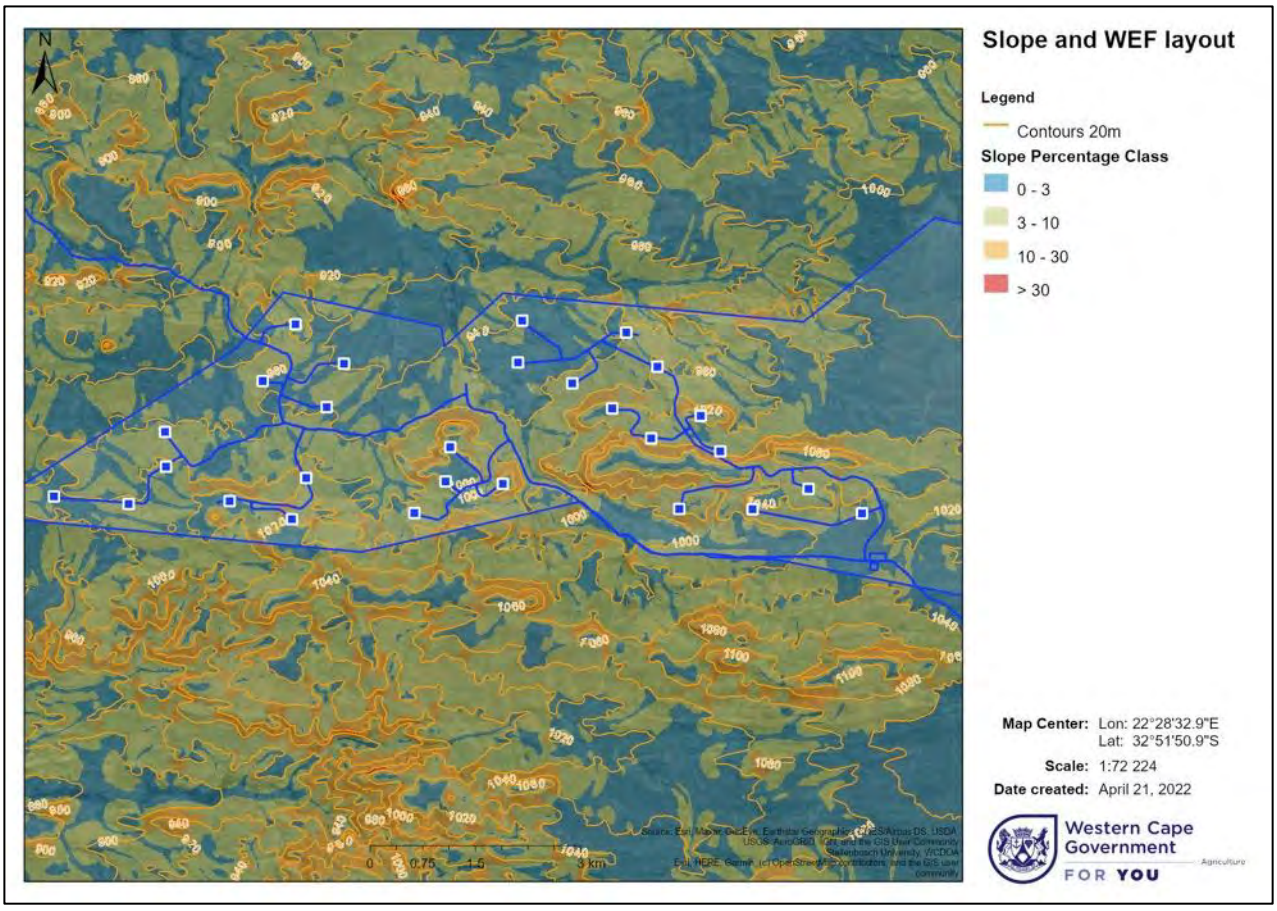

Figure 20: Koup 1 slope classification (%) excerpt (Figure 18) showing proposed WEF development infrastructure. Some of the proposed access road infrastructure on the eastern portion of the site is located on slopes over 10%.

Figure 21: Looking south over Koup WEF landscape from outside the development boundary.

The western koppie, called ‘Platdoring se Kop’, is visually and experientially related to the small cluster settlement of Platdorings less than a kilometre to the north. The gravel entrance road west off the N12 follows the Platdoringsrivier and the east-west ridge to the north towards the centre of the Koup 1 project site. The highest koppie of Koup 1 marks the entrance to a small but locally visually significant ‘poort’, which opens up onto an open flat alluvial area to the north where most of the homesteads of the project site are found. The site’s sense of place is influenced by the relatively flat riverine plains and valleys, largely the areas of human habitation, and the connecting poorts that have funnelled movement of humans and animals through the higher ridge lines that separate them. The physical relationship between the relatively high koppie and associated poort together with the topographically distinctive koppie, Platdoring se Kop, adds to the visual impact and experience of this place when moving through the poort in the centre of the Koup 1 project site.

Figure 22: View west towards the poort that leads to the Platdoring homestead with koppies on either side of the road.

Figure 23: Platdorings farmstead in the foreground with Platdoring se Kop in the background looking south.

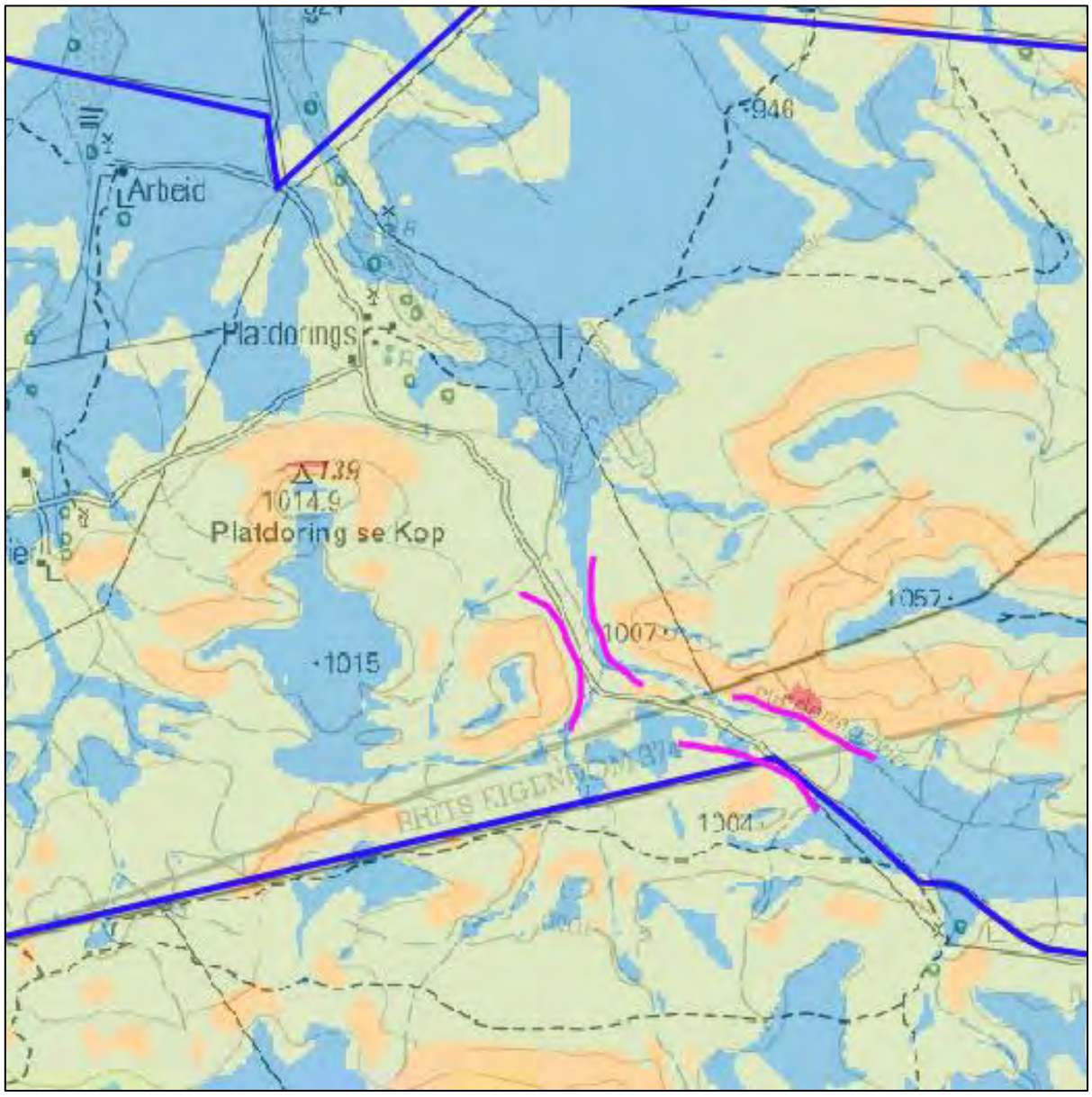

Figure 24: Koup 1 slope classification (%) excerpt (Figure 18) over 1:50k topographic map showing Platdoring poort (pink) and adjacent koppie (red) along the gravel road. Note the alluvial plain to the north and north east (blue and green) with homesteads of Arbeid and Platdorings as well as the koppie, Platdoring se Kop, which adds to the sense of place and visual experience of moving through the poort in the centre of the Koup 1 project site.

The Visual Impact Assessment for Koup 1 WEF (Schwartz, 2021) concluded with the following on the impact of the WEF turbine development on the study site:

"The VIA has determined that the study area has a largely natural visual character with some pastoral elements. The area has seen very limited transformation or disturbance and as such the proposed Koup1 WEF development is expected to alter the visual character of the area and contrast significantly with the typical land use and / or pattern and form of human elements present."

In response to these findings, the VIA recommended the following mitigation:

"Using GIS-based visibility analysis, it was possible to determine that the tip of at least one turbine blade (ie at a maximum height of 300m) would be visible from most identified potentially sensitive receptors in the study area and as such, no areas on the site are *significantly* more visible than the remainder of the site. It should be noted however that the visual prominence of a very tall structure such as a wind turbine would be exacerbated if located on a ridge top or a relatively high lying plateau. As such, it is recommended that wind turbines should preferably not be located on the highest ridges (= 1050msl) within the WEF development area. While these ridges could be seen as areas of potentially high visual sensitivity, the study area as a whole is rated as having a low to moderate visual sensitivity (*due to limited receptors*), and as such, the sensitivity rating would be reduced to "Medium-High". Hence the ridges are not considered to be "no go areas", but rather should be viewed as zones where turbine placement would be least preferred.

From a visual perspective, another concern is the direct visual impact of the turbines on any farmsteads or receptors located on the application site. Accordingly, a 1km visual sensitivity zone has been delineated around the existing residences on the application site and also around the two receptors located within 1km of the site boundary. This 1km buffer is in accordance with the flicker-sensitive buffers applied in the DFFE Screening Tool. In addition, it is recommended that the following visual sensitivity zones be applied to main roads on or near the application site:

- N12 national route: 1km
- Main access roads on the site: 300m

The preclusion of turbine development from these zones would reduce the direct impact of the turbines on the occupants of the farmsteads and on passing motorists, especially those impacts related to shadow flicker. At this stage however, the visual sensitivity zones are ***not*** considered "no go" areas, but rather should be viewed as zones where development should be limited. It should be stressed that these zones on the WEF development site apply to turbine development only. The visual impacts resulting from the associated on-site infrastructure are considered to have far less significance when viewed in the context of multiple wind turbines and as such the associated on-site infrastructure has been excluded from the sensitivity analysis."

The National Screening Tool for Landscape Themes identifies areas of Very High sensitivity in respect of WEF developments on the Koup 1 site, associated with the presence of natural landform features such as mountain tops, high ridges and steep slopes (Figure 25).

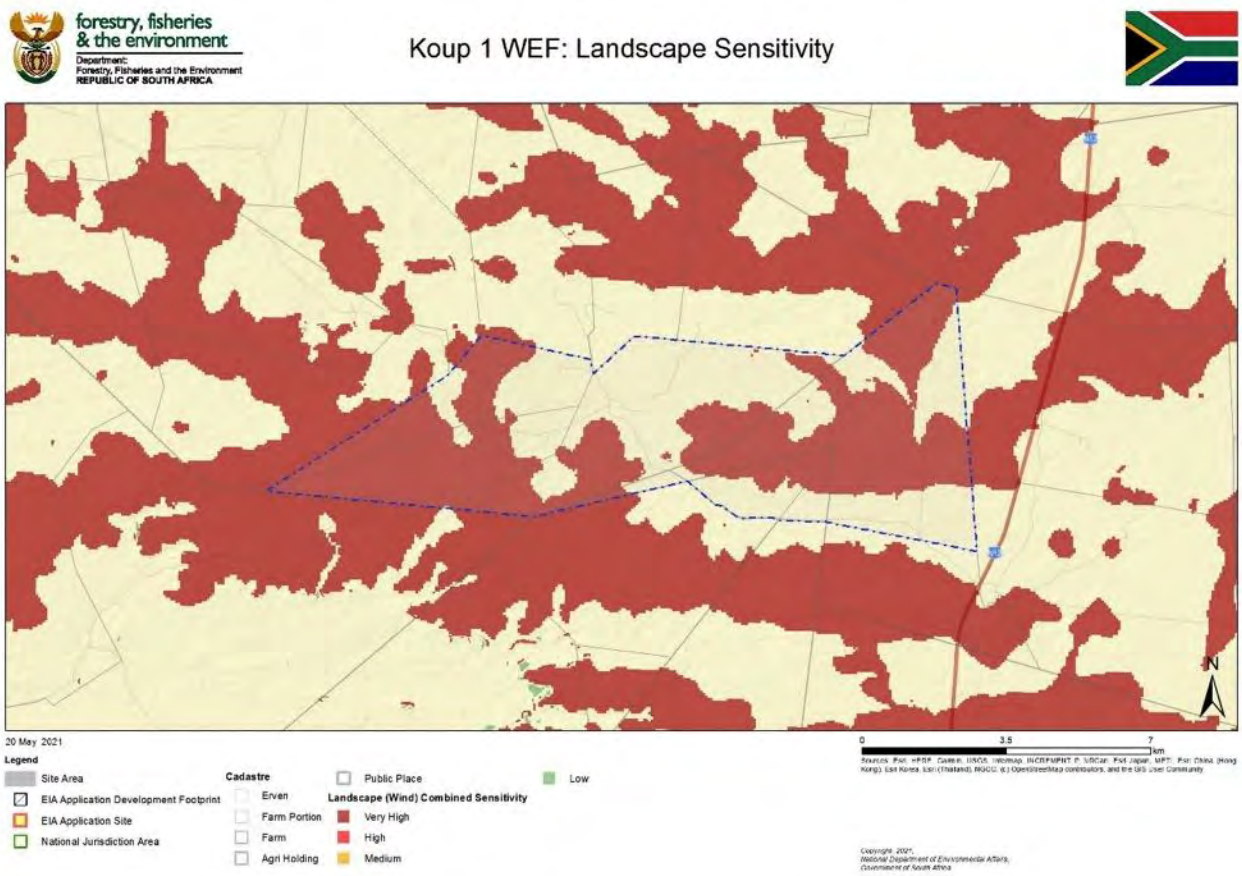

Figure 25: Koup 1 Relative Landscape Sensitivity (May2021) taken from the National Screening Tool for WEF development.

10.1.3 Hydrology

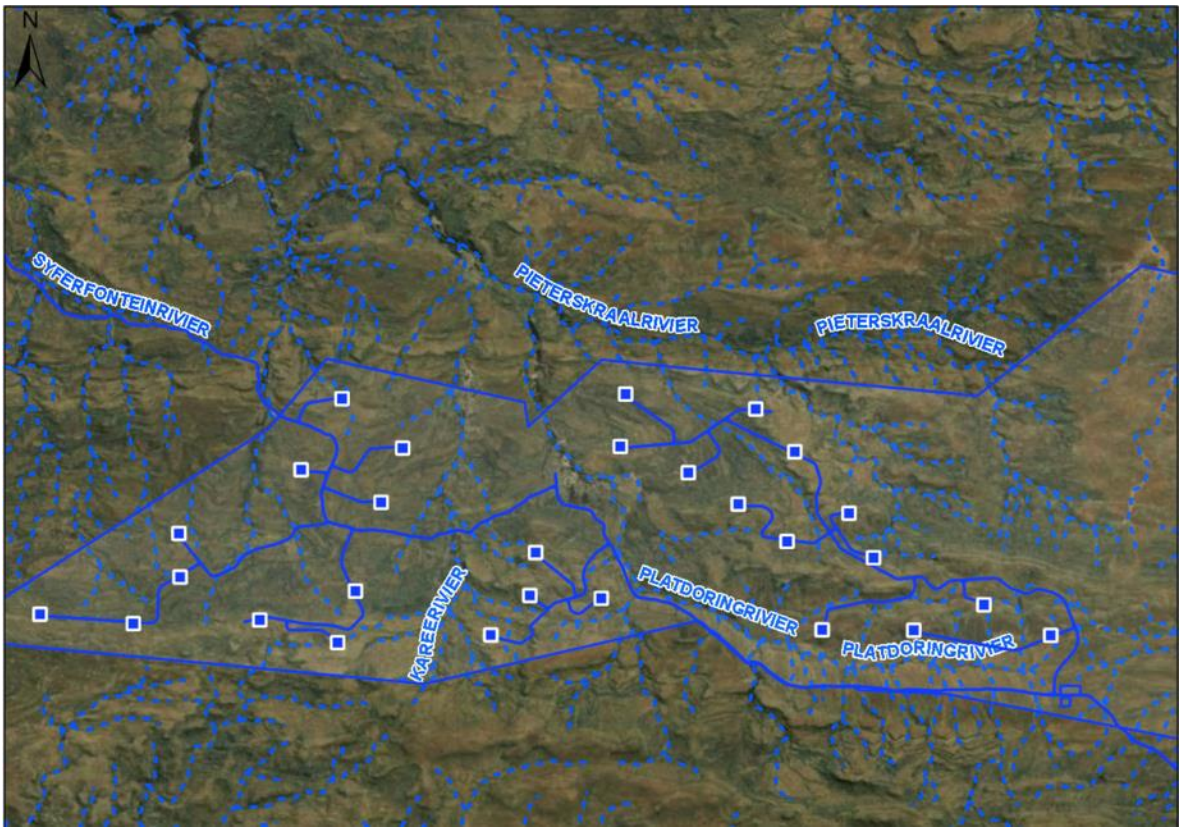

Figure 26: Cape Farm Mapper (2021) map of non-perennial rivers for Koup 1 landscape with WEF infrastructure overlay.

The hydrology of the Koup 1 landscape is comprised of non-perennial rivers that reflect the names of the local farmsteads, indicating a close relationship between inhabitants on the landscape and these rivers as well as the significant dependence on these resources. These aquatic environments are also the focus of the Critical Biodiversity Areas and Ecological Support Areas for the area.

10.1.4 Vegetation

The Koup 1 project area is characterized by the karroid broken veld of the Gamka Karoo with taller vegetation attributed to non-endemic vegetation associated to locations of human habitation (**Figure 27** and **Figure 28**). This vegetation type is classified as least threatened and has not experienced a high degree of transformation. The study area forms an integral part of the unique landscape character that is classified as a least threatened ecosystem. Most of the study area has been used for agriculture, drawing on the potential of the natural vegetation to support livestock (mostly sheep and some cattle), and therefore has a largely untouched character.

Figure 27: View to south west over western portion of Koup 1 project site showing typical karroid broken veld of the Gamka Karoo.

Figure 28: Koup landscape showing karroid broken veld in riverine context with taller vegetation associated to human habitation at Kareerivier farmstead.

10.1.5 Conservation: Biodiversity

The Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA) are essentially a combination of the following layers and their biodiversity significance:

- Ecosystems
- Vegetation Types
- Wetland Types
- River Types
- Estuaries
- Indigenous Forest
- Threatened Species

The CBA and ESA areas for the Koup 1 project site are largely riverine related with the aquatic environments of the Platdoringsrivier and Kareerivier, as well as a southern section of the riverine corridor associated with the Bloemendal homestead cluster on adjacent Koup 2, having been identified. A single portion to the eastern edge of the Koup 1 site has been identified as a CBA of terrestrial species' significance associated to a riverine corridor. All the non-perennial river corridors are identified as ESAs for the project site (Figure 29).

The rationale of this study is that the CBA and ESA layers embody those natural hydrological, vegetation and ecological variables that are integral to maintaining the landscape character in some areas of the study area. The CBA's constitute highly significant areas and the ESA's include areas of medium significance, even from a heritage perspective (Jansen and Franklin, 2020). This is because agricultural and heritage values overlap in these considerations. The significance of the site, in the way that it was farmed to maintain the integrity of the natural vegetation, signifies a unique relationship between man, and nature where it reflects an entangled dimension, and representative of a cultural landscape.

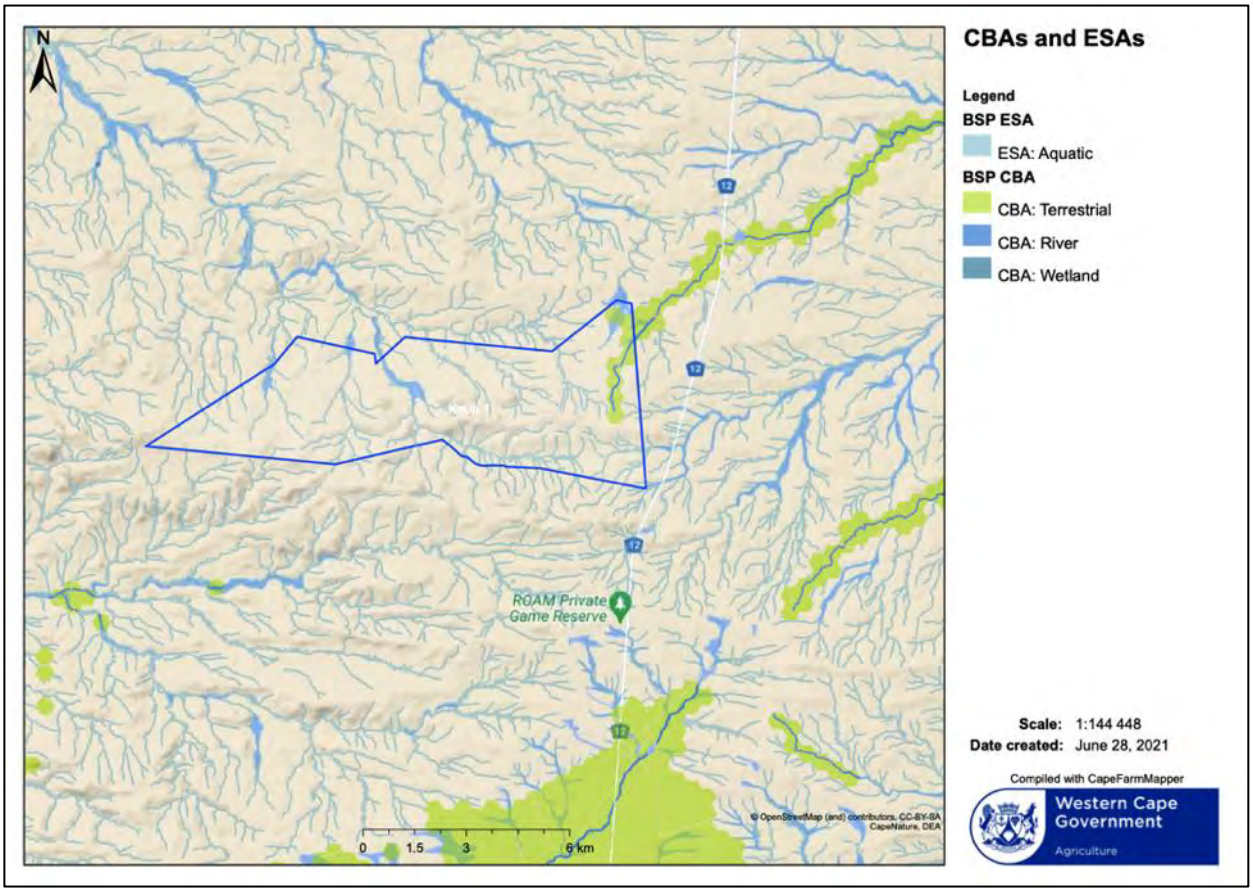

Figure 29: Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) map for Koup 1 project site within wider region (Cape Farm Mapper, 28 June 2021).

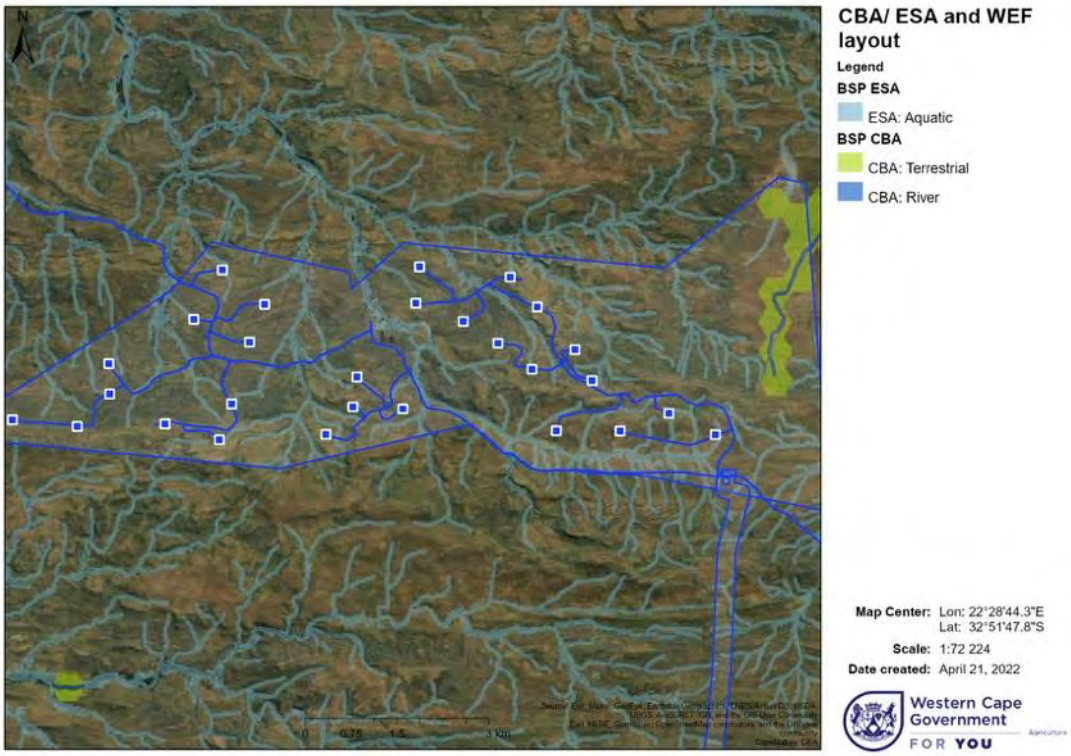

Figure 30: Critical Biodiversity Areas and Ecological Support Areas map for Koup 1 landscape with proposed WEF infrastructure overlay.

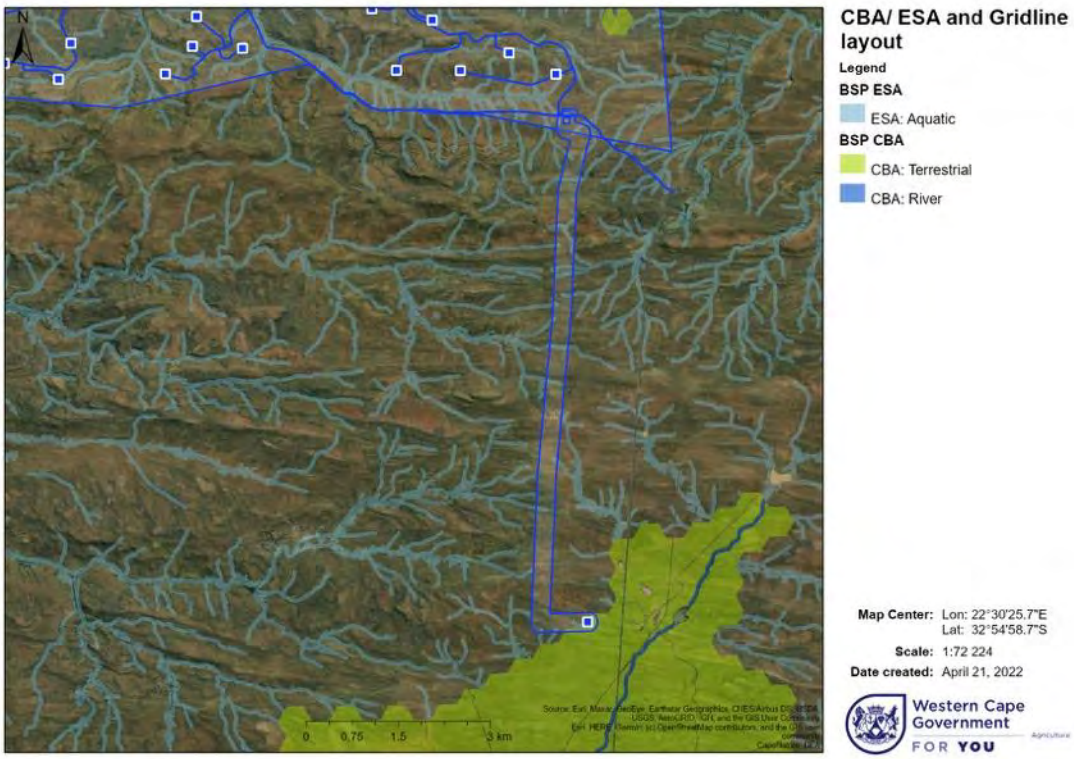

Figure 31: Critical Biodiversity Areas and Ecological Support Areas map for Koup 1 landscape with proposed Gridline infrastructure overlay.

Figure 32: Example of a dry riverbed in the Koup 1 landscape.

Figure 33: Kareerivier riverine ESA adjacent to Kareerivier farmstead showing adaptation to local natural conditions by human inhabitants through water management systems in the form of stone weirs.

10.2 Cultural Elements

10.2.1 Archaeological material

The Archaeological Impact Assessment identified various elements of heritage significance including stone-age scatter sites, unmarked and formalized grave sites as well as historic farmsteads (**Figure 34** and **Figure 35**).

The Koup 1 Archaeological Impact Assessment Rev (PGS, August 2021) describes the archaeology of the area as follows:

The archaeological record of the Karoo region is well documented, dating from the ESA to the historic periods. Vast areas of the region have however, yet to be subjected to systematic analytical research. Scatters of ESA through to LSA artefacts have been widely reported in the general vicinity of Beaufort West. This is a result of the erosional nature of the environment, which tends to leave artefacts exposed on the surface rather than buried beneath layers of sediment. To date, heritage studies in the area have shown that these artefacts have occurred in secondary contexts, often associated with gravel deposits, having been subjected to erosion of the soils in which they were once deposited (Dreyer 2005; Halkett 2009; Kaplan 2006, 2007; Orton 2010; Webley & Hart 2010a, 2010b; Webley & Lanham 2011). Although context is generally poor, the Karoo is still regarded as a region that is very rich in archaeological and historical heritage. Historical resources, such as farmsteads, kraals and graves, are also observed within the Beaufort West region (Halkett 2009; Webley & Hart 2010b). To the northeast of Beaufort West, rock engravings have been identified on dolerite boulders that are characteristic of parts of the Karoo (Orton, 2010; Parkington et al., 2008). The lack of caves and rock shelters in the Karoo region, results in the majority of archaeological sites in the area being classified as open-air sites. As such, the artefacts are generally not in-situ and organic remains are rarely preserved.

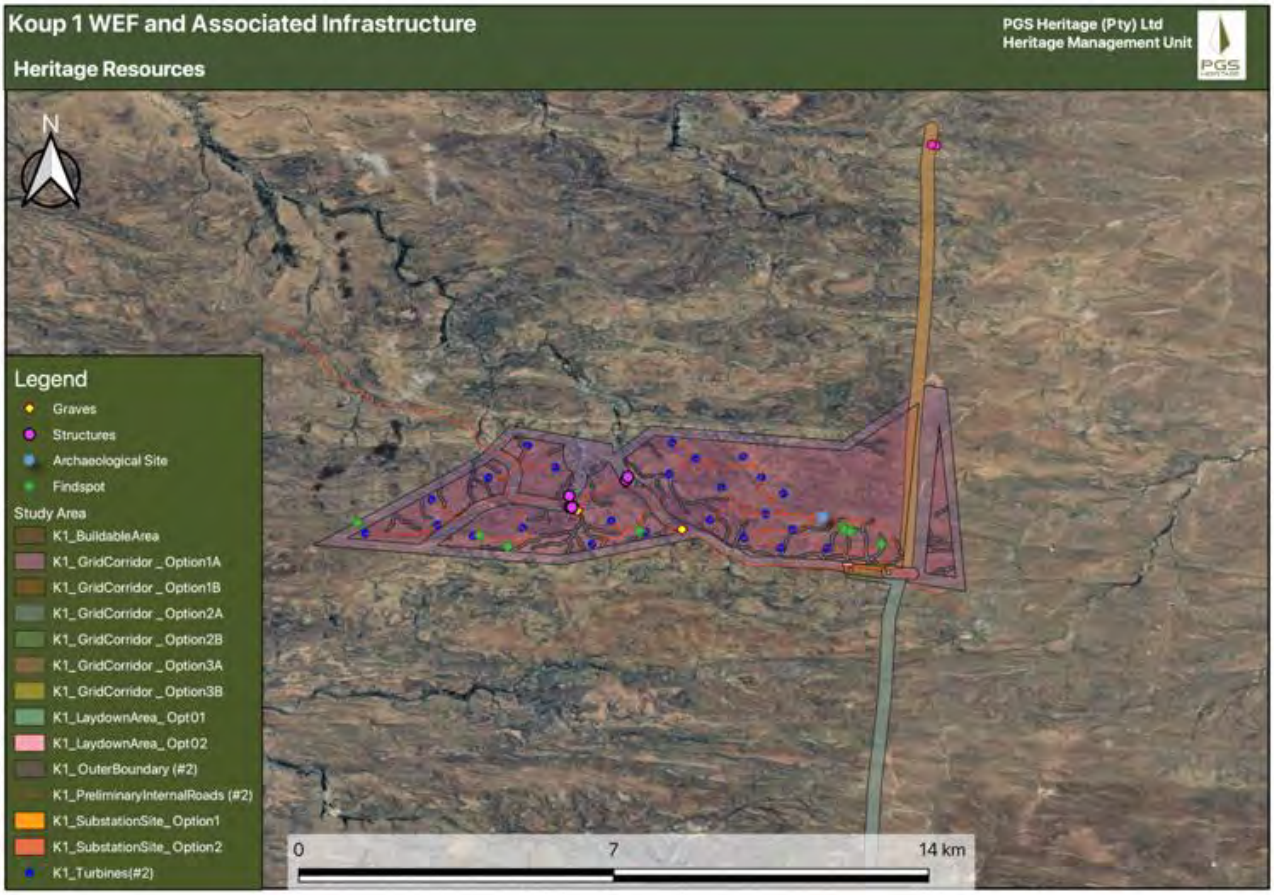

***Figure 34:* Locality of the archaeological heritage resources identified within the buildable area of the site by PGS Heritage (Koup 1 AIA Rev, 2021).**

Figure 35: Archaeological resources identified in AIA (PGS, 2021) for central section of the proposed Koup 1 WEF development area (Platdorings: KO-04, KO-05, KO-06; Kareerivier: KO-02, KO-03, KO-07, KO-08)

10.2.2 Historical farmsteads and routes

The history of the landscape is intimately associated to stock farming and waves of settlement throughout history. The stone-age and prehistoric archaeology attests to the inhabitants of the landscape before written history, with the first farmsteads and stone kraals and walls remnants of the first people to settle on the land more permanently rather than being transhumant. The place names of the farms and landscape elements on historic maps give some context to the chronological evolution of settlement in the area. Many Afrikaans names are still prevalent with the terms *rivier*, *kraal, kop* and *poort*, commonly found in existing place names to describe the phenomenon being named. The use of influential landscape elements highlights the significanc of these elements in the psyche of the historical inhabitants in this vast, seemingly barren, flat place. Names of individuals and descriptions of groups of people have also been used to name places and farms, which further attest to the historical cultural influences on the landscape.

Figure 36: Excerpt of the 1900-1919 Imperial map with proposed WEF development boundary overlay (purple, green, blue), showing historic farm roads (yellow) in relation to the locations of the historic farmsteads identified on the 1965 1:50K topographical map (purple points).

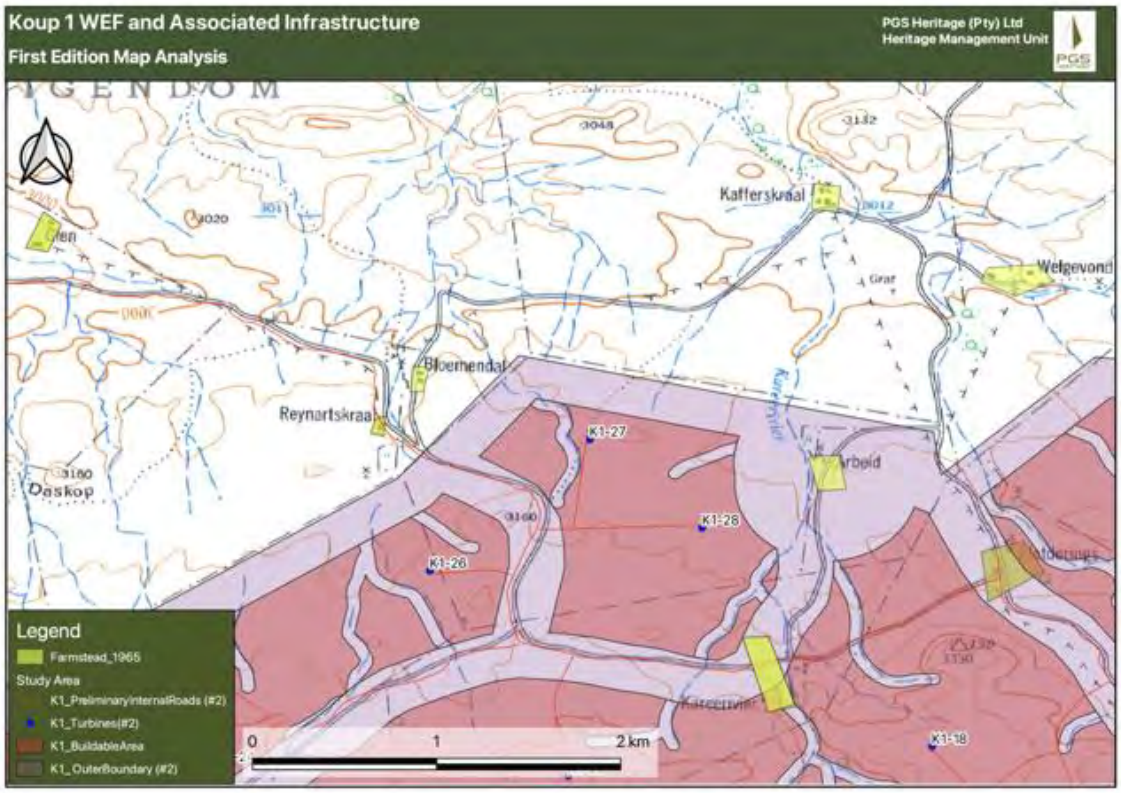

Figure 37: First edition 1965 3222CD 1:50k topographic map, showing proposed Koup 1 WEF, with potential heritage features located in and near the project area (PGS, 2021)

The farms *Rietpoort, Antjesfontein, Rietfontein* and *Amospoort*, constituting or adjacent to the development area, are all evident on the Imperial map (Beaufort West, 1900-1991) and the most recent 1:50K topographical map, lending them significance in the longevity of the place names. The place *Kafferskraal*[3], although outside the development area, is evident on the Imperial map (Beaufort West, 1900-1991) for the area and the 1965 1:50K topographical map but not the most recent topographical map (most likely due to the sensitive nature of the name), having been changed to *Brits Eigendom*. Its original name suggests that it may well have been occupied by non-colonist groups for longer than other places in the region, lending it significance in the potential for the recognition of the role played by politically marginalized groups in the development of the region. The place *Renaarslaagte* on the Imperial map is most likely associated to *Reynartskraal* on the 1965 and most recent 1:50K topographical maps (Figure 36).

These historic farmsteads and the roads that link them are contextually and historically significant as they would have determined patterns of use and movement across the landscape, and in turn the natural landscape determined where these places of habitation would be through location of water sources, protection from the element, poorts through ridges and drifts through rivers. Connection between these places and the people who lived and stayed there has historically been critical in determining the way in which people use and survive in this landscape. Further, in an environment of harsh dry conditions where water is scarce, spaces of cultivation are testament to the determination of its inhabitants to survive in *this* place and the investment of resources, time and effort, that would go into such an ideology. The potential for continued occupation of the farmsteads are significant in maintaining the significance of the cultural landscape.

Three farmsteads of this nature are relevant to the Koup 1 WEF site, these being

Platdorings/ Platdoorn

Platdoorn consists of a small cluster of buildings and associated water management infrastructure, including the ubiquitous windpump, within about 600m of the visually prominent koppie *Platdorings se kop* to the south. The shared name suggests a long-standing recognized relationship between these elements on the landscape. The existing structures are of medium local heritage significance and are over 56yrs in age. There is evidence of previously cultivated land on either side of the dry riverbed to the north of the buildings showing the historic landuse practices and patterns. Platdoorn is currently occupied which increases its significance as a cultural landscape element, as the continued occupation of a place prolongs and deepens the relationship between man and environment in that setting. The AIA (PGS, 2021) identified unmarked graves across the road at the foot of Platdorings se Kop, also of high local significance. Most likely associated to Platdorings' inhabitants, the relationship between the koppie, the graves and the farmstead

[3] It is recognized that the use of this word is socially and politically sensitive in our current time. Its use in historical texts, however, is informative for the understanding of the relationship between people and the landscape. In this study, it relates to one of the oldest identified places on historical maps for the area, lending it additional historical and cultural significance.

attests to the hyperlocal relationship that these inhabitants have to the place. The visual and land use relationship between the farmstead buildings and the prominent koppie and the dry riverbed creates a sense of place which should be conserved. As a continued example of the relationship between man and environment, the Platdoorn farmstead and associtated cultural landscape is of medium to high significance.

Figure 38: Platdorings/ Platdoorn farmstead with Platdorings se Kop in the background to the south west.

Figure 39: One of the currently-inhabited Platdoorn homesteads.

Figure 40: One of the currently-inhabited Platdoorn homesteads with Platdoring se Kop behind.

Figure 41: Unmarked graves identified at the foot of Platdoring se Kop between the hill and the Platdoorn/ Platdorings farmstead (PGS, 2021).

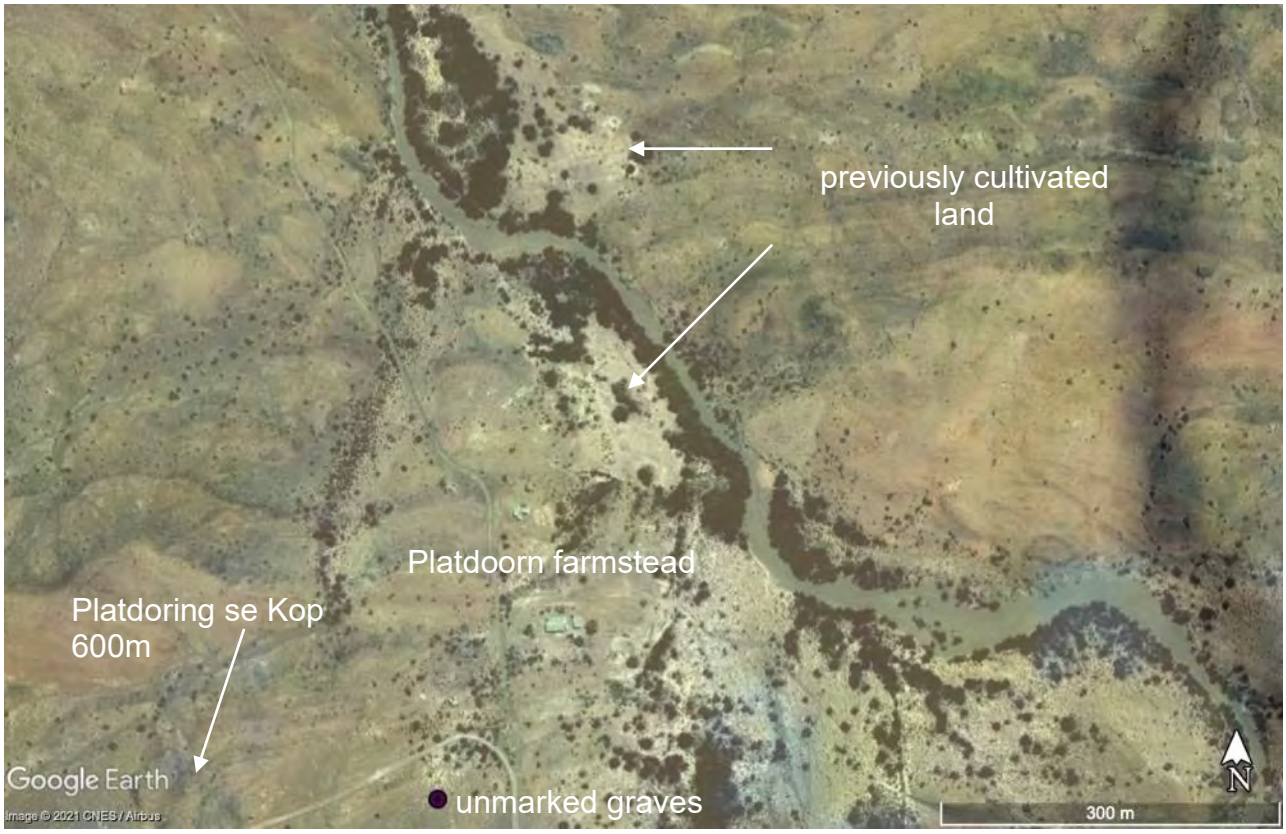

Figure 42: Aerial view of Platdoorn farmstead showing cluster of buildings, unmarked graves (purple point) and previously cultivated lands adjacent to the dry riverbed.

Arbeid

The Arbeid farmstead consists of two stone packed buildings and associated water management infrastructure, as well as a small area which is still used for crop cultivation by the local residents. An old ox-wagon carcass has been deserted adjacent to the crop garden. Aerial views of the area around the exiting farmstead show evidence of previously cultivated land adjacent to the dry riverbed. The use of modern water tanks to replace the large concrete dams is testament to the severe drought that has only recently

subsided and the continued ingenuity and adaptation required by inhabitants of this region. The name '*Arbeid*' is Afrikaans for the uncountable noun 'work', a further indication of the relationship between the place and its inhabitants. An unmarked grave nearby was pointed out and identified as " *'n witmens se graf* " (a white person's grave) by a local Bloemendal resident who was busy planting and watering crops in the fenced off garden at Arbeid (pers comm 23 June 2021). The unmarked grave is of high local significance. The farmstead, including the crop gardens and water management infrastructure, is of medium to high local heritage significance as it is still actively in use. The in-tact ox wagon is a heritage feature of medium to high significance as it adds to the overall history and use of the farmstead landscape over time. Although no longer in use, it's presence on this landscape adds to the cultural significance of the space and it should be preserved in situ as far possible.

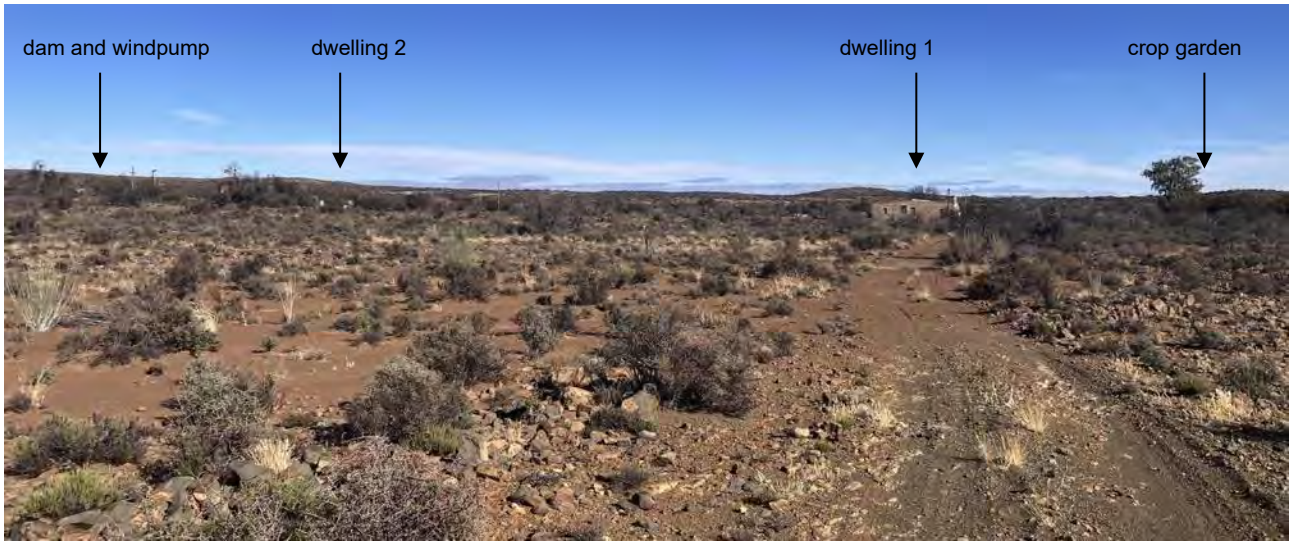

Figure 43: Looking north west to Arbeid farmstead.

Figure 44: Arbeid dwellings

Figure 45: Arbeid dwelling 2 with associated modern dump

Figure 46: Arbeid water management (left) and oxwagon carcass (right)

***Figure 47: Arbied crop gardens and water management being utilised by local Bloemendal** (Koup 2) resident*

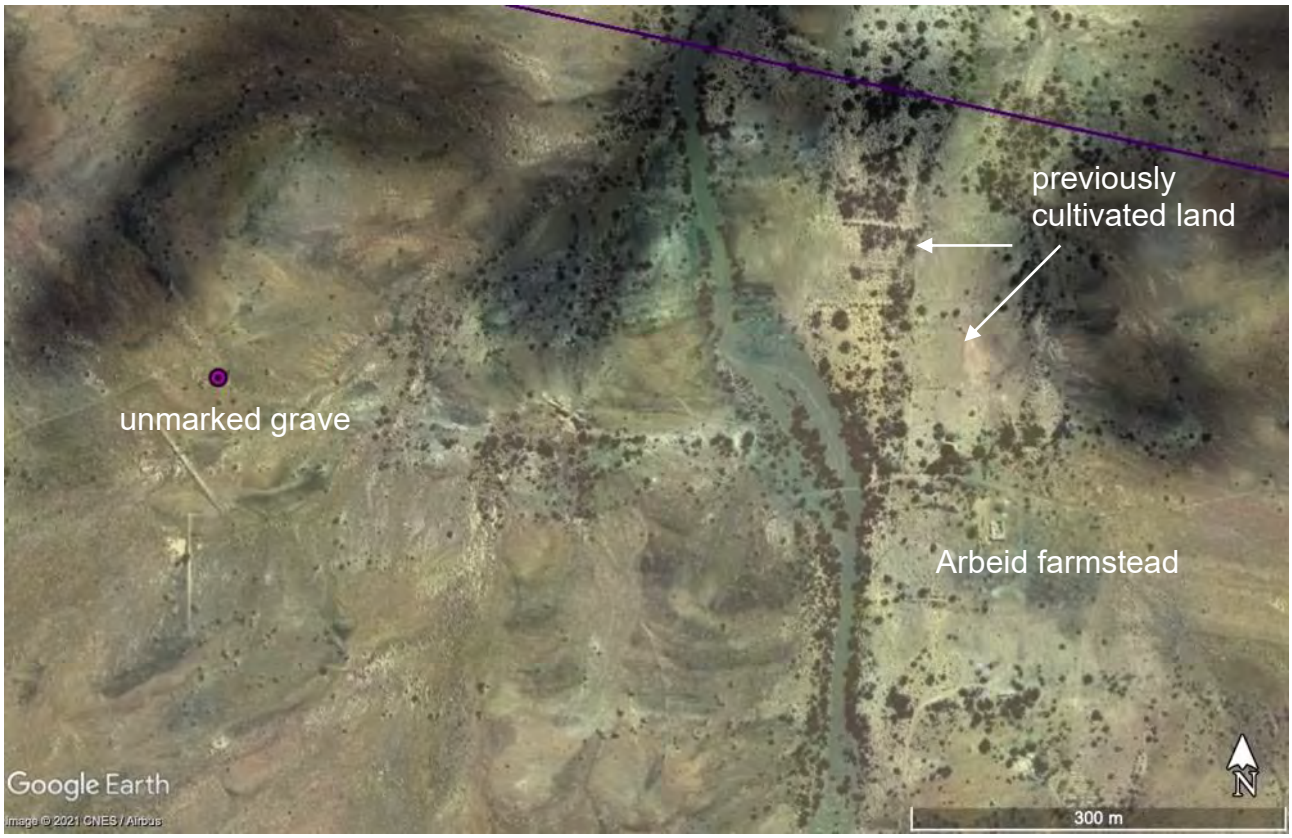

Figure 48: Aerial view of Arbeid farmstead showing relative locations of the previously cultivated land to the north, adjacent to the dry riverbed, and the unmarked grave (purple point) identified as a "witmens se graf". The Koup 1 WEF boundary is indicated at the top of the figure (purple line).

Figure 49: Informal grave with stone head and foot markers nearby Arbeid farmstead (looking south west) pointed out by local resident and identified as "witmens se graf" (-32.848510° 22.454976°).

Kareerivier

The Kareerivier farmstead consists of at least two small stone buildings, the main homestead still occupied and well maintained and landscaped. Located along the Kareerivier non-perennial dry riverbed, the shared name suggests a long-standing recognized relationship between these elements on the landscape and the dependency of the inhabitants on the river and the orientation of the farmstead, gardens and cemetery on either side of it. Associated to the homestead is a family cemetery of the Bothma family as well as relatively extensive remnants of cultivation and orchards, including modern irrigation infrastructure, located across the dry river bed from the homestead, with various landscaped pathways joining these elements. The Kareerivier farmstead is still occupied. As an example of the ongoing relationship of ingenuity and determination between man and nature in this trying environment, the Kareerivier farmstead is of high local significance as a cultural landscape element.

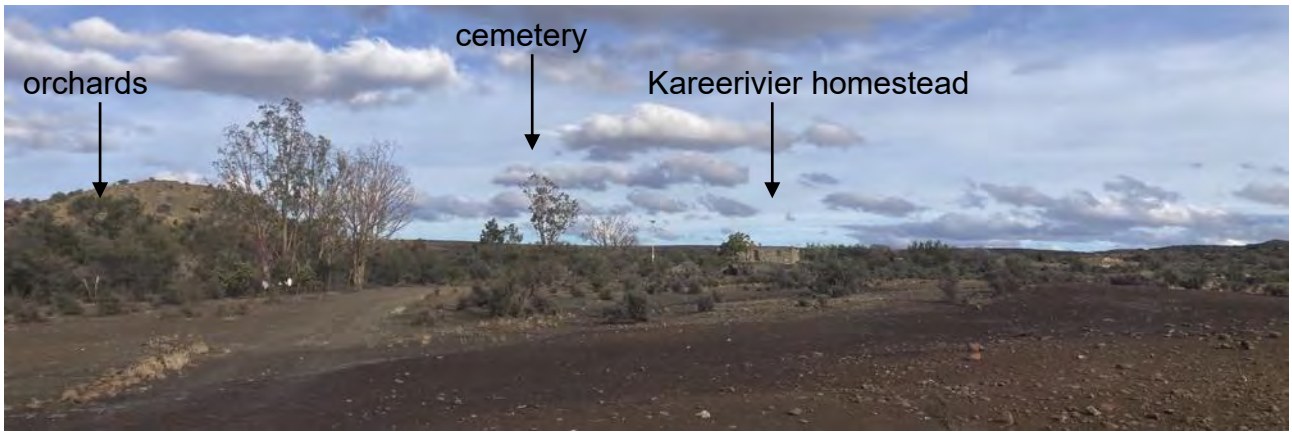

Figure 50: Looking south towards Kareerivier farmstead

Figure 51: Kareerivier homestead front facade

Figure 52: Kareerivier orchard

Figure 53: Kareerivier cemetery of the Bothma family

Figure 54: Aerial view of Kareerivier farmstead cultural landscape

Koup 1 farm roads

The 1900-1919 Imperial map shows farm roads associated with the Koup 1 historic landscape (Figure 36). An old farm road runs east-west along the southern boundary of the Koup 1 WEF development and ends abruptly at a small poort. This is the current gravel access road to the Koup 1 farmsteads and the proposed access road for the WEF development. Although fencing in general is synonymous with the landscape, the height of the game fences on either side of this road detract from the vastness of the space and the associated sense of place. The Koup 1 AIA (PGS, 2021) identified a possible unmarked grave at the point where the historic farm road ends on the Imperial map. The small poort is a significant visual element of the landscape and would have determined travel through the landscape by animals and the people who followed them. This poort marks the end of the farm road marked on the Imperial map, after which the landscape opens up onto an open flat alluvial area to the north where most of the homesteads of the project site are found. The physical relationship between the relatively high koppie and associated poort together with the topographically distinctive koppie, Platdoring se Kop, adds to the visual impact and experience of this place when moving through the poort in the centre of the Koup 1 project site. Another historic farm road travels north - south through the farmsteads of *Kafferskraal*[3] and *Reynartskraal*, both places also indicated by the same names on the 1900-1919 Imperial map, attesting to their longstanding relationship to the cultural landscape as places of habitation and connection in this vast and relatively barren landscape.

Figure 55: The historic farm road leading up to the small poort in the centre of the Koup 1 landscape.

Figure 56: View from the farm road leading from the small poort to Platdoorn with a view to the Nuweveld mountains in the north.

N12 regional road

The N12 can be seen in red running north - south as a 'trunk road' on the Imperial map of 1900-1919, identifying it has a significant historic route, linking the town of Beaufort West to the coast via the significant Meiringspoort Pass in the Swartberg. As the most recent iteration of the historically significant network of roads that has determined patterns of travel and use on the landscape and linked vulnerable farmsteads and towns in an area of conflict and tension throughout history, the regional roads in the area are of high significance. The N12 is a historic route that has been used to navigate the vastness of space between places. This character of the landscape and the experience of travelling along the route, is an essential part of the sense of place and a significant element in the cultural landscape. As a significant regional road, the N12 ferries much heavy transport like reticulated trucks, along its course and although not overwhelming when travelling the route as well, the experience of the industrial traffic from a stationary point such as Amospoortjie impacts negatively on the sense of wilderness, especially after dark when all other more subtle sounds that are part of the sense of place are drowned out.

Figure 57: View travelling north on N12 with Koup 1 WEF site on left

Figure 58: View travelling south on the N12 with the Swartberg mountain range in the distance

10.2.3 Conservation areas and economic development

The more recent transformation of the landscape into one of nature and game reserves attests to the resilience and adaptability of the inhabitants of the landscape to exploit the resources in the most economically productive manner without overwhelming or detracting from the sense of place or natural elements of the cultural landscape. The surrounding nature reserves have reintroduced wild game, as were prevalent before the influx of farming communities, and draw on the sense of wilderness and physical and visual expanses of the landscape to encourage tourism. The eco-tourism and game park ventures surrounding the proposed WEFs have high economic value for the local inhabitants of the area, currently under the strain of high unemployment. This landscape element is a clear example of man and nature working in a symbiotic relationship with conservation considerations in relation to agricultural, economic and heritage values overlapping. The significance of this element, in the way that it is being exploited to maintain the integrity of the natural vegetation and fauna, signifies a unique relationship between man and nature and is representative of a cultural landscape.

10.2.4 Social

In consideration of impacts relevant to the cultural landscape, the desktop Social Impact Assessment for Koup 1 WEF by Bews and Associates (2021) concluded that the Koup 1 WEF project will “create employment for local communities during the construction and operational phases”, and that the “more significant positive impact of the project will be the contribution it will make towards renewable energy infrastructure”. The SIA also points out that “it is evident that the cumulative impacts associated with changes to the social environment of the region are more significant than those attached to any one project”. On a negative front, it notes that one of the issues of most concern, is “the change to the sense of place of an area that was once considered a pristine region of South Africa”. Further the SIA continues to state that “the initiative to address these cumulative impacts lies at a far higher level than at an individual project level. In this regard, the Western Cape Government has undertaken an exercise to address intergovernmental readiness for the large development scenarios in the Central Karoo; which is a positive

step towards addressing the cumulative impact of these developments (Western Cape Government Environmental Affairs and Development Planning, 2019)".

The findings of this cultural landscapes impact assessment report, supports those of the SIA (Bews and Associates, 2021) for Koup 1.

Without detailed local public participation, which is not within the scope of the SIA or CLA at the BAR stage, the full impact of the proposed WEF cannot be fully assessed and the findings of the Public Participation Process (PPP) will need to further inform the process. This must include the non-owner residents on and surrounding the development site which will be impacted on by the proposed WEF as identified by the SIA and VIA. The PPP must consider fully issues of sense of place in its process.

10.2.5 Industrial elements

Industrial elements of transmission lines and associated infrastucture are evident along the N12 (Figure 57 & Figure 58). Due to their limited scale and massing along the N12 currently, they do not overwhelm or detract from the rural and historic sense of place in the area. They are further limited to the western side of the N12, leaving the view to the east of the N12 open. There is currently no impact on the experience of the place after dark as there are no significant lighting elements associated with the industrial infrastructure.

Figure 59: Industrial elements along the N12 south of the Koup landscape.

11. LANDSCAPE CHARACTER ASSESSMENT

The scope of cultural understanding is not only limited to the tangible features found on the site, but also include features that are captured in the production of space, the sense of place, and emotional connection to place.

"Article 22 of the Burra Charter in article 15.1 states that the amount of change to a place and its use should be guided by the cultural significance of a place and its appropriate interpretation. It is for this reason that this study analysed the entire landscape for its collective and contextual significance. Landscape Character Assessment is used as a tool to understand the character of the cultural landscape, and its associated boundaries.

Landscape Character Assessment (LCA) helps us to understand our landscapes: their qualities, vulnerabilities and varying capacities to absorb change. It is a tool for understanding the formation of landscapes, defining patterns of natural and cultural features, and identifying the significant elements that give them character. Landscape Character Assessment is an integral part of identifying Cultural Landscapes, which embody the long history and heritage of the relationship between nature and culture, between people and their environment.

The methodology of Landscape Character Assessment was adjusted to include five core value lines that underscore heritage significance in the context of the study site (ecologic, aesthetic, historic, social and economic value). Each of these value lines and the element of landscape character that they support (site requirements), lead to development criteria or placement indicators for the protection and management of its heritage significance. In each instance, 'Character' is thus understood to comprise a distinct, recognisable, describable and consistent pattern of elements in the landscape that makes one landscape different from another, each with its sense of place. When such a place is recognised as being valuable as a whole, but also due to each of its individual elements, it is defined as having significance.

The purpose of Landscape Character Analysis in this study is to help conserve and manage the significant qualities of our cultural landscapes as heritage. Landscape character differs with a different combination of elements and features that make up the landscape. Elements are classified as the functional (what), while features are more distinctive (how) that makes one area different to the next." (Jansen and Franklin, 2020)

11.1 Koup 1 Landscape Character Areas and Cultural Heritage Resources

Cultural landscapes are a significant factor in the evaluation of the impact of proposed development on cultural heritage resources, tangible (e.g. Historic settlements, landscapes, technological) and intangible (e.g. language, indigenous knowledge systems, oral traditions). The area investigated for the proposed Koup 1 and 2 WEFs is considered as having a high cultural landscape heritage significance.

The Koup 1 site can be divided into landscape character areas with cultural heritage resource types. These units were determined by taking the larger landscape context into consideration in order to understand the character and cultural heritage values that underpin the proposed development site.

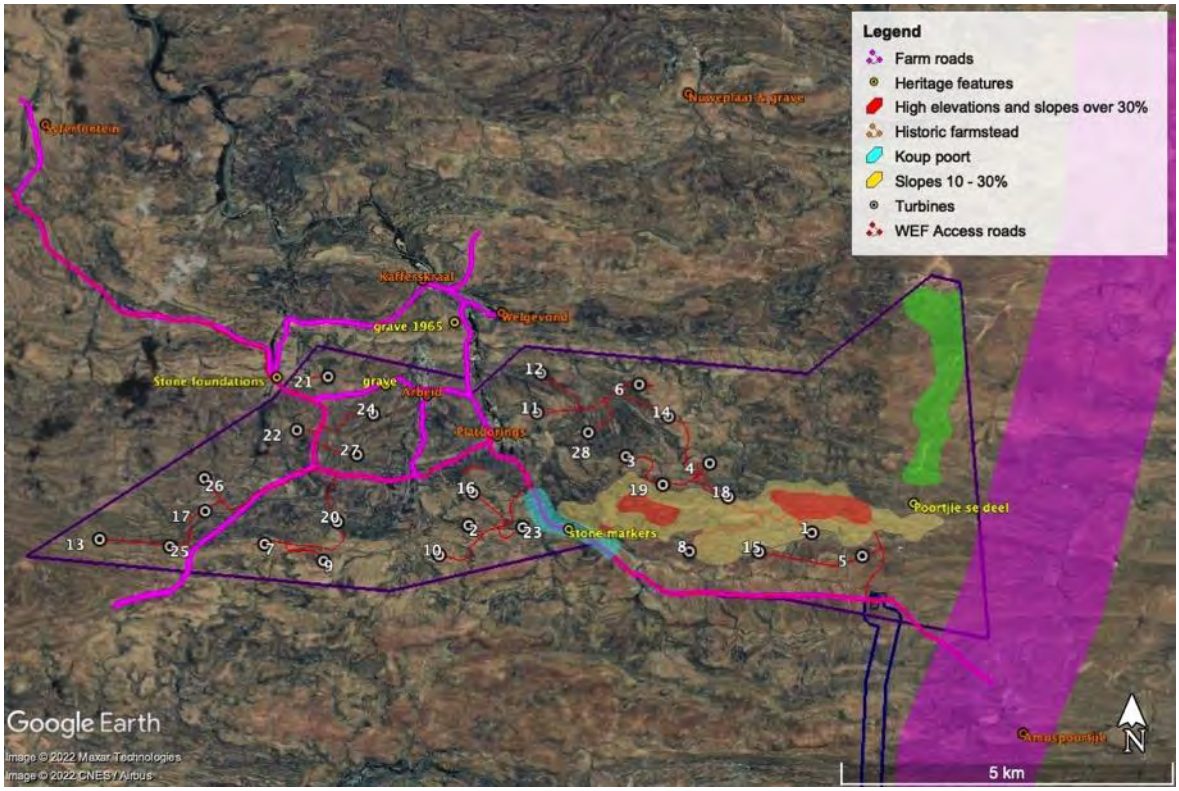

Figure 60: Koup 1 Cultural landscape features map with proposed WEF infrastructure overlay. (slope classes and riverine corridors/ ESAs have not been included here but have been mitigated for in the recommendations)

A: Poorts and koppies

The vast terrain of the Koup lends significance to the low ridges and associated visually prominent koppies that create intermittent relief from the monotonous largely flat topography of the region. The small local poorts and koppies create a sense of place and orientation in this landscape and are associated to points of continuous access and thoroughfare by humans and animals over time.

B. Riverine corridors – Bio-cultural heritage resources

The dry riverine corridors that spread over the Koup landscape create points of contact and cultivation in an otherwise dry and barren environment. Largely non-perrenial, these watercourses are also known for flooding after heavy rains, spreading much needed water over the surrounding land and, in so doing, supporting ecological and agricultural systems. Historic farmsteads and their associated structures and areas of crop cultivation are found in this landscape unit.

C. Historic farmsteads and associated crop gardens – Grade IIIA – IIIB cultural heritage resources

The farmsteads in this study are all located adjacent or near to riverine corridors in the lower elevations of the undulating plains, with associated grazing lands for livestock on the higher elevations and ridges. Areas of crop cultivation are found adjacent to the farmsteads, often along the dry riverbeds. The continued existence of these

farmsteads in this historically and environmentally hostile environment lends significance to their place on the landscape and the determination of the people they represent.

D. Conservation areas –Bio-cultural heritage resources

Critical Biodiversity Areas and Ecological Support Areas, largely associated with the riverine environment of the study area supports biodiversity conservation. These areas recognise the ongoing relationship between man and the environment in the way they are managed to maintain a natural state, which in turn, has a benefit for human habitation.

E. Historic routes and gateways – Grade IIIA – II cultural heritage resources

The site is accessed via the national N12 road, a historic route linking Beaufort West with the towns of De Rust and Outdshoorn via scenic Meiringspoort Pass, and the coastal town of George further south. The north-south orientated N12 intersects the characteristic east west ridges with shallow poorts, often the location of historic farmsteads, such as Amospoortjie, Trakaskuilen and Amandelhoogte, culminating in the Meiringspoort Pass that winds through the Groot Swartberg mountain range located within the Swartberg Nature Reserve. This road has carried inhabitants and travellers between historic towns, farmsteads and further regional destinations since at least the late C18th. The N12 has been recognised as a scenic route in the district and municipal SDFs for the area.

F. Viewsheds of significant mountain ranges

Views and vistas of the distant mountains and destinations give significance to the experience of the vast open landscape. The flat open expanses of the Koup Karoo are a central element to the experience and sense of place of the landscape; the mountain ranges of the Nuiweveld to the north and Swartberg to the south give scale and containment to this vastness.

G. Archaeological and palaeontological sites – Grade IIIA to NCW cultural heritage resources

All archaeological and palaeontological resources are protected by the NHRA and were investigated for grading by the AIA with the results included in the HIA (PGS, 2021). Stone age material, built structures and informal graves and family cemeteries are included here.

H. Slopes and ridges

The vast terrain of the Koup lends significance to the low undulating ridges and associated visually prominent koppies that create intermittent relief from the monotonous largely flat topography of the region. Within this relatively flat expanse the steep slopes and ridges contained in the Koup 1 landscape are significant in their visual and environmental capacities.

12. IMPACTS TO CULTURAL LANDSCAPE AND RECOMMENDATIONS

The impact of the proposed development on the cultural landscape will be assessed according to five core values developed by Job Roos (2007), which include ecologic, aesthetic, historic, social and economic (taken from the Cultural Landscapes study by Jansen and Franklin, 2020). These values merge the requirements of significance assessment according to cultural and natural heritage resources as is required for consideration of cultural landscapes which, by definition, are the manifestation of the relationship between these characteristics of a landscape over time.

An updated cultural landscapes impact assessment report must be completed should the WEF continue to be used after the term granted in this application, should it be granted. The report should include a detailed assessment of the impacts to the cultural landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved.

12.1 Ecological

Most of the area is prized for the fact that its natural character is retained, and that the landscape therefore still performs a range of biodiversity and ecological functions. This is mainly due to the low agricultural potential of the area for anything other than grazing, which has limited the impact on the landscape and vegetation. Critical Biodiversity Areas and Ecological Support Areas, largely associated with the riverine environment of the study area supports biodiversity conservation. These areas recognise the ongoing relationship between man and the environment in the way they are managed to maintain a natural state, which in turn, has a benefit for human habitation. reflect the names of the local farmsteads, indicating a close relationship between inhabitants on the landscape and these rivers as well as the significant dependence on these resources The dry riverine corridors that spread over the Koup landscape create points of contact and cultivation in an otherwise dry and barren environment. Largely non-perennial, these watercourses are also known for flooding after heavy rains, spreading much needed water over the surrounding land and, in so doing, supporting ecological and agricultural systems. Historic farmsteads and their associated structures and areas of crop cultivation are found in this landscape unit.

Mitigation and recommendations:

Species and ecosystem loss should be prevented by limiting fragmentation in the landscape, and should therefore adhere to the following:

12.1.1 Planning/ pre-construction

- Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases.

- No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines.
- Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use and continued access to these resources be maintained.
- Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.

12.1.2 Construction/ decommissioning

- Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases.
- No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines
- Remaining areas of endemic and endangered natural vegetation should be conserved.
- Areas of critical biodiversity should be protected from any damage during all phases; where indigenous and endemic vegetation should be preserved at all cost.
- Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed.
- Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use.
- Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.

12.1.3 Operational

- Areas of endemic and endangered natural vegetation should be conserved.
- Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected.
- Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed.
- Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if

threatened for use. Access to these resources should be made available to those who have had historic access to them.

12.2 Aesthetic

The overwhelming sense of vast open landscape with low shrubby vegetation, characteristic of the Koup Karoo and determining to a large extent its evolution in history, creates a sense of place and landscape character intimately associated with this cultural landscape. The various cultural landscape elements have all contributed to a landscape that offers wide open spaces, stillness, distant vistas of impressive and containing mountain ranges with local poorts and koppies defining of the movement of people and animals throughout history. The vast terrain of the Koup lends significance to the low ridges and associated visually prominent koppies that create intermittent relief from the monotonous largely flat topography of the region. The small local poorts and koppies create a sense of place and orientation in this landscape and are associated to points of continuous access and thoroughfare by humans and animals over time. The experience of the landscape after dark is one of stillness and wilderness with the vastness of the landscape paralleled and expressed in the vastness of the stars overhead amidst overwhelming darkness.

Mitigation and recommendations:
Appropriate planning, construction and management of the WEF infrastructure will prevent degradation of the regional character of the cultural landscape and its unique sense of place for which it is valued. The following recommendations, which also impact the construction phase, must be addressed at the planning and layout stage to reduce impacts as far possible and reduce potential negative impacts during following phases.

12.2.1 Planning/ pre-construction

- Where additional infrastructure (i.e. roads) is needed, the upgrade of existing roads to accommodate the development should be the first consideration.
- Avoid development of infrastructure (such as buildings, wind turbines and power lines), on crests or ridgelines due to the impact on the visual sensitivity of skylines. The visual impact of turbines can be reduced by distancing them from viewpoints such as roads and farmsteads, and placing them in lower lying plains to reduce their impact on the surrounding sensitive cultural landscape.
- Significant and place-making viewsheds of surrounding ridgelines and distant mountain should be maintained by limiting the placement of turbines or associated infrastructure on opposing sides of any of the regional roads, so that at any time a turbine-free view can be found when travelling through the landscape or at the historic farmsteads.
- Retain view-lines and vistas focused on prominent natural features such as mountain peaks or hills, such as Platdoring se Kop and the Koup 1 poort, as these are important place making and orientating elements

for experiencing the cultural landscape.

- Prevent the construction of new buildings/structures/ new roads on visually sensitive, steep, elevated or exposed slopes, ridgelines and hillcrests.
- Turbine and new road placement to avoid slopes steeper than 10% with existing farm roads to be used for access to turbines as far possible.
- Due to the scenic and historic significance of the regional road, a buffer of 1000m to either side of the N12 should be maintained for no development associated with the WEF other than sensitive road upgrades, which must not impact on the views from the road. The visual impact of the turbines will be 50% less at 1km distance and therefore this distance will greatly reduce the negative visual impact of the turbines on the experience of the historic road and the values that give it significance.
- Due to the nature of the landscape being largely devoid of high vertical elements such as the proposed turbines, and the introduction of these turbines fundamentally altering the sense of place and character of the landscape for those living there, location of majority of turbines should be limited to an 800m buffer around the farmsteads. The current turbine layout supports this recommendation in that there is nowhere more than a single turbine at the edge of these buffer zones.
- Due to the historic and local experience of the landscape from the farm roads, which link the historically significant farmsteads across the region, a buffer of 300m from the farm roads should be maintained for no development associated with the WEF other than sensitive road upgrades which must not impact on the views from the road.
- Alternatives Option 1(sub1) for the grid corridor and Option 1 for the laydown area, are preferred in terms of cultural landscape assessment as they limit the construction to a smaller footprint on the landscape and locate the infrastructure far enough from the N12 and out of the Koup 1 landscape as far possible. They should be moved out of the historic farm road buffer without impacting on a riverine corridor flood line or a slope over 3%.
- The substation location should be located on the same side as other development infrastructure and to the north of the farm road so as to limit the visual impact to one viewshed. As there is a ridge behind this development area, for which turbine placement is proposed, location of the substation to the north of the farm road contains the impact to one side of the road and the infrastructure will not interrupt view lines of the mountain ranges in the distance.
- The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.

12.2.2 Construction/ decommissioning

- Encourage mitigation measures (for instance use of vegetation) to 'embed' or disguise the proposed structures within the surrounding tourism and agricultural landscape at ground level, road edges etc;
- The continuation of the traditional use of material could be enhanced with the use of the rocks on the site as building material. This would also help to embed structures into the landscape and should not consist of shipping containers or highly reflective untreated corrugated sheeting that clutters the landscape and is exacerbates the foreign intrusion on the natural matte landscape.
- Using material found on the site adds to the sense of place and reduces transportation costs of bringing materials to site.
- The local material such as the rocks found within the area could be applied to address storm water runoff from the road to prevent erosion.
- Duration and magnitude of construction/ decommissioning activity must be minimized to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Light vehicles should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Construction/ decommissioning traffic must operate at speeds that reduce dust and noise.
- Any new road network or widening must be returned to its original state at end of the operational time of the WEF, with full environmental and aesthetic rehabilitation to the approval of a qualified cultural landscapes assessment specialist.
- Turbine sites, substation and laydown areas should be returned to their original state at the end of the operational time of the WEF, with full environmental and aesthetic rehabilitation to the approval of a qualified cultural landscapes assessment specialist.

12.2.3 Operational

- Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges.
- Prevent the construction of new buildings/structures on visually sensitive, steep (over 10%), elevated or exposed slopes, ridgelines and hillcrests or within 800m of the farmsteads and N12 and 300m of the farm roads.
- Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads.
- Duration and magnitude of operational activity must be minimized to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Light vehicles should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and

noise.

- The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.

12.3 Historic

The site is accessed via the national N12 road, a historic route linking Beaufort West with the towns of De Rust and Outdshoorn via scenic Meiringspoort Pass, and the coastal town of George further south. This road has carried inhabitants and travellers between historic towns, farmsteads and further regional destinations since at least the late C18th. The N12 has been recognised as a scenic route in the district and municipal SDFs for the area. The history of the landscape is intimately associated to stock farming and waves of settlement throughout history. The stone-age and prehistoric archaeology attests to the inhabitants of the landscape before written history, with the first farmsteads and stone kraals and walls remnants of the first people to settle on the land more permanently rather than being transhumant. The use of influential landscape elements highlights the significance of these elements in the psyche of the historical inhabitants in this vast, seemingly barren, flat place. The historic farmsteads and the roads that link them are contextually and historically significant as they would have determined patterns of use and movement across the landscape, and in turn the natural landscape determined where these places of habitation would be through location of water sources, protection from the element, poorts through ridges and drifts through rivers. Connection between these places and the people who lived and stayed there has historically been critical in determining the way in which people use and survive in this landscape. Further, in an environment of harsh dry conditions where water is scarce, spaces of cultivation are testament to the determination of its inhabitants to survive in *this* place and the investment of resources, time and effort, that would go into such an ideology. The potential for continued occupation of the farmsteads are significant in maintaining the significance of the cultural landscape.

Mitigation and recommendations:

Appropriate planning, construction and management of the WEF infrastructure will prevent degradation of the historic elements of the cultural landscape.

12.3.1 Planning/ pre-construction

- Due to the scenic and historic significance of the regional road, a buffer of 1000m to either side of the N12

should be maintained for no development associated with the WEF other than sensitive road upgrades, which must not impact on the views from the road. The visual impact of the turbines will be 50% less at 1000m distance and therefore this distance will greatly reduce the negative visual impact of the turbines on the experience of the historic road and the values that give it significance.

- The integrity of the historic farmsteads and their associated cultivated areas and relationship to the riverine corridors and other natural elements, such as Platdoring se Kop, should be maintained and protected. Due to the nature of the landscape being largely devoid of high vertical elements such as the proposed turbines, the introduction of turbines will fundamentally alter the sense of place and character of the landscape for those living there. Location of proposed turbines should be limited to an 800m buffer around the farmsteads to limit impact to the farmsteads. The current turbine layout supports this recommendation in that there is nowhere more than a single turbine at the edge of these buffer zones.
- Any development that impacts the inherent character of the werf component should be discouraged and a development buffer of 50m around the outer boundary of farm werfs and 200m around any graded heritage structure, must be maintained, including the associated cultivated areas, cemeteries and unmarked graves, for all new infrastructure. A preconstruction micro-survey for access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.
- No infrastructure or operational upgrades, such as boreholes, should impact negatively or reduce natural, on site water quality, quantity or access for the residents within or around the development site. Any borehole or other water resource upgrade should also be made freely accessible to the residents living on site.
- Due to the historic and local experience of the landscape from the farm roads, which link the historically significant farmsteads across the region, a buffer of 300m from the farm roads should be maintained for no development associated with the WEF other than sensitive road upgrades which must not impact on the views from the road. A preconstruction micro-survey for access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.
- Buffers from identified stone markers and foundations should be in accordance with the AIA (PGS, 2021) where they are not directly associated with an historic farmstead.
- The existing names of places, routes, watercourses and natural features in the landscape that are related to its use, history and natural character should be retained and used as heritage resources related to intangible heritage.
- Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No development closer than 100m from the boundary of any burial grounds or unmarked graves. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey for access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained. A preconstruction micro-survey of each turbine footprint should be conducted to ensure no further unmarked graves are threatened.
- Commonages and outspans were located at water points, and these places were likely gathering points before the arrival of colonists and continued to provide communal resources. In the mid-20th century, many

old commonages came under the ownership of the Municipality, and have since been rented out to private individuals or organisations. The Municipality should facilitate the use of common land in a way that promotes the well-being and quality of life of the public. These sites can play a restorative role within the community, for instance for those who have limited alternative opportunities for recreation.

- Respect existing patterns, typologies and traditions of settlement-making by promoting the continuity of heritage features. These include: (a) indigenous; (b) colonial; and (c) current living heritage in the form of tangible and intangible associations to place.
- Alterations and additions to conservation-worthy structures should be sympathetic to their architectural character and period detailing.

12.3.2 Construction/ decommissioning

- Historic farmsteads must be protected from the impacts of heavy construction vehicles and increased numbers of people. No construction traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.
- A preconstruction micro-survey for turbines, access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.
- Duration and magnitude of construction/ decommissioning activity must be minimized to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Light vehicles should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Construction decommissioning traffic must operate at speeds that reduce dust and noise.
- No infrastructure or operational upgrades, such as boreholes, should impact negatively or reduce natural, on site water quality, quantity or access for the residents within or around the development site. Preferably any borehole or other water resource upgrade should also be made freely accessible to the residents living on site.
- Accommodation of construction staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation.
- Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur. A buffer of 50m around such planting patters should be maintained.
- Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development

that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. A preconstruction micro-survey for access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.

- Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed.
- Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not needlessly destroyed, as they add to the layering of the area. A preconstruction micro-survey for access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.
- Roads running through the area have historic stone way markers. Where these are found care should be taken that they are left in tact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers. A preconstruction micro-survey for access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.
- Where the historic function of a building/site is still intact, the function has heritage value and should be protected.
- Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Koup 1 should be maintained and integrity as a communal road for farm residents must be retained.

12.3.3 Operational

- Historic farmsteads must be protected from the impacts of operational facility vehicles and increased numbers of people. No WEF operations traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.
- No infrastructure or operational upgrades, such as boreholes, should impact negatively or reduce natural, on site water quality, quantity or access for the residents within or around the development site. Preferably any borehole or other water resource upgrade should also be made freely accessible to the residents living on site.
- Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns

include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur.

- Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged and a buffer of 100m around all burial ground or unmarked graves should be in place. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened.
- Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed.
- Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not needlessly destroyed, as they add to the layering of the area.
- Roads running through the area may have historic stone way markers. Where these are found care should be taken that they are left in tact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers.
- Where the historic function of a building/site is still intact, the function has heritage value and should be protected.
- Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Koup 1 should be maintained and integrity as a communal road for farm residents must be retained.
- Accommodation of WEF staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation.
- Light vehicles should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise.
- A preconstruction micro-survey for access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained during operational activities.

12.4 Socio-economic

The non-landowner residents on the Koup 1 site are in a symbiotic relationship with the environment and through cultivation and resource management have continued to exist and interact with the landscape in a way that has allowed for the relatively unchanged character of the landscape. This has created a unique

sense of place and relationship between the inhabitants and the place. The continued land use pattern and relationship to the land buffers the decline of the socio-economic position of the inhabitants, as they are able to maintain some level of subsistence with these resources. The ability for these residents to provide for themselves in this way must not be negatively impacted upon by the WEF development and must be supported, including financially, by the development. Their existence on the landscape, as the historic inhabitants of the area, previously disenfranchised and disempowered, is a fundamental element to the cultural landscape.

The Social Impact Assessment report for Koup 1 WEF considers the socio-economic impact of the development at a broader scale and concludes that (Bews and Associates, 2021) “While the project will create employment for local communities during the construction and operational phases, the more significant positive impact of the project will be the contribution it will make towards renewable energy infrastructure. It is evident that the cumulative impacts associated with changes to the social environment of the region are more significant than those attached to any one project. The change to the sense of place of an area that was once considered a pristine region of South Africa is considered a negative impact associated with the developments in the region. It is evident that, at the social level, the positive elements outweigh the negative and that the project carries with it a significant social benefit at a national level.”

Mitigation and recommendations:

Appropriate consultation and inclusion of local communities, including non-landowner residents on site and in the region, in all phases will prevent degradation of the socio-economic elements of the cultural landscape as well as potential loss of intangible indigenous knowledge. Loss of historic local inhabitants of the area due to reduction in economic opportunity or places for habitation and cultivation as a result of the WEF development will negatively impact on the character of the Koup landscape.

12.4.1 Planning/ pre-construction

- The findings of this report must be shared with identified interested and affected parties, including non-landowner residents on the development properties, in the EIA public participation process in order to further ascertain any intangible cultural resources that may exist on the landscape that have not been identified. A specialist qualified in recognising and discussing significance of intangible heritage resources should be present during the public meetings. The findings should inform the recommendations for appropriate mitigation for impacts to the cultural landscape.
- The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.
- The local community on and around the development should benefit from job opportunities created by the

proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.

- Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere.
- Local residents must be offered employment training opportunities associated with WEF developments at all phases.

12.4.2 Construction/ decommissioning

- An updated cultural landscapes impact assessment report must be completed should the WEF continue to be used after the term granted in this application. This report should include a detailed assessment of the socio-economic impacts to the cultural landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved.
- The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.
- The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.
- Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere.
- Local residents must be offered employment training opportunities associated with WEF developments at all phases.
- Sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.

12.4.3 Operational

- The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.
- The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and

human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.

- No infrastructure or operational upgrades, such as boreholes, should impact negatively or reduce natural, on site water quality, quantity or access for the residents within or around the development site. Preferably any borehole or other water resource upgrade should also be made freely accessible to the residents living on site.
- The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.
- Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere.
- Local residents must be offered employment training opportunities associated with WEF developments at all phases.
- Crop cultivation, sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.

12.5 Cumulative Impacts

This section evaluates the possible cumulative impacts on heritage resources associated with cultural landscapes with the addition of the Koup 1 WEF and associated grid infrastructure. The cumulative impact on heritage resources evaluated a 35-kilometer radius. It must further be noted that the evaluation is based on available heritage studies. The proposed WEF is located out of a REDZ. Although there are 6 WEF applications in process currently, none have yet been built and as a result the full impact of the development cannot be fully assessed.

The following must be considered in the analysis of the cumulative effect of development on heritage resources:

 Fixed datum or dataset: The region has never been covered by a heritage resources study that can account for all heritage resources. Further to this none of the heritage studies conducted can with certainty state that all heritage resources within the study area have been identified and evaluated. The region is not in a designated Renewable Energy Development Zone as identified in the national SEA study.

 Defined thresholds: The value judgment on the significance of a heritage site will vary from individual to individual and between interest groups. Thus implicating that heritage resources' significance can and does change over time. And so will the tipping threshold for impacts on a certain type of heritage resource;

 Threshold crossing: In the absence of a comprehensive dataset or heritage inventory of the entire region we will never be able to quantify or set a threshold to determine at what stage the impact from

developments on heritage resources has reached or is reaching the danger level or excludes the new development on this basis. (Godwin, 2011)

In review of the HIAs and EIAs it is noted that none of the reports for the area within 35kms include specialist Cultural Landscape Assessments. Without a regional database of this information it is impossible to offer a true cumulative impact of the proposed development. Cumulative impact assessment on cultural landscapes for the area is therefore based on minimal information and assumptions drawn from the general information of the area and the limited local cultural landscapes assessments that have been done for other proposed WEF facilities in the Karoo region where the cultural landscape is most similar.

A few specialist HIA and VIA reports in the area did consider cultural landscapes in their consideration of the developments being assessed for and they have been summarised here. It must be noted that these were not necessarily all assessed for WEFs and therefore the consideration of impacts would differ from this cultural landscapes report. Notwithstanding, the findings of these reports in terms of the significance of the landscape and potential mitigation are in line with those of this cultural landscapes assessment report for Koup 1 WEF.

Webley and Halkett's (2015) HIA for the Rystkuil Uranium Mine found that,

"Although technically the land is zoned as agricultural, in real terms the Cultural Landscape has the character of a wilderness. Occasional stock posts, dry stone kraals, fences, wind pumps, boundary beacons and tracks are the only apparent elements of human modification on the landscape. It appears, even in prehistoric times, to have been marginally inhabited.

Visual impacts occur when developments exceeds the visual capacity of the landscape to absorb the change and results in a radical change to the sense of place of the area or region.

 As a result of the flat horizontal landscape character visibility is high and the viewshed extends over a large area;

 Due to the inherent lack of available screening in the context with the flatter, wide open vistas, there is a high potential for visual impact in the flat arid Karoo landscapes.

 It is important that development is managed in such a way that does not detract from the elements which define significant landscape character, specifically relating to the tourism industry."

Their recommendations for the built environment heritage resources were,

"No demolition of any farm buildings may be undertaken without an assessment of the significance of the buildings by the heritage authority;

 If any of the existing farm buildings is used for mining accommodation, then the approval of the relevant heritage compliance authority is necessary for any building alterations;

 Haulage routes should avoid passing in close proximity to farm buildings."

Stead's (2008) VIA for the for the Rystkuil Uranium Mine made the following recommendations in his report:

" Avoid visual impacts to the R61 which will be bisected by the Ryst Kuil/De Pannen mining blocks. While

the route will have a potential view corridor across the mining operations, it is important to note that the R61 is not rated as having scenic qualities and is commonly used as a short cut to the N1;

 Avoid visual impacts to Karoo farmsteads and Karoo landscapes that have outstanding rural qualities. However, only one farmstead (Katdoornkuil) was identified as having potential Grade IIIC significance and it is located at least 2km from the Ryst Kuil Extension mining area;

 Avoid impacts on visually prominent ridgelines and skylines on the property."

Gibb and Shwartz's VIA (2018) for a powerline to link two substations nearby the Koup 1 site found in summary that, "It is anticipated that this concentration of facilities will alter the inherent sense of place and introduce an increasingly industrial character into a largely natural area. This will result in some form of cumulative impacts, although it is anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each these developments by the visual specialists."

PGS's HIA (2018) for the Mainstream grid connection found that,

- "There is a characteristic sense of remoteness in the Great Karroo area. This is related partly to the flatness of the land and subtle ridges elements with distant views in part of the Swartberg. However, these landscape exhibit very little qualities of use over time and as a result cannot be considered significant cultural landscapes.
- The placement of power lines and turbines will have a strong visual impact on the landscape because of the height and concentration of turbines. This however is not necessarily an adverse impact depending on how the turbines are placed and ordered.
- Placement of any power lines and turbines close to the Amospoortjie and Dwaalfontein werf may impact on heritage resources
- There is no possibility of hiding or mitigating the impact of the power lines or turbines other than through placement. Placement close to farms will impact visually on the environment.
- The N12 will be affected but it is not a scenic route.
- Skylines are affected owing to the predominance of the skyline in the landscape."

It must be noted that the N12 has been recognised as a scenic route. [4] The Findings of this CLA report for Koup 1 suggests planning and placement recommendations that would mitigate the impact on the cultural landscape.

Orton's (2021) HIAs on the proposed Nuweveld WEST/ NORTH/ EAST WEFs did consider the cultural landscape and found that, "The cultural landscapes of the region are broad and encompass archaeological, contemporary rural and natural landscapes. In the broadest sense, the entire study area and all surrounding land are part of the local cultural landscape. It is impossible to not impact the cultural landscape when constructing structures as large as wind turbines and, because it is largely the presence of the turbines that causes the impacts, the impacts will occur during all phases of the development. The specific nature of the

[4] It must be noted that the N12 has been recognised as a scenic route.

landscape, whether it competes directly with the development, how much landscape scarring would be required (e.g. from cut-and-fill work) and the visibility of the site from accessible public areas (i.e. roads) are key in determining the expected intensity of the impacts. In this instance, the landscape is almost entirely undisturbed, it lacks similar developments but the proposed turbines are all far from any public roads. As a result, the intensity is rated as moderate and, although the probability of the impact occurring is definite, the expected impact significance in the construction phase calculates to **moderate negative**. The visual impact assessment assesses the construction phase impacts on the Karoo landscape as moderate negative before mitigation (Lawson & Oberholzer 2021: tables 11 & 12). There is little that can be done to mitigate the visual intrusion of such large turbines and the construction vehicles in the landscape. It is good, though, that all turbines are located to one side (east) of the R381 so that views towards the west remain uninterrupted. At ground level there are various measures that can be taken to reduce landscape scarring. Altogether, with mitigation, it is expected that the impact significance will still be **moderate negative**."

It must be noted that the focus of heritage studies in the area has been on the material and tangible aspects of the landscape as identified in the NHRA. Cultural landscape assessments would ideally include consideration of intangible heritage associated to the tangible resources identified and a public participation process dealing with issues regarding inter alia intangible heritage, indigenous knowledge systems, oral histories, language and lifeways of the people who inhabit and use the landscape.

The Koup region is not located within a SEA identified REDZ zone or in one of the SEA strategic transmission corridors. Currently there are no operational renewable energy projects in the Koup region, however there are applications for both wind and solar energy developments within a 35km radius from the Koup WEF application site. Various electric grid connections and transmission lines are currently in operation along the N1 and the N12. Although their height surpasses any natural or cultural elements, the linear orientation of these lines, in most part adjacent to the road, do not cross the viewshed as one travels along the N12. Together with their light form and static nature, this reduces their visual impact. The associated infrastructure, such as substations, is more intrusive as the height, scale and angular form is more in conflict with the natural undulating horizontal lines of the surrounding landscape. These elements are currently relatively low scale and do not overwhelm the sense of place, but should be considered as part of the cumulative impact of the new renewable energy developments in the region.

Table 3: Existing and Proposed Renewable Energy Projects within 35km of Site

Project	DEA Reference No	Technology	Capacity	Status of Application / Development
Proposed Beaufort West Wind Farm	12/12/20/1784/1	Wind	140 MW	Approved
Proposed Trakas Wind Farm	12/12/20/1784/2	Wind	140 MW	Approved

Proposed Wind and Solar Facility on the Farm Lombardskraal 330	14/12/16/3/3/2/406	Solar	20 MW	EIA in Process
Proposed Leeu Gamka Solar Power Plant	12/12/20/2296	Solar		Withdrawn/Lapsed
Kwagga Wind Energy Facility 1 (Pty) Ltd	Pending	Wind	279 MW	EIA in Process
Kwagga Wind Energy Facility 2 (Pty) Ltd	Pending	Wind	341 MW	EIA in Process
Kwagga Wind Energy Facility 3 (Pty) Ltd	Pending	Wind	204.6 MW	EIA in Process
Proposed Koup 2 WEF	TBA	Wind	140 MW	EIA in Process

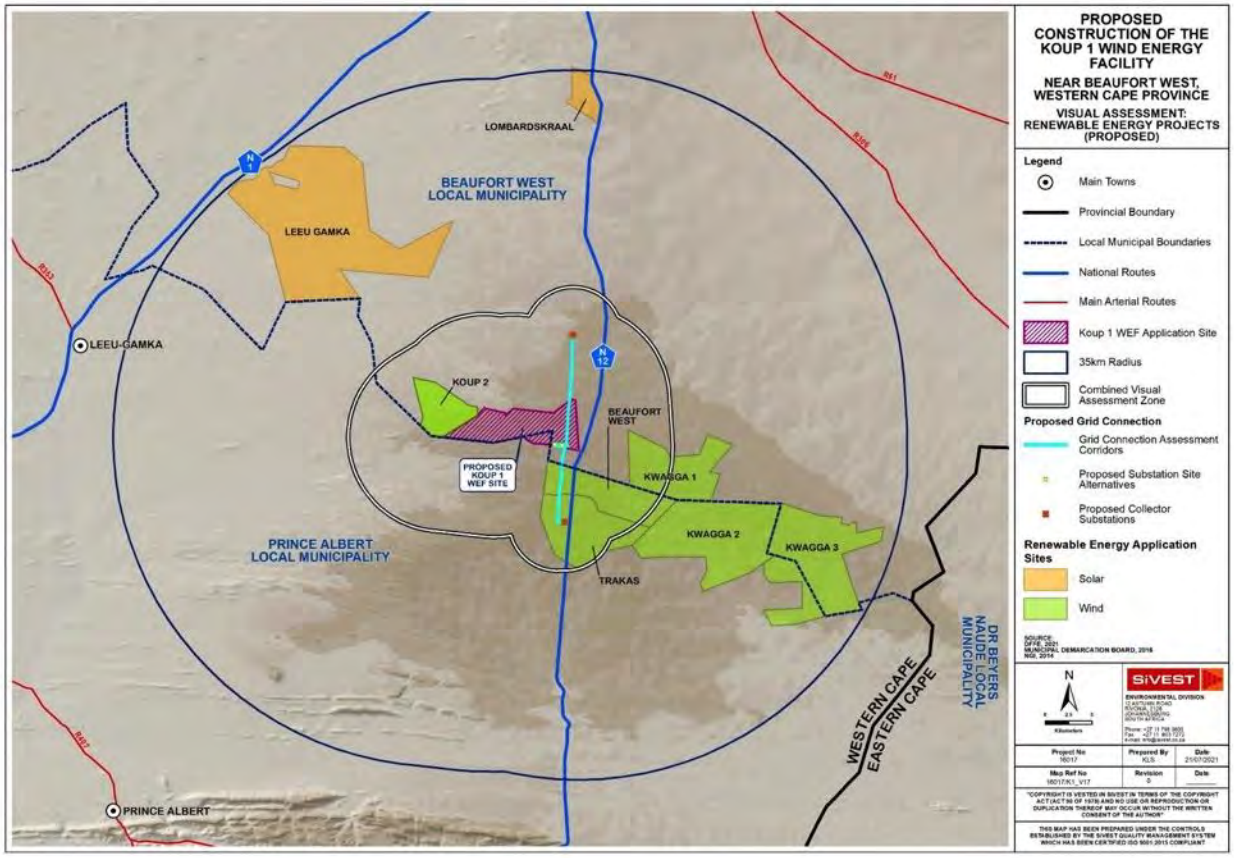

Figure 61: Renewable energy application sites in process in the surrounding area. The solar parks RE application for Leeu Gamka has been withdrawn/ lapsed which reduces the development extent on the western side of the N12.

The numerous applications and proposed establishment of several wind energy facilities between Beaufort West and the Swartberg mountain range, as well as the adjacent regions in the Karoo have sparked a concern with regards to cumulative impacts that these projects may have on the heritage resources and the cultural landscape. The approval of an increased number of RE projects in the region may lead to the mass industrialisation of the landscape that changes the character of the landscape and hence impacts on the sense of place and aesthetic value negatively. The Koup region has been considered as a wilderness landscape with a significant footprint of human habitation, cultural contact and conflict, whereby the cumulative impact of increased WEFs will involve significant sterilisation of the aesthetic qualities of the landscape. The cumulative impacts on tangible heritage resources can be considered low in general due to

the thin density in the area, except when considering the cultural landscape which is negatively impacted by the construction of renewable energy, wind turbines and associated electrical infrastructure on the 'sense of place', land use patterns and its scenic beauty. The cumulative impact on the cultural landscape is thus unavoidably high without mitigation, with losses to perceptual qualities and historic land use. Similarly, cumulative impacts to living heritage sites will be unavoidably high without mitigation, with losses including the physical expressions of cultural heritage as well as to sense of place and cultural landscapes. While mitigation in the form of avoidance and protection of these sites can go some way to reducing cumulative impacts, these are likely to remain moderate.

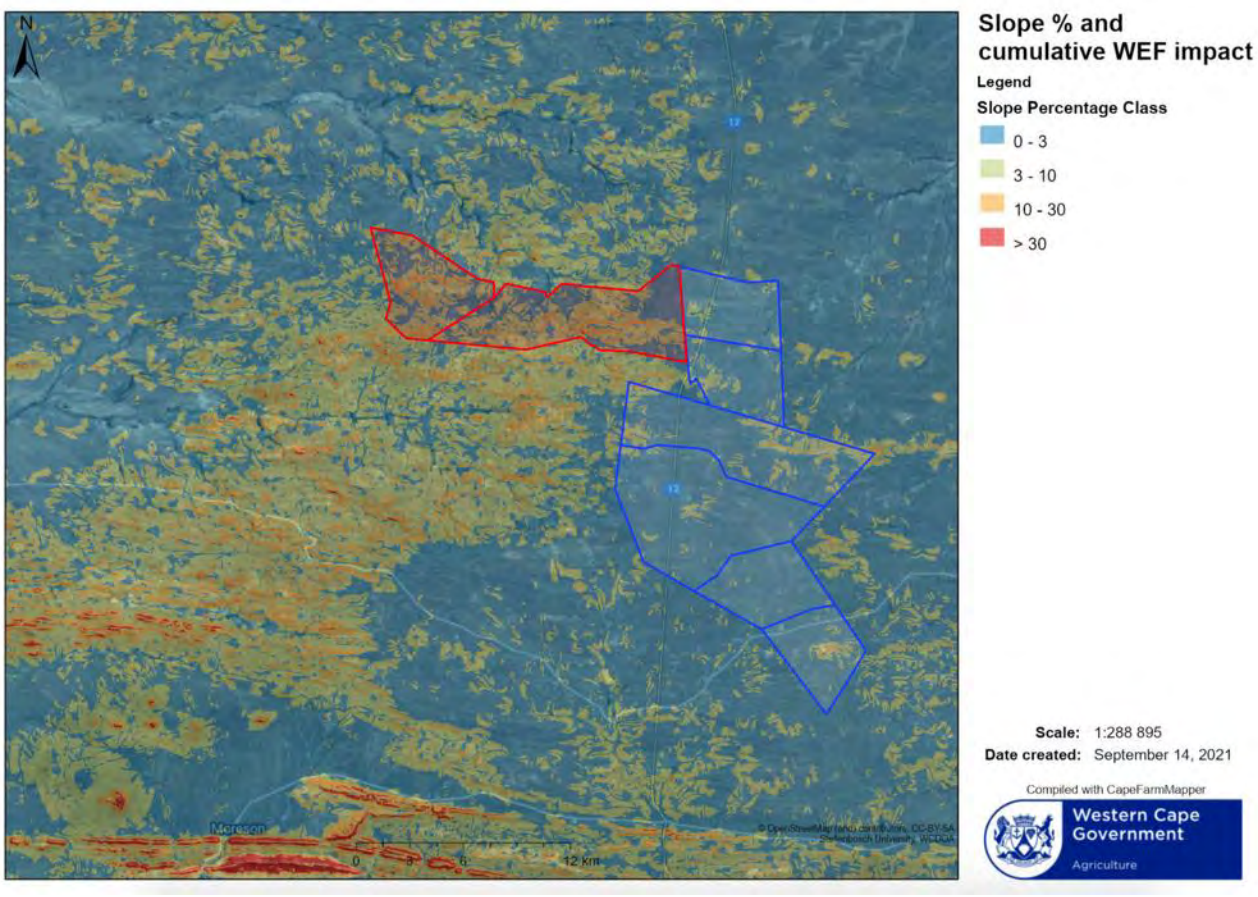

Figure 62: A map showing slope % classification for the wider Koup region, with the Koup 1 and Koup 2 WEF developments in red and other proposed WEF development in blue polygons. Note that the proposed Koup 1 and 2 WEFs to the west of the N12 are located on the more elevated ridgelines of the landscape, increasing their visual impact when compared to the developments proposed largely to the east of the N12 (blue).

The proposed Koup 1 and Koup 2 WEF developments located to the west of the N12 are located on the elevated ridgelines of the landscape, increasing their visual impact when compared to the developments proposed largely to the east of the N12 (Figure 62). This could result in the ridgelines masking the impact of the turbines to some degree, by combining the vertical elements in one area of the landscape, or it could increase the negative impact of the turbines on the landscape by increasing their height to unacceptable levels and overwhelming the impact on the viewshed. By placing turbines away from the high and prominent ridgelines as well as below rather than on top of steep and high slopes, the height of the turbines should be

somewhat reduced so that they can be more gently incorporated visually into the skyline of the landscape. The infrastructure associated with the WEF, such as laydown areas, substations and gridlines, should be less conspicuous located between the ridgelines, at low lying elevations, than on the vast flat plains to the east.

The main negative impacts by WEF development and associated infrastructure to the cultural landscape are on the aesthetic and historic value of the area, including the local residents'[5] opportunity to continue their historic patterns of land use and relationship to the landscape. The historic inhabitants of the area are an essential element to the historic and cultural significance of the cultural landscape and their continued existence in this place with the opportunity to practice traditional land use patterns and knowledge systems are critical in the conservation of the Koup region's intangible heritage.

The cumulative visual impact of the proposed Koup 1 WEF on the region has been considered by Schwartz (VIA, 2021) and is supported by the findings of this cultural landscapes impact assessment in terms of aesthetic heritage significance. The recommendations for cumulative visual impact according to the VIA (Schwartz, 2021) impact rating table is supported by this cultural landscape impact assessment.

"Although it is important to assess the visual impacts of the proposed Koup 1 WEF and grid connection infrastructure specifically, it is equally important to assess the cumulative visual impact that could materialise if other renewable energy facilities (both wind and solar facilities) and associated infrastructure projects are developed in the broader area. Cumulative impacts occur where existing or planned developments, in conjunction with the proposed development, result in significant incremental changes in the broader study area. In this instance, such developments would include renewable energy facilities and associated infrastructure development.

Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region. Although power lines and substations are relatively small developments when compared to renewable energy facilities, they will introduce a more industrial character into the landscape, thus altering the sense of place.

Six renewable energy project applications were identified as 'in process' within a 35 km radius of the proposed Koup 1 WEF and grid connection infrastructure. It is assumed that all of these renewable energy developments include grid connection infrastructure. The six (6) WEFs, namely Beaufort West WEF, Trakas WEF, Kwagga WEFs 1, 2 and 3 and Koup 2 WEF are all located in relatively close proximity to Koup 1 WEF. Beaufort West and Trakas WEFs are approximately 2kms and 6km south of Koup 1 respectively,

[5] 'Local residents' refers to, and must include, the people currently living on site and utilizing the natural resources there (e.g. site managers or rentee's) and not necessarily landowners. These residents often represent the historic occupants of this landscape, who have been historically disenfranchised and disempowered by the lack of land ownership opportunity.

while the three Kwagga WEFs are between 5km and 23km east of the Koup 1 WEF site. Koup 2 WEF, which lies on the western boundary of the Koup 1 WEF site, is the subject of a separate EIA process, which is currently being undertaken in parallel to this EIA for the proposed Koup 1 WEF. These proposed WEFs, in conjunction with the associated grid connection infrastructure, will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts. The number of renewable energy facilities within the surrounding area and their potential for large scale visual impacts will significantly alter the sense of place and visual character in the broader region, as well as exacerbate the visual impacts on surrounding visual receptors, once constructed.

From a visual perspective, the further concentration of renewable energy facilities as proposed will inevitably change the visual character of the area and alter the inherent sense of place, introducing an increasingly industrial character into the broader area, and resulting in significant cumulative impacts."

Significant negative cumulative impacts will occur due to the night lighting associated with WEFs. As identified and supported by the VIA (Schwartz, 2021) the negative impact of this WEF element on the cultural landscape will alter the sense of place for the duration of the operation of the facility.

"Much of the study area is characterised by natural areas with pastoral elements and low densities of human settlement. As a result, relatively few light sources are present in the broader area surrounding the proposed development site. The closest built-up area is the town of Beaufort West which is situated approximately 55km north of the application site and is thus too far away to have significant impacts on the night scene. At night, the general study area is therefore characterised by a picturesque dark starry sky and the visual character of the night environment across the broader area is largely 'unpolluted' and pristine. Sources of light in the area are limited to isolated lighting from surrounding farmsteads and transient light from the passing cars travelling along the N12 national route. Given the scale of the proposed WEF, the operational and security lighting required for the proposed project is likely to intrude on the nightscape and create glare, which will contrast with the extremely dark backdrop of the surrounding area. In addition, red hazard lights placed on top of the turbines may be particularly noticeable as their colour will differ from the few lights typically found within the environment and the flashing will draw attention to them."

However, with the proposed recommendations of this CLA the cumulative negative impact of the proposed WEFs on the cultural landscape can be reduced.

12.5.1 Recommendations to mitigate for cumulative impact on the Koup cultural landscape.

In addition to the proposed recommendations of this CLA the cumulative negative impact of the proposed WEFs on the cultural landscape can be reduced with the following recommendations on WEF development for the regional cultural landscape.

To reduce the negative cumulative impact of the proposed WEFs on the N12 scenic route and the character and sense of place of the cultural landscape of the Koup region, it is recommended that WEF turbines be constructed either to the west or east of the N12 and not on either side along the same stretch of N12.

The WEFs should read as separate developments with vast spaces in between to continue the reading on the landscape of places amongst the vastness as is the historical trend of farmsteads in the Koup region.

Following the existing natural ridgelines that run east to west may reduce the impact of the cumulative WEF developments on the cultural landscape as the turbines, although out of scale and form with the surrounding area due to their verticality, may follow the skyline and break the views where they have historically been reduced already by the height of the ridges. The turbines, if placed sensitively and far away enough from the N12 and not on the ridgeline or steep slopes, so as not to feel overwhelming, can emphasise the experience of the poort elements of the cultural landscape if placed to follow the natural undulating landform.

These recommendations should allow for the continued opportunity by travellers to experience the vistas of the vast open wilderness spaces and views of the mountain ranges in the distance at all points along the N12 scenic drive.

13. IMPACT RATING TABLES

13.1 Planning / Pre construction

Table 4: Rating of impacts for Planning/ Pre-construction Phase

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	TUs (+	S		E	P	R	L	D	I / M	TOTAL	TUs (+	S
Planning Phase																				
Ecological	Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	2	4	3	3	3	2	30	-	Negative Medium	Please see page 65	2	2	2	2	3	2	22	-	Negative Low
Aesthetic	Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape - Relocation of turbines has been offset with grid corridor, laydown and substation locations.	2	4	3	3	3	3	45		Negative High	Please see page 67	2	4	2	3	3	3	42		Negative medium
Historic	Inappropriate infrastructure layout planning degrades historic	2	4	3	2	3	3	42		Negative Medium	Please see page 70	2	2	2	1	3	2	20		Negative Low

	elements of the cultural landscape.																			
Socio-economic	Non-landowner residents' lack of representation in planning and public participation process leads to loss of local knowledge, socio-economic empowerment and character of the cultural landscape.	2	4	4	3	4	4	68	-	Negative Very High	Please see page 75	2	2	1	2	4	2	22	-	Positive Low

13.2 Construction/ Decommissioning

Table 5: Rating of impacts for Construction/ Decommissioning Phase

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ / -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ / -)	S
Construction/ Decommissioning Phase																				
Ecological	Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment - Relocation of turbines has been offset with grid corridor and collector substation locations.	2	4	3	3	3	3	45	-	Negative High	Please see page 66	2	2	2	1	3	2	20	-	Negative Low

Aesthetic	WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place – Relocation of turbines has been offset with grid corridor, laydown and substation locations.	2	4	3	3	3	4	60		Negative high	Please see page 69	2	4	2	2	2	2	24		Negative Medium
Historic	Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities.	2	4	4	2	4	3	48		Negative high	Please see page 72	2	2	3	2	2	2	22		Negative low
Socio-economic	Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities.	2	3	4	4	4	4	68		Negative very high	Please see page 76	1	3	3	1	3	2	22		Positive low

13.3 Operational

Table 6: Rating of impacts for Operational Phase

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	O / B	C / U	S		E	P	R	L	D	I / M	O / B	C / U	S

							M										M			
Operation Phase																				
Ecological	Inappropriate operational activities degrade the significant ecological elements of the cultural landscape - Relocation of turbines has been offset with grid corridor and collector substation locations.	1	4	4	2	3	4	56		Negative high	Please see page 66	1	1	4	2	3	2	22		Negative low
Aesthetic	Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place - Relocation of turbines has been offset with grid corridor, laydown and substation locations.	2	4	3	3	3	3	45		Negative high	Please see page 69	2	4	2	3	3	2	28		Negative medium
Historic	Inappropriate operational activities degrade the significant historic elements of the cultural landscape altering the character and sense of place	2	4	4	4	4	4	72		Negative very high	Please see page 73	2	2	4	2	3	2	26		Negative medium
Socio-economic	Inappropriate operational	2	4	3	4	4	4	68		Negative very high	Please see page 76	2	3	2	2	3	2	24		Positive medium

	activities degrade the significant socio-economic and lifestyle opportunities of the cultural landscape																			

13.4 Cumulative impacts

Table 7: Rating of cumulative impacts

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ -)	S
CumulativePhase																				
Ecological	Inappropriate cumulative development degrade the significant ecological elements of the cultural landscape	3	4	4	3	4	4	72		Negative very high	Please see page 84 for mitigation recommendations for specifically cumulative impacts. NOTE: If the recommendations in this CLA are applied to the majority of the surrounding RE developments, impacts can be reduced to ratings given in this table. With no specialist CLA reports done on the surrounding applications, cumulative impact on	3	2	3	2	3	2	26		Negative medium
Aesthetic	Inappropriate cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place	3	4	4	3	3	4	68		Negative very high		3	4	2	2	3	3	42		Negative medium
Historic	Inappropriate cumulative	3	4	4	4	4	4	76		Negative very high		3	2	3	2	3	2	26		Negative medium

	development degrades the significant historic elements of the cultural landscape altering the character and sense of place										the cultural landscape of the region has not been considered and cannot be included in this rating.									
Socio-economic	Inappropriate cumulative development degrade the significant socio-economic opportunities of the cultural landscape	3	4	3	4	4	4	72		Negative very high		3	3	1	1	4	2	24		Positive medium

14. COMPARATIVE ASSESSMENT OF ALTERNATIVES

Key

PREFERRED	The alternative will result in a low impact / reduce the impact / result in a positive impact
FAVOURABLE	The impact will be relatively insignificant
LEAST PREFERRED	The alternative will result in a high impact / increase the impact
NO PREFERENCE	The alternative will result in equal impacts

Alternative	Preference	Reasons (incl. potential issues)
SUBSTATION SITE ALTERNATIVES		
Substation Option 1	Favourable on north side of the farm road with 300m buffer from farm road	The substation location should be located on the same side as other development infrastructure and to the north of the farm road so as to limit the visual impact to one viewshed. As there is a ridge behind this development area, for which turbine placement is proposed, location of the substation to the north of the farm road contains the impact to one side of the road and the infrastructure will not interrupt view lines of the mountain ranges in the distance. Must be moved out of the 300m farm road buffer without impacting on a riverine corridor flood line or a slope over 3%.
CONSTRUCTION LAYDOWN AREA SITE ALTERNATIVES		
Construction Laydown Area Option 1	Favourable with 300m historic buffer from farm road	Alternatives Option 1 for the laydown area is preferred in terms of cultural landscape assessment as it limits the construction to a smaller footprint on the landscape and locates the infrastructure far enough from the N12 and out of the Koup 1 landscape as far possible. Must be moved out of the 300m farm road buffer without impacting on a riverine corridor flood line or a slope over 3%.
GRID CORRIDOR SITE ALTERNATIVES		
Grid corridor Option 2	Least preferred	Increased clutter and degradation of rural cultural landscape along the N12 scenic route. Collector substation located within the N12

Alternative	Preference	Reasons (incl. potential issues)
		1km buffer as well as inside a identified CBA.

14.1 No-Go Alternative

It is mandatory to consider the “no-go” option in the BA process. The no development alternative option assumes the site remains in its current state, i.e. there is no construction of a WEF facility and associated infrastructure in the proposed project area and the status quo would proceed. This option would result in no development impact on the Koup 1 cultural landscape and it should continue to operate in the similar way maintaining the current significance.

If the Koup 1 site is not developed, the WEF and associated infrastructure will not be built to the west of the N12 and the aesthetic and visual impact of new RE developments will be contained to the eastern viewshed.

The potential for socio-economic opportunities related to the construction and operation of the RE facility for local residents in the area would be lost. The potential for increased RE energy capacity nationally would be lost in this instance but certainly gained elsewhere.

15. CONCLUSION

15.1 Summary of Findings

The Koup region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock farming with limited farmstead crop cultivation. The vastness and relative homogenous nature of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning department to consider this application in terms of other renewable energy developments that are planned/proposed for the Koup area, notably the proposed RE developments included in the cumulative impact section of this report.

Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.

Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).

The findings of this report, coupled with the proposed layout for development of wind turbines, which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site if the report's recommendations are followed. The mitigating recommendations in this report consider the ecological, aesthetic, historic and socio-economic value lines that underpin the layers of significance that combine to create the character of the place and the cultural landscape of the Koup. These recommendations include road and farmstead complex buffers which incorporate cultivated areas and graves, steep slope and ridgeline no-go areas as well as consideration of the unique land form of the site, CBA and ESA no-go areas, as well as mechanisms to support the non-landowner residents that live on the site in being bale to continue their indigenous land use patterns, knowledge and social systems. These mitigations will reduce the impact on the surrounding landscape and heritage resources but due to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.

15.2 Heritage Indicators

The conclusion of this CLA study has culminated in the map (Figure 63) showing location of proposed turbines and WEF infrastructure with the following heritage indicators and development buffers:

- A 1000m buffer to either side of the N12 for turbine and infrastructure placement (pink buffer);
- 300m buffer to either side of identified significant historic farm roads (pink) for turbine placement, substation and laydown area (buffer not shown in map, only roads identified);
- 800m buffer around historic farmsteads (red circles) for turbine placements; and
- 50m outer boundary buffer for roads and infrastructure around farmsteads including cultivated areas and graves – integrity of farmstead complex as a whole should be retained and no WEF roads running through farmstead complexes;
- 200m freestanding graded heritage structure buffer for new roads and infrastructure, including road upgrades;
- 100m buffer from cemetery or unmarked burial for all development;
- existing roads to be used with minimal upgrade as far as possible;
- no-go areas on mountain ridges and steep slopes (over 10%) for all infrastructure;
- riverine corridors 100yr flood line buffer (ecological) or 100m buffer (archeological) whichever is further (buffers not indicated).
- CBA and ESA no-go areas for all development (green shading)
- Koup poort buffer (light blue shading) included in the 300m farm road buffer.
- A preconstruction micro-survey for turbines, access roads, substations, laydown areas and gridlines should be completed with CLA specialist to ensure appropriate buffers are maintained.

Further, the following changes to the current proposed layout is recommended:

- Turbine 11 must be relocated outside of the historic farmstead buffer;
- the proposed substation should be located to the north of the farm entrance road;
- the laydown area and substation should be located outside the 300m farm road buffer without impacting on the riverine corridor flood line and slopes over 3%;
- new access roads must be relocated to avoid slopes over 10% and visually sensitive slopes impacting on the views from the historic farm roads.

Further heritage indicators and recommendations for construction/ decommissioning and operational phases unsuitable for mapping have been made in the CLA (Section 12 on page 65) and are necessary for the identified negative impacts to be reduced from very high to medium negative impact of the proposed Koup 1 WEF and associated infrastructure on the cultural landscape.

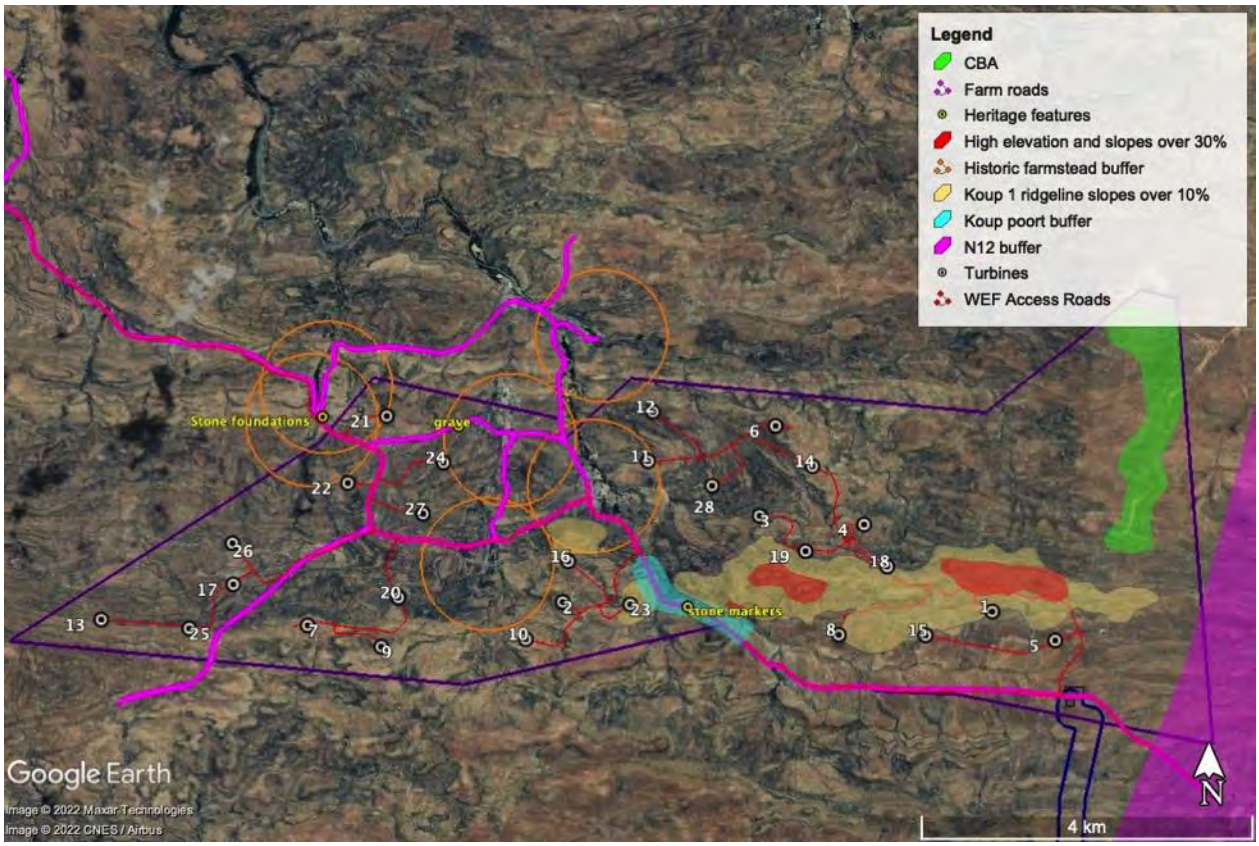

Figure 63: Cultural Landscapes Assessment heritage indicators and buffers map for proposed Koup 1 WEF development (Note: 300m buffer for pink farm roads not indicated; 100m/ flood line riverine corridor and ESA buffers not indicated).

15.3 Conclusion and Impact Statement

From this study it is recommended that only 1 of turbines is not feasible in their current proposed locations for the proposed Koup 1 WEF when taking into consideration impacts to cultural landscapes. The substation and laydown area locations require some layout alteration to accommodate the farm road buffer. The access roads

need to avoid slopes over 10% and visually sensitive slopes impacting on the historic farm roads. The collector substation for proposed Gridline Option 2 requires relocation out of the N12 scenic road buffer and the CBA.

With these buffers in place and all other recommendations followed, the overall impact to the cultural landscape for the proposed Koup 1 WEF and associated grid connection and infrastructure can be reduced from very high to moderate.

There are no fatal flaws and the development can proceed with CLA recommendations and mitigation in place.

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