



## **Appendix 6H** Transportation





GENISIS ENERTRAG KOUP 2 (PTY) LTD

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# **KOUP 2 WIND ENERGY FACILITIES**

## Transportation Study

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For:	GENESIS ENERTRAG KOUP 1 (PTY) LTD	
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# EXECUTIVE SUMMARY

## Objective

The main objective of the 'Transportation Study' is to determine the impact/s of the proposed development on the area with respect to transportation and included in the Environmental Impact Assessment (EIA). The assessment will comprise of a desktop assessment and will include preliminary transportation related matters arising during the construction phase, through the Operation & Maintenance Phase, up to and including the decommissioning phase of the development. The assessment of these phases, will take into account the transportation of normal and abnormal vehicles, which are made up of *inter alia*; - WEF components, construction materials, equipment, construction workers and employees.

## Key Findings

We don't foresee any major risks with respect the proposed development and therefore include our recommendations below to take note of prior to and during the detailed design and construction stages. It should however be noted that a number of recommendations were highlighted from previous projects and are therefore noted as important.

The Koup WEF development consists of two separate EIA applications namely; - Koup 1 & Koup 2. Although this report only focuses on the Koup 2 WEF, both developments are taken into account for this study as they share a common access point from the N12 Freeway.

The construction phase of this development will typically generate the highest number of additional vehicles. It will however be temporary and impacts are considered to be minimal / low.

Existing access from the N12 Freeway has sufficient sight distance in both directions and hence an upgrade to the existing access will be required from the Western Cape Department of Transport & Public Works.

A number of mitigation measures are proposed to accommodate the development and to reduce the impact to the surrounding road network.

## Recommendations

With reference to this report, associated assessment and the findings made within, it is SiVEST's opinion that the Koup 2 Wind Energy Facility and associated infrastructure will have a nominal impact on the existing traffic network. The project is therefore deemed acceptable from a transport perspective, provided the recommendations and mitigations measures in this report are implemented, and hence the Environmental Authorisation (EA) should be granted for the EIA application.

## DECLARATION BY SPECIALIST

I, MERCHANDT LE MAITRE, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of Specialist:



Name of Company: SiVEST SA (PTY) Ltd

Date: 13<sup>th</sup> August 2021

**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- <ul style="list-style-type: none"> <li>i. the specialist who prepared the report; and</li> <li>ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;</li> </ul>	Refer Section 4
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Refer above
c) an indication of the scope of, and the purpose for which, the report was prepared;	Refer Section 3
(cA) an indication of the quality and age of base data used for the specialist report;	Refer Section 7.1
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Refer Section 10 Refer Section 11
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Refer Section 3
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Refer Section 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;	Refer Section 12
g) an identification of any areas to be avoided, including buffers;	N/A
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;	Refer Figure 12.1
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Refer Section 5
j) a description of the findings and potential implications of such findings on the impact of the proposed activity, (including identified alternatives on the environment) or activities;	Refer Section 7 Refer Section 13
k) any mitigation measures for inclusion in the EMPr;	Refer Section 10
l) any conditions for inclusion in the environmental authorisation;	Refer Section 10
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Refer Section 10
n) a reasoned opinion- <ul style="list-style-type: none"> <li>i. (as to) whether the proposed activity, activities or portions thereof should be authorised; <ul style="list-style-type: none"> <li>(iA) regarding the acceptability of the proposed activity or activities; and</li> </ul> </li> <li>ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance,</li> </ul>	Refer Section 13

management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
q) any other information requested by the competent authority.	N/A
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.	N/A

# GENESIS ENERTRAG KOUP 1 (PTY) LTD

## KOUP 2 WIND ENERGY FACILITY

### TRANSPORTATION STUDY

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# 1. INTRODUCTION

SiVEST Civil Engineering Division was appointed by Genesis Enertrag Koups 2 (Pty) Ltd (hereafter referred to as "Genesis" or the "Developer") to complete a Transportation Study for the proposed 140MW Koups 2 Wind Energy Facility (WEF) (hereafter referred to as the "proposed facility / facilities or the "development") situated approximately 55km south of the town of Beaufort West in the Western Cape Province.

The proposed facility, situated between Beaufort West and De Rust will not be located within the future Renewable Energy Development Zones (REDZs), namely the 'Beaufort West REDZ'.

The Koups WEF development consists of two separate EIA applications namely; - Koups 1 & Koups 2. Although this report only focuses on the Koups 2 WEF, both developments are taken into account for this study as they share a common access point from the N12 Freeway.

## 2. WIND ENERGY FACILITY COMPONENTS

The WEF will consist of the following:

### 2.1 Wind Farm Components

It is anticipated that the proposed Koups 2 WEF will comprise of thirty-two(32) 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. The 132kV overhead power line will however require a separate EA and is subject to a separate BA process, which is currently being undertaken in parallel to the EIA process. In summary, the proposed Koups 2 WEF will include the following components:

- Up to 32 wind turbines, each with a generating capacity of between 5.6MW and 6.6MW, and with a maximum combined 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 hardstand areas / platforms (also known as crane pads) of approximately 90m x 50m (total footprint of approx. 4 500m<sup>2</sup>) 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 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 2.2ha. 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.

## **2.2 Grid Connection Components**

The proposed grid connection infrastructure to serve the Koups 2 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 1ha. 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 via the proposed Koups 1 collector substation 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..

## **3. OBJECTIVES AND SCOPE OF WORK**

The main objective of the 'Transportation Study' is to determine the impact/s of the proposed development on the area with respect to transportation. The assessment will comprise of a desktop assessment and will include preliminary transportation related matters arising during the construction

phase, through the Operation & Maintenance Phase, up to and including the decommissioning phase of the development. The assessment of these phases, will take into account the transportation of normal and abnormal vehicles, which are made up of *inter alia*; - WEF components, construction materials, equipment, construction workers and employees.

The scope of works consists of the following:

- a) A site investigation which was completed the 22<sup>nd</sup> June 2021.
- b) Consultations with the relevant authorities and / or stakeholders which includes the collection of traffic data and information.
- c) Desktop analysis of traffic data and information from the various authorities and / or stakeholders. Analysis to include the evaluation of the capacity of the road network (if required)
- d) Evaluate the impact of the proposed development on the existing road network / traffic volumes and populating of a suitable 'Impact Rating System'
- e) Determine specific traffic needs during the different phases of implementation.
- f) Conclude & propose possible mitigation measures
- g) Identify the position and suitability of the preferred access road alternatives.
- h) Confirm the associated clearances required for the necessary equipment to be transported from the point of delivery to the various sites.
- i) Confirm freight and transport requirements during construction, operation and maintenance period.
- j) Propose origins and destinations of equipment
- k) Determine Abnormal load requirements (if any)
- l) Seasonal impacts do not affect the assessment.

### **3.1 Legal Requirement & Guidelines**

Key legal requirements and guidelines to the proposed facilities are as follows:

- o Government Notice 509 (GN509) as published in Government Gazette 40229 of 2016 and refers to the National Water Act, 1998 (Act No. 36 of 1998)
- o National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA)
- o National Water Act, 1998 (Act No 36 of 1998) (NWA)
- o Road Safety Act (Act No 93 of 1996)
- o National Road Traffic Regulations, 2000

## **4. SPECIALIST CREDENTIALS**

The Transportation Study has been compiled by Mr. Merchandt Le Maitre from SiVEST Consulting Engineers. He has a B Tech (Baccalaureus Technologiae) in Civil Engineering with over 16 years of experience in this field. He is registered as a Pr. Tech Eng (Professional Engineering Technician) with the Engineering Council of South (ECSA) and is a corporate member of the South African Institute of Civil Engineers (SAICE) and an affiliate member of the South African Wind Energy Association (SAWEA). A full Curriculum Vitae is included in 'Appendix A'

**Table 4.1 Specialist Qualifications and Experience**

<b>Environmental Practitioner</b>	SiVEST (Pty) Ltd
<b>Contact Details</b>	merchandtm@sivest.co.za
<b>Qualifications</b>	B Tech (Baccalaureus Technologiae) in Civil Engineering
<b>Expertise to carry out the Transportation Study</b>	<ol style="list-style-type: none"> <li>1. Tooverberg WEF</li> <li>2. Umsobomvu PV</li> <li>3. Droogfontein 3 PV</li> <li>4. Mierdam PV</li> <li>5. Dwarsrug PV</li> <li>6. Platsjambok West PV</li> <li>7. Platsjambok East PV</li> <li>8. Loeriesfontein 3 PV</li> <li>9. Koeris BESS</li> </ol>

## 5. ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are to be noted:

- The analysis is based on the information provided at the time by Genesis Enertrag and their representatives.
- The Koup WEF development consists of two separate EIA applications namely; - Koup 1 & Koup 2. Although this report only focuses on the Koup 2 WEF, both developments are taken into account for this study as they share a common access point from the N12 Freeway.
- Digital Terrain Model: 25m DEM from NGI (2014) & 2m DEM from GeoSmart (2016:3222DA)
- Technical Specifications for this facility are:

Technical Component	Dimensions
Number of Turbines	Maximum of 32
Capacity	140MW Max
Hub Height	±200m
Rotor Diameter	±200m
Construction Period (assumed)	±24 months / 2 years (TBC)
Expected Lifespan	20 years (TBC)
Road Width	Up to 10m but on average 8m

- Traffic Station Data / Counts and trip generation calculations are for one direction only and do not include return trips, unless indicated.
- This assessment is limited to the impact the development traffic will have on the network and not on the wider impacts known as background traffic. Such impacts can only be addressed in a detailed Traffic Impact Study which takes into account actual traffic counts undertaken during the peak periods.
- The information provided in this report is an informed estimate. Construction related traffic may however vary and be different to the information provided during construction phases as a result of supplier delivery schedule changes.

## 6. PROJECT DESCRIPTION

### 6.1 Locality

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.

The overall objective is to generate electricity by means of renewable energy technology capturing wind energy to feed into the National Grid, which will be procured under either the Renewable Energy Independent Power Producer Procurement Program (REIPPPP), other government run procurement programmes or for sale to private entities if required.

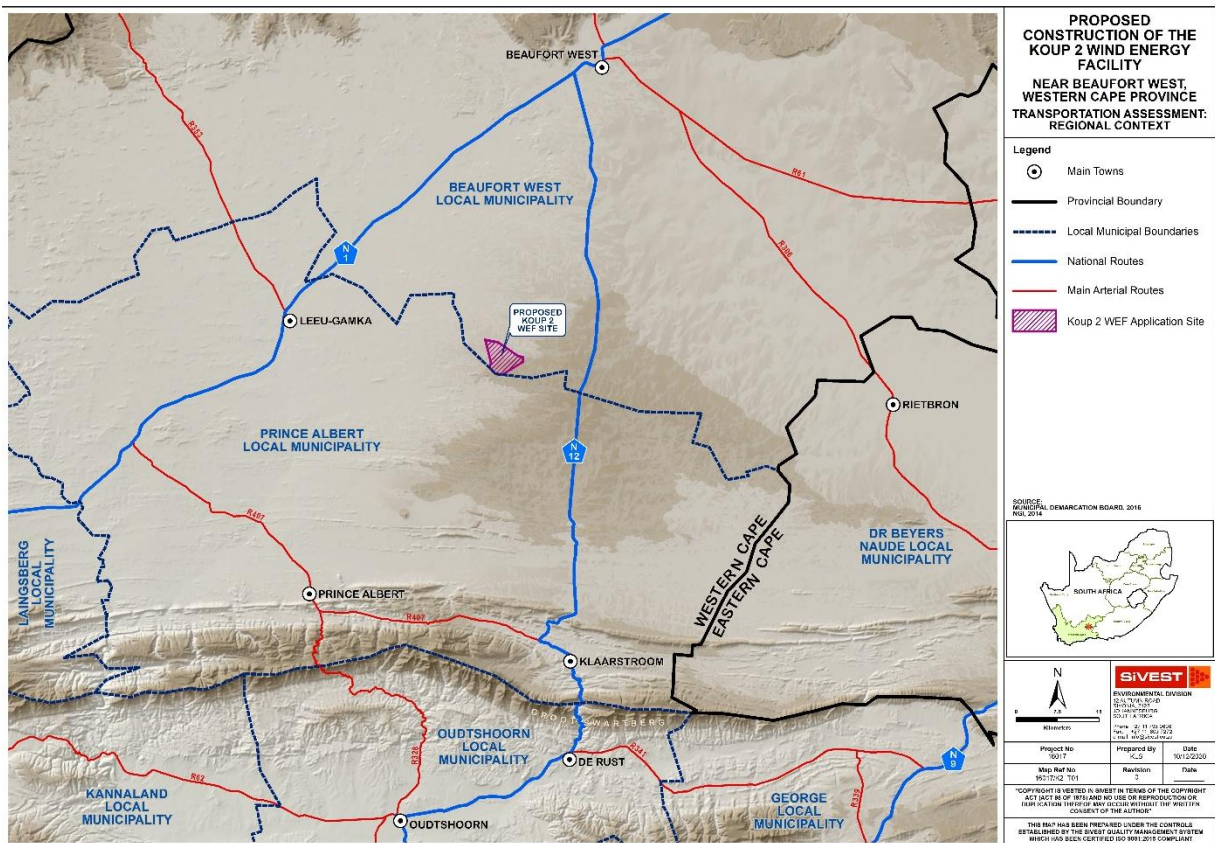


Figure 6.1 Regional Context

The proposed site for the WEF facility is ± 2 466ha in extent and covers the following properties (Refer Figure 6.2):

#### Koup 2

- Portion 1 of the farm Kaffirs Kraal 380
- Portion 8 of the farm Kaffirs Kraal 380

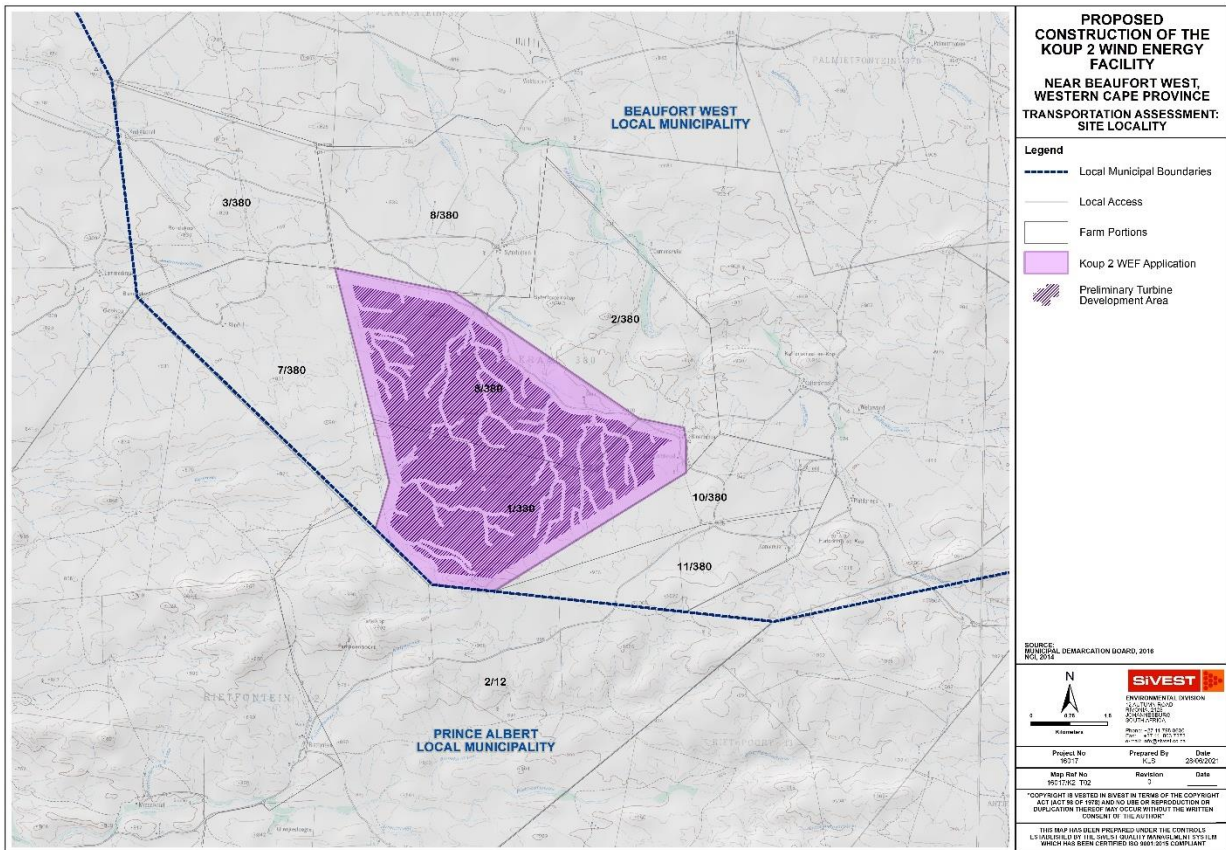


Figure 6.2 Koup 2 WEF Site Locality

## 7. TRANSPORTATION

Both the proposed Koup 1 & 2 WEF sites are located in close proximity to national / provincial roads. Existing access onto the facilities already exists in the form of farm access points, however, the access for the future facility expansions, will need to be upgraded or moved to new positions in order to accommodate the proposed adjusted land use.

For Koup 2 WEF, the existing access position is located  $\pm 11\ 709\text{m}$  west of the surfaced N12 National Road (Road No: TR03305) and traverses over the adjacent Koup 2 WEF. Road TR03305 is a proclaimed road and falls under the jurisdiction of the Western Cape Provincial Administration. The access road between the development and the N12 Freeway is a private gravel farm road and traverses over the Remainder of Portion 4 of the farm 374 and the Koup 2 WEF.

The site and their respective access points and internal layouts will be discussed in more detail in the sections below;

### 7.1 Existing Traffic Conditions

The Western Cape Provincial Government makes use of a Traffic Counting System (TCS) and serves the Western Cape Provincial Network since 1999. The main emphasis of the system is on Trunk, Main and Divisional roads and at the present time only Minor roads that intersect with more important roads are on the system.

The data indicated below are from two stations on the N12 Freeway, immediately north and south of the proposed development at Km 79.41 and Km 33.23 respectively.

**Table 7.1 Traffic Station Data / Counts**

	Light Vehicles	Heavy Vehicles	Total Vehicles	Station Count Chart
<b>N12 @ DR02304 INTERCHANGE</b> <b>Km79.41</b> <b>Station No: 2126A</b> <b>Date: 12/09/2016</b>				
Morning 7:00-8:00	19	6	25	
Afternoon 16:00-17:00	35	8	43	
Average Annual Daily Trips	629	136	765	
<b>N12 @ DR02301 INTERCHANGE</b> <b>Km33.23</b> <b>Station No: 2125C</b> <b>Date: 25/10/2017</b>				
Morning 7:00-8:00	19	6	25	
Afternoon 16:00-17:00	35	8	43	
Average Annual Daily Trips	629	136	765	

Based on the table above, it can be concluded that the existing peak traffic on this section of road is a 'Weekday Midday' peak hour traffic between 10:00 – 16:00.

**7.2 Additional Traffic Generation**

The construction phase will typically generate the highest number of trips for the proposed facility. Construction will typically involve access roads, foundations, WTG, electrical cables / transformers / switch gears / substations / BESS installations and the delivery of these materials / equipment / abnormal loads on the public road network.

It is assumed that no staff or labour will reside on the construction site, other than security, and therefore all will reside in nearby farms / hostels / towns of Beaufort West or Klaarstroom.



## 7.2.1 Construction Phase

Based on calculations and our experience from previous WEF's, confirm the civil construction phase will generate the greatest additional traffic to the surrounding road network. The resultant impact will be on the surrounding road network, increasing dust generation, noise and the increase in road maintenance.

The civil construction period on WEF developments typically take place between month 2 – 13 on a WEF of this size. This development of 32 WTG will generate  $\pm 73$  additional vehicles trips per day on the surrounding road network. Of these vehicle trips,  $\pm 34$  vehicle trips will occur at the peak of the construction phase transporting staff and labour. Typically, these trips will be in the morning between 6:00 – 7:00 and in the afternoons between 16:00 – 17:00. These trips will therefore occur outside of the 'weekday midday' peak period and hence be in the off-peak period.

The remaining  $\pm 39$  vehicle trips will occur during the 'weekday midday' peak period for the delivery of construction material and abnormal loads. The abnormal loads however only account for  $\pm 2$  trips of the construction phase and is elaborated further in Section 7.2.1.1 below. Assuming an 9hr work day, the  $\pm 37$  vehicles during 'weekday midday' peak will equate to  $\pm 4$  vehicle trips / hour. The resultant impact of this development to the surrounding road network during the construction period, is therefore seen as minimal.

### 7.2.1.1 Abnormal Loads

The transportation of abnormal loads originates from local and foreign manufacturers. The local manufactures are typically located in Gauteng, Cape Town or Durban while the foreign manufacturers will ship their loads primarily to two ports. The two ports assumed to be preferred ports to the Koup 2 WEF are the port of Saldanha Bay harbour ( $\pm 606$ km) and the other from the Port of Ngqura ( $\pm 510$ km). Both ports were selected based on their proximity to the development and their ability to accommodate the WTG loads.

Examples of the transportation methods for the Tower Sections (Figure 7.1 Example of Nacelle & Tower Figure 7.1), Nacelle (Figure 7.1), Hub (Figure 7.2) and Rotor Blades (Figure 7.3) have been included below.

The Geometric clearance requirements, associated with these abnormal load transporting the equipment types is shown in Table 7.2. We should however note that the figure and table below are indicative figures as many of the components are still at design stage and will only be confirmed closer to time of construction.

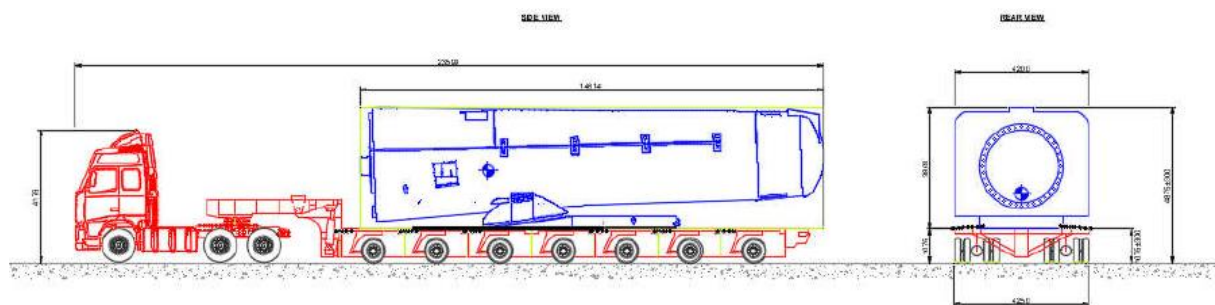


Figure 7.1 Example of Nacelle & Tower

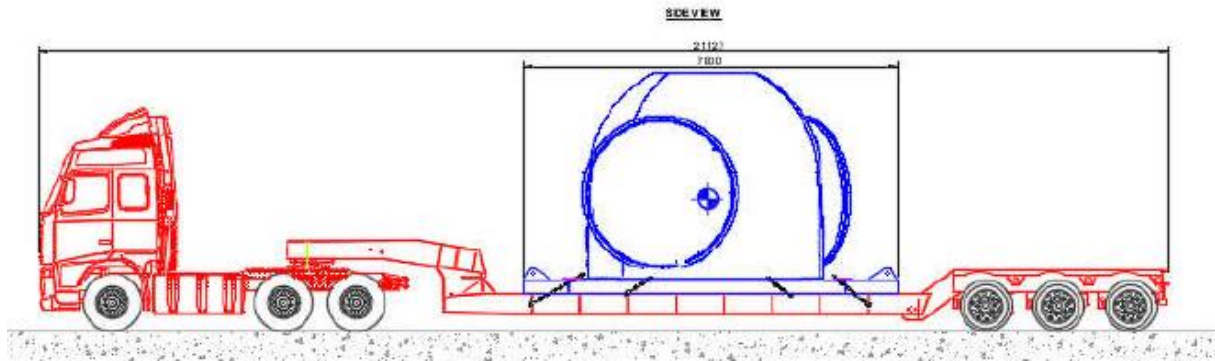


Figure 7.2 Example of Hub

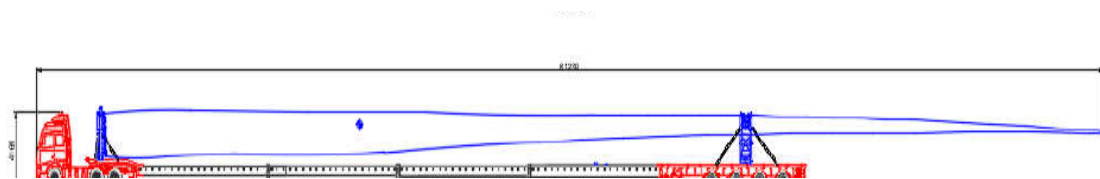


Figure 7.3 Example of Rotor Blades

Table 7.2 Abnormal Load Dimensions

Load to be Transported	Typical Dimensions		
	Length (m)	Width (m)	Height (m)
Tower Sections (8 Loads of 15-27m long each dependant on the weight)	27	4.5	4.5
Nacelle (1 per Turbine, transported individually)	12.8	4.2	3.4
Blades (3 per Turbine, transported separately)	100	4.5	4.5
Rotor Hub (1 per Turbine, transported individually)	5.5	3.8	3.8

\* Please note the values above are estimates based on WTG models currently in production

From the table above it was assumed that two sets / teams of abnormal loads will transport sections of the WTG to each facility over a 20 month period. This equates to a total of ±512 abnormal load trips or ±2 trips per day, which will include any ancillaries.

Prior to any Abnormal Loads conveying equipment to the facility, approval needs to be obtained in the form of a permit from the Department of Transport (DoT). The permit application will be completed by specialists in the transportation of Abnormal loads and will conform to 'The Road Traffic Act, 1996 (Act No 93 of 1996)'. The application includes route clearances from Telkom and Eskom after which the application is submitted to DoT who intern consults with the SANRAL, Local Municipalities and Provincial Authorities prior to issuing a permit.

### 7.2.1.2 Permitting – General Rules

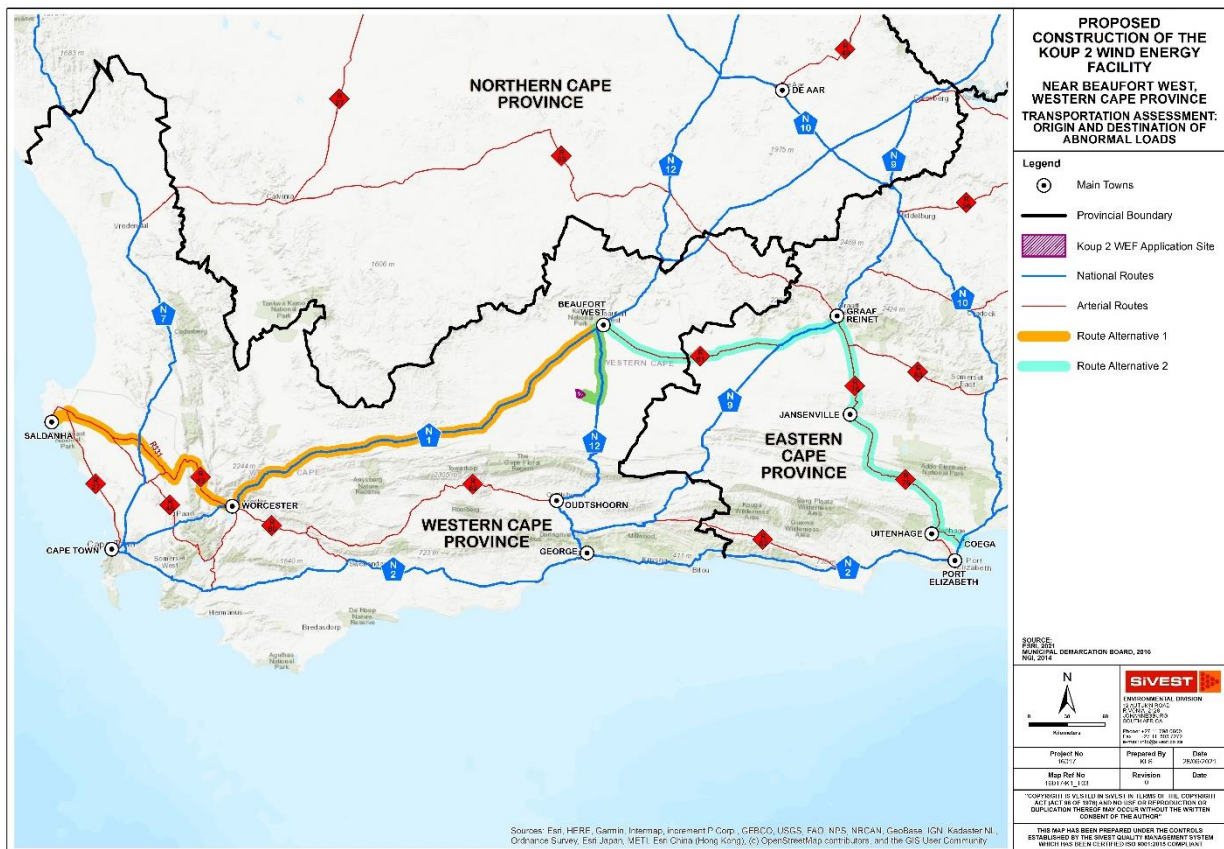
The limits recommended in TRH 11 - *Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads* are intended to serve as a guide to the Permit Issuing Authorities. It must be noted that each Administration has the right to refuse a permit application or to modify the conditions under which a permit is granted. It is understood that:

- A permit is issued at the sole discretion of the Issuing Authority. The permit may be refused because of the condition of the road, the culverts and bridges, the nature of other traffic on the road, abnormally heavy traffic during certain periods or for any other reason.
- A permit can be withdrawn if the vehicle upon inspection is found in any way not fit to be operated.
- During certain periods, such as school holidays or long weekends an embargo may be placed on the issuing or permits. Embargo lists are compiled annually and are obtainable from the Issuing Authorities.

### 7.2.1.3 Proposed Abnormal Load Routes

The transportation of Abnormal goods has been indicated in Figure 7.4 below and will be primarily from two ports namely; - Saldanha and Ngqura. Based on the route studies completed previously, Saldanha port is the preferred point of entry for delivery and to transport Abnormal goods to the Beaufort West area.

The route between Ngqura and the Koup 2 WEF is not preferred even though the route is ±100km less than the Saldanha route.



**Figure 7.4 Abnormal Load Transport Routes**

We recommend that a more comprehensive route analysis be completed prior to construction in order to get a better understanding of the works required and the potential risks.

### **7.2.2 Operation & Maintenance Phase (O&M)**

The Koup 2 WEF has been designed with a 20 year lifespan and could possibly be increased if financially viable. The O&M during the 20 year period will typically be in the form of a small general maintenance team during the O&M period. Any maintenance which will require inter alia a new nacelle, blade or generator will classify as an abnormal load and the traffic generated by this will be negligible in the greater scheme of the development. The largest contributor of traffic in this phase will therefore only comprise of employees commuting to and from the site.

We assume, a maximum number of ±35 employees will be employed during the 20 year life span of the project. It is therefore assumed that the employees will commute together and hence a total of an additional 10 trips will be added onto the existing road network during the morning off peak period. In addition to the staff commuting will be the collection of waste and sanitation. These are assumed to generate an additional 2 vehicles / week onto the existing road network and therefore the sum of this phase will have a low to negligible impact.

The specific traffic needs this phase of the development will have on the environment is inter alia;

- Reduction in vehicle speed
- Adequate law enforcement
- Implementation of pedestrian safety initiatives
- Regular maintenance of farm fence, access cattle grids.
- Adequate road signage as per the South African Road Traffic Sign Manual (SARTSM) latest edition.
- Continues engagement with the Western Cape Department of Transport

### **7.2.3 Decommission Phase**

Decommissioning of the Koup 2 WEF will generate considerably less trips than the construction phase. It is estimated that the decommissioning phase will generate an additional ± 10 vehicles / day over a period of 12 – 18 months. The material removed will be transported back to Cape Town for recycling. The impact of this phase will therefore be low.

The specific traffic needs this phase of the development will have on the environment is inter alia;

- Reduction in vehicle speed
- Adequate law enforcement
- Use of dust suppressant techniques.
- Implementation of pedestrian safety initiatives
- Adequate road signage as per the South African Road Traffic Sign Manual (SARTSM) latest edition.
- Continues engagement with the Western Cape Department of Transport

### **7.3 Koup 2 WEF – Access**

Access to the Koup 2 WEF site will be from the existing access, ±11 709m west of the surfaced N12 National Road (Road No: TR03305) and traverses over the adjacent Koup 2 WEF. Road TR03305 is a proclaimed road and falls under the jurisdiction of the Western Cape Provincial Administration. The existing access is located at Km 51.80 and provides access to the farms situated on both east and west of the N12 Freeway.

The access to this development is towards the west (Refer Figure 7.5) from the N12 Freeway and traverses over the Remainder of Portion 4 of the farm 374 and the Koup 2 WEF as a gravel access road up to the existing farm access. (Refer Figure 7.6) Upgrades to the gravel access road are required to both the longitudinal and horizontal alignments to accommodate large construction and delivery vehicles.

A minimum road reserve width of 6m is required on the access road to the development and 5m on internal roads. The appropriate turning radii, large enough to enable large vehicles to navigate with ease during the delivery of equipment is also required. We recommend that a concrete hard stand be constructed at the development access while the remainder of the roads remain gravel.

Furthermore, we recommend further review of the existing access road agreement between the proposed development and the land owner of REM of Portion 4 so as to update the agreement for the revised access road alignment.



**Figure 7.5 Existing Access to Koup 2 on N12 Freeway**



**Figure 7.6 Koup 1 WEF Existing Farm Access**

The N12 freeway is classified as a Class 2 – Minor Arterial and has an average road reserve width of 30m with a surfaced area width of 7.2m wide and a 1.2m wide gravel shoulder on both sides. The road has a design speed of 120km/h.

Access to Koup 2 WEF is located at Km 51.80 as indicated in Figure 7.7 and Figure 7.8 below. The minimum required sight distance standards applicable to this access is 400m and hence the current sight distance of  $\pm 405\text{m}$  between the access and the ridge to the south, is acceptable and therefore can remain in its current position.

Upgrades to the access @ Km 51.80 will be required and approval will need to be obtained from the Western Cape Department of Transport & Public Works.



**Figure 7.7 Existing Access to Koup 2 - South approaching**



**Figure 7.8 Existing Access to Koup 2 - North approaching**

#### **7.4 Design Considerations**

The specific traffic needs for this phase of the development facility imposed on the environment is *inter alia*;

- Reduction in vehicle speed

- Adequate law enforcement
- Implementation of pedestrian safety initiatives
- Regular maintenance of farm fences, access cattle grids.
- Adequate road signage as per the South African Road Traffic Sign Manual (SARTSM) latest edition.
- Continuous engagement with the Western Cape Department of Transport & Public Works

Based on our recent discussions with the Western Cape Department of Transport and Public Works, new Land Use applications must be sent for approval to their department with the proposed new / upgraded access positions. As part of the application, the expected traffic during construction and the O&M phase, available sight distances including photographs and the affected stormwater structures needs to be included in the application.

Standard access requirements from the Western Cape Department of Transport & Public Works has been included in Figure 7.9 and Figure 7.10 below.

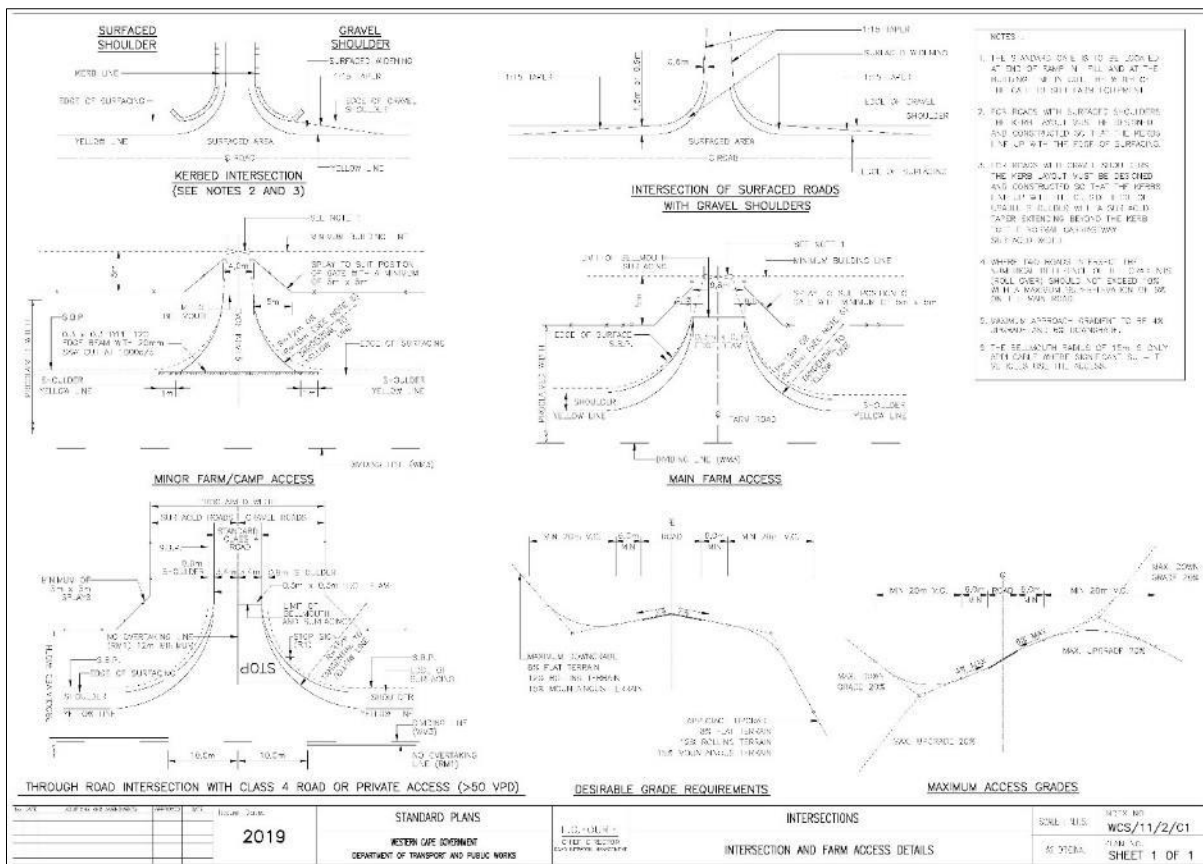


Figure 7.9 Typical Intersection and Farm Access Detail



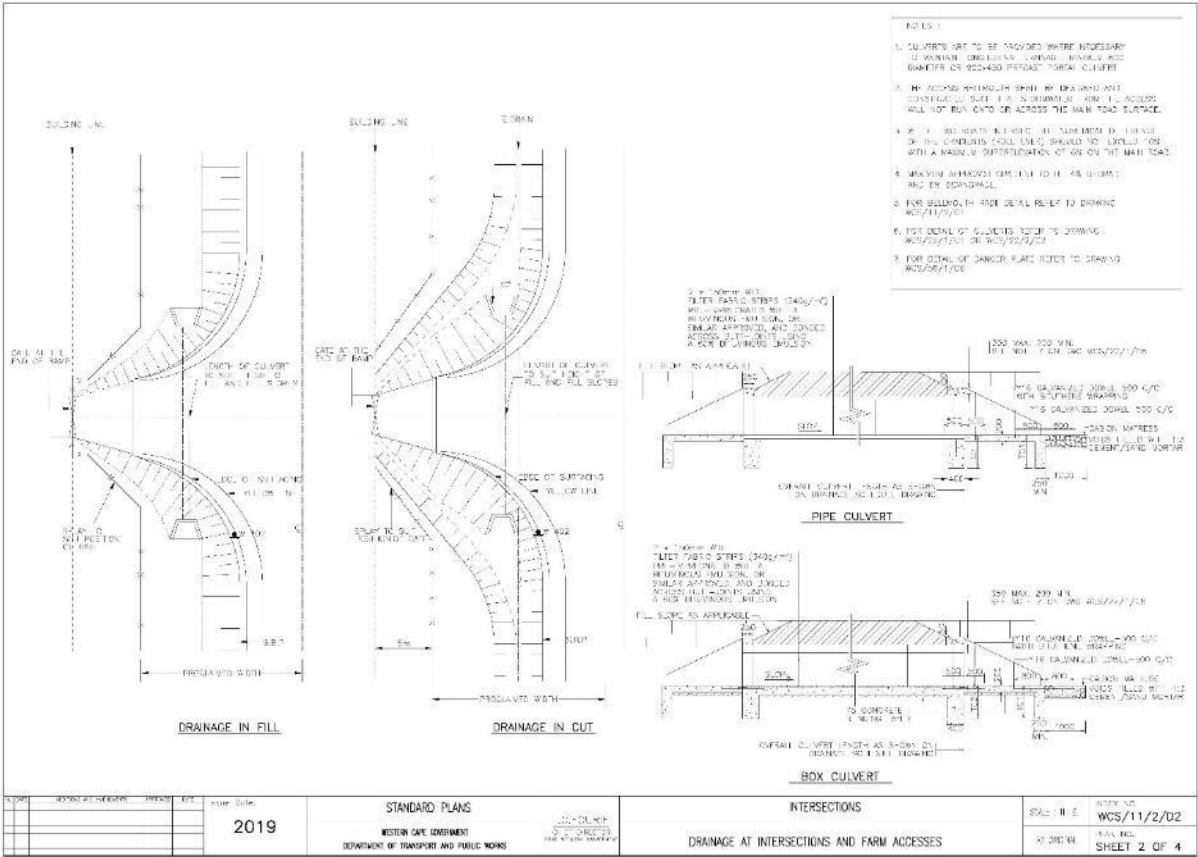
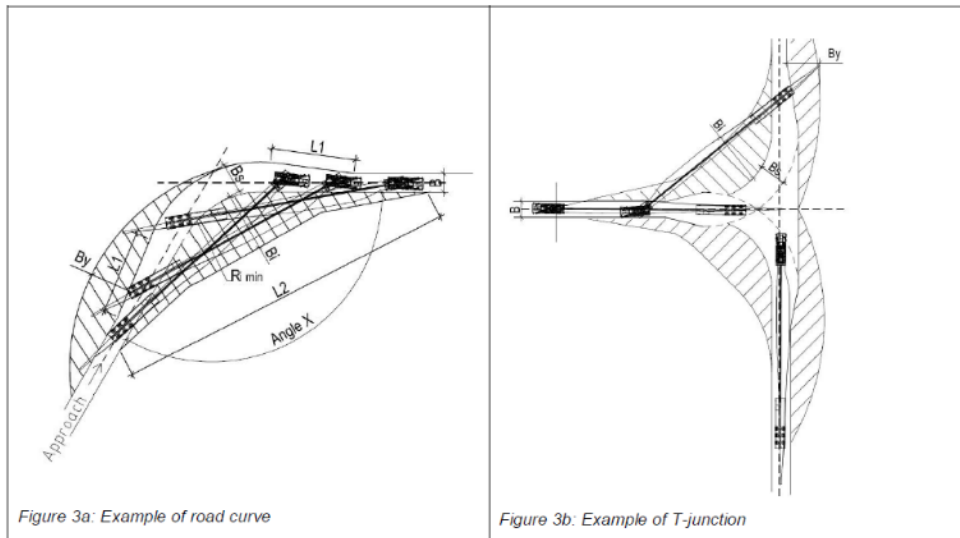


Figure 7.10 Typical Drainage at Intersections and Farm Access

### 8. INTERNAL LAYOUTS

The layout of the internal infrastructure should be such that the impact to the environment is kept to a minimum. We therefore propose that both Koup 1 & 2 share a central access to both facilities and that all other proposed temporary and permanent buildings and construction infrastructure be located close to the access point. (Refer Figure 8.2)

An internal network of minimum 5m wide gravel roads will connect all the WTG and ancillary equipment to each other. The roads will have a horizontal and vertical alignment to accommodate vehicles and more specifically abnormal vehicles intended to use these roads for the delivery of the WTG equipment. A typical intersection and horizontal alignment would consist of radii and clearances similar to the requirements in Figure 8.1. We note that the larger WTG's are planned for these facilities and will need to be simulated once additional information becomes available.

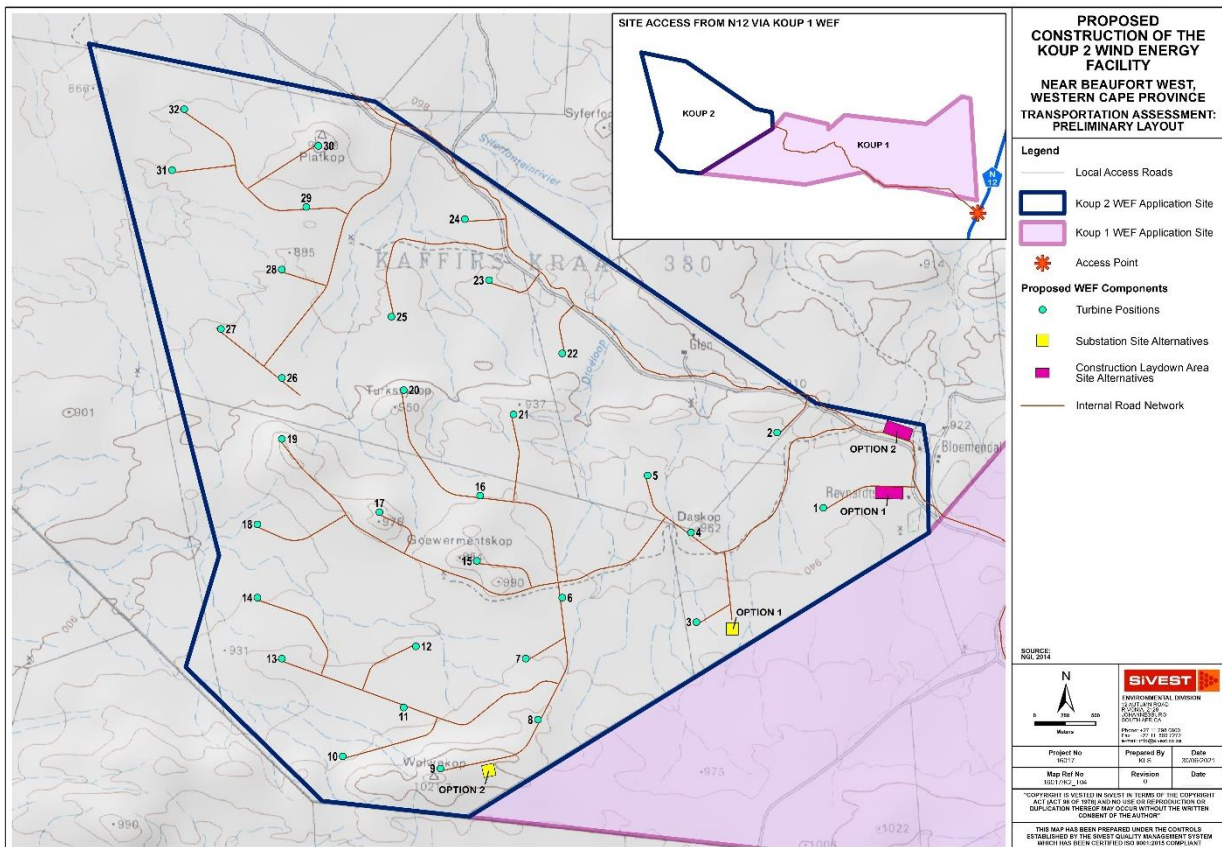


The hatched areas on the figure are areas that the Employer shall clear of obstacles and level to allow overhang.

Angle X	R <sub>i min</sub>	B <sub>y</sub>	B <sub>s</sub>	B <sub>i</sub>	L <sub>1</sub>	L <sub>2</sub>
160°	14 m	4 m	4,5 m	3 m	10 m	35 m
120°	28 m	6 m	5 m	5 m	12 m	40 m
90°	38 m	7 m	7 m	6 m	18 m	52 m

**Figure 8.1 Typical Horizontal Design Standards for a 101m Rotor Diameter**

All internal access roads should be designed to have a minimum impact to the environment and thus are in most cases parallel to the contours and keep drainage line crossings to a minimum. The use of roads perpendicular to the contours for long sections should be avoided, as the risk of possible erosion is increased. Existing gravel roads should also be used to reduce the overall impact on the environment.



**Figure 8.2 Koups 2 WEF – Preliminary Internal Layout**

GENESIS ENERTRAG KOUP 2 (PTY) LTD

SIVEST Civil Engineering Division

Koups 2 WEF – Transportation Study

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## 9. GRID CONNECTION

At this stage, it is proposed that a 132kV overhead power line will connect the Koup 2 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 9.1).

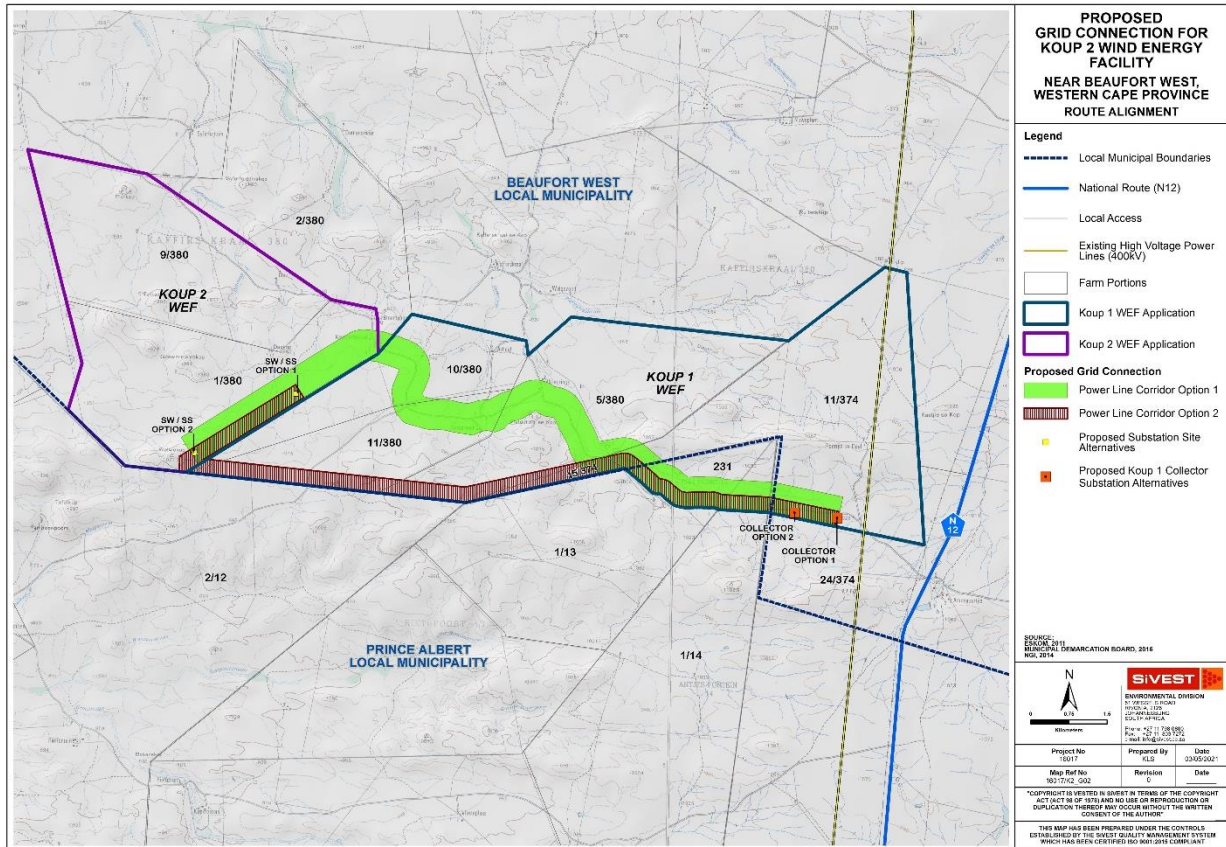


Figure 9.1 Proposed 132kV Power Line Alignment

## 10. IMPACT RATING ASSESSMENT

The 'Impact Rating System' takes into account the nature, scale and duration of the effects on the environment whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the project stages:

- Planning
- Construction
- Operation
- Decommissioning

A rating points-based system is applied to the potential impacts on the environment and includes objective evaluations of the mitigation of the impact. These impacts can be found in Table 10.1 below.

In summary, all impacts were classified as 'Low' or 'Medium' impacts and remain 'Low' after the implementation of suitable mitigation measures. This rating is applicable to all alternatives considered.

**Table 10.1 Koup 2 WEF – Impact Rating Table**

KOU P 2 WEF FACILITY																				
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 (+ OR -)	S		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S
<b>Construction Phase</b>																				
Additional Traffic Generation	Increase in Traffic	2	3	1	2	1	2	18	-	Low	<ul style="list-style-type: none"> <li>• Ensure staff transport is done in the 'off peak' periods and by bus.</li> <li>• Stagger material, component and abnormal loads</li> <li>• Construction of an on-site concrete batching plant to reduce trips.</li> </ul>	2	3	1	2	1	2	18	-	Low
	Increase of Incidents with pedestrians and livestock	2	4	2	4	1	2	26	-	Medium	<ul style="list-style-type: none"> <li>• Reduction in speed of vehicles</li> <li>• Adequate enforcement of the law</li> <li>• Implementation of pedestrian safety initiatives</li> <li>• Regular maintenance of farm fences &amp; access cattle grids</li> <li>• Construction of an on-site concrete batching plant to reduce trips.</li> </ul>	2	3	2	4	1	1	12	-	Low
	Increase in Dust from gravel roads	2	3	2	2	1	2	20	-	Low	<ul style="list-style-type: none"> <li>• Reduction in speed of the vehicles</li> <li>• Use of dust suppressant techniques</li> <li>• Implement a road maintenance program under the auspices of the respective transport department.</li> <li>• Construction of an on-site concrete batching plant to reduce trips.</li> </ul>	2	3	2	2	1	2	20	-	Low
	Increase in Road Maintenance	2	3	2	2	2	2	22	-	Low	<ul style="list-style-type: none"> <li>• Implement a road maintenance program under the auspices of the respective transport department.</li> <li>• Construction of an on-site batching plant to reduce trips.</li> </ul>	2	3	2	2	1	2	20	-	Low
Abnormal Loads	Additional Abnormal Loads	3	2	1	2	1	1	9	-	Low	<ul style="list-style-type: none"> <li>• Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery.</li> <li>• Adequate enforcement of the law</li> </ul>	3	2	1	2	1	1	9	-	Low
Internal Access Roads	Increase in Dust from gravel roads	1	4	1	1	1	2	16	-	Low	<ul style="list-style-type: none"> <li>• Enforce a maximum speed limit on the development</li> <li>• Use of dust suppressant techniques</li> </ul>	1	3	1	1	1	2	14	-	Low



											<ul style="list-style-type: none"> <li>• Construction of an on-site concrete batching plant to reduce trips.</li> </ul>									
	Increase in Road Maintenance	2	3	2	2	2	2	22	-	Low	<ul style="list-style-type: none"> <li>• Implement a road maintenance program under the auspices of the respective transport department.</li> <li>• Construction of an on-site batching plant to reduce trips.</li> </ul>	2	3	2	2	1	2	20	-	Low
Abnormal Loads	Additional Abnormal Loads	3	2	1	2	1	1	9	-	Low	<ul style="list-style-type: none"> <li>• Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery.</li> <li>• Adequate enforcement of the law</li> </ul>	3	2	1	2	1	1	9	-	Low
Internal Access Roads	Increase in Dust from gravel roads	1	4	1	1	1	1	8	-	Low	<ul style="list-style-type: none"> <li>• Enforce a maximum speed limit on the development</li> <li>• Use of dust suppressant techniques</li> <li>• Adequate watering by means of water bowser</li> </ul>	1	3	1	1	1	2	14	-	Low
	New / Larger Access points	1	4	1	2	1	1	9	-	Low	<ul style="list-style-type: none"> <li>• Adequate road signage according to the SARTSM</li> <li>• Approval from the respective roads department</li> </ul>	1	4	1	2	1	1	9	-	Low
Cumulative																				
Additional Traffic Generation	Increase in Traffic	2	3	1	2	1	4	36	-	Low	<ul style="list-style-type: none"> <li>• Ensure a large portion of vehicles traveling to and from the proposed development travels in the 'off peak' periods or by bus.</li> <li>• Construction of an on-site batching plant to reduce trips.</li> <li>• Coordination between all developers in the area</li> </ul>	2	3	1	2	1	2	18	-	Low
	Increase of Incidents with pedestrians and livestock	2	4	2	4	1	4	52	-	High	<ul style="list-style-type: none"> <li>• Reduction in speed of vehicles</li> <li>• Adequate enforcement of the law</li> <li>• Implementation of pedestrian safety initiatives</li> <li>• Regular maintenance of farm fences, access cattle grids</li> <li>• Construction of an on-site batching plant to reduce trips.</li> <li>• Coordination between all developers in the area</li> </ul>	2	3	2	4	1	2	24	-	Medium
	Increase in Dust from gravel roads	2	3	2	2	1	4	40	-	Medium	<ul style="list-style-type: none"> <li>• Reduction in speed of the vehicles</li> <li>• Use of dust suppressant techniques</li> <li>• Implement a road maintenance program under the auspices of the respective transport department.</li> <li>• Construction of an on-site batching</li> </ul>	2	3	2	2	1	2	20	-	Low

												plant to reduce trips. • Coordination between all developers in the area								
	Increase in Road Maintenance	2	3	2	2	2	2	22	-	Low	<ul style="list-style-type: none"> <li>• Implement a road maintenance program under the auspices of the respective transport department.</li> <li>• Construction of an on-site batching plant to reduce trips.</li> <li>• Coordination between all developers in the area</li> </ul>	2	3	2	2	2	2	22	-	Low
Abnormal Loads	Additional Abnormal Loads	3	2	1	2	1	4	36	-	Medium	<ul style="list-style-type: none"> <li>• Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods.</li> <li>• Adequate enforcement of the law</li> </ul>	3	2	1	2	1	2	18	-	Low
Internal Access Roads	Increase in Dust from gravel roads	1	4	1	1	1	3	24	-	Medium	<ul style="list-style-type: none"> <li>• Enforce a maximum speed limit on the development</li> <li>• Use of dust suppressant techniques</li> <li>• Adequate watering by means of water bowser</li> </ul>	1	3	1	1	1	2	14	-	Low
	New / Larger Access points	1	4	1	2	1	2	18	-	Low	<ul style="list-style-type: none"> <li>• Adequate road signage according to the SARTSM</li> <li>• Approval from the respective roads department</li> </ul>	1	4	1	2	1	1	9	-	Low

## 11. CUMULATIVE IMPACT ASSESSMENT

SiVEST undertook every effort to obtain the information (including specialist studies, BA / EIA / Scoping and EMPr Reports) for the surrounding developments within 35 km of the proposed WEF facility, however many of the documents are not currently, publicly available. To this extent, the information that could be obtained from the surrounding, planned renewable energy developments was taken into account as part of the cumulative impact assessment. Nine (9) renewable energy projects were identified within a 35 km radius of the proposed development as shown in Table 11.1 below. The renewable energy developments considered as part of this transportation study are as follows:

**Table 11.1 Proposed Renewable Energy developments within a 35km radius.**

Project	DEA Reference No	Technology	Capacity	Status of Application / Development
Proposed Beaufort West Wind Farm	12/12/20/1784/1	Wind	140MW	Approved
Proposed Trakas Wind Farm	12/12/20/1784/2	Wind	140MW	Approved
Proposed Wind and Solar Facility on the Farm Lombardskraal 330	14/12/16/3/3/2/406	Solar	20MW	EIA in Process
Proposed Leeu Gamka Solar Power Plant	12/12/20/2296	Solar	-	EIA in Process
Proposed Roma Energy Leeu Gamka Solar Plant	12/12/20/2685	Solar	10MW	Approved
Proposed Koup 1 WEF	TBA	Wind	140MW	EIA in Process
Proposed Kwagga WEF 1	14/12/16/3/3/2/2070	Wind	279MW	EIA in Process
Proposed Kwagga WEF 2	14/12/16/3/3/2/2071	Wind	341MW	EIA in Process
Proposed Kwagga WEF 3	14/12/16/3/3/2/2072	Wind	204.6MW	EIA in Process



The information obtained for other planned renewable energy developments in the surrounds is indicated in

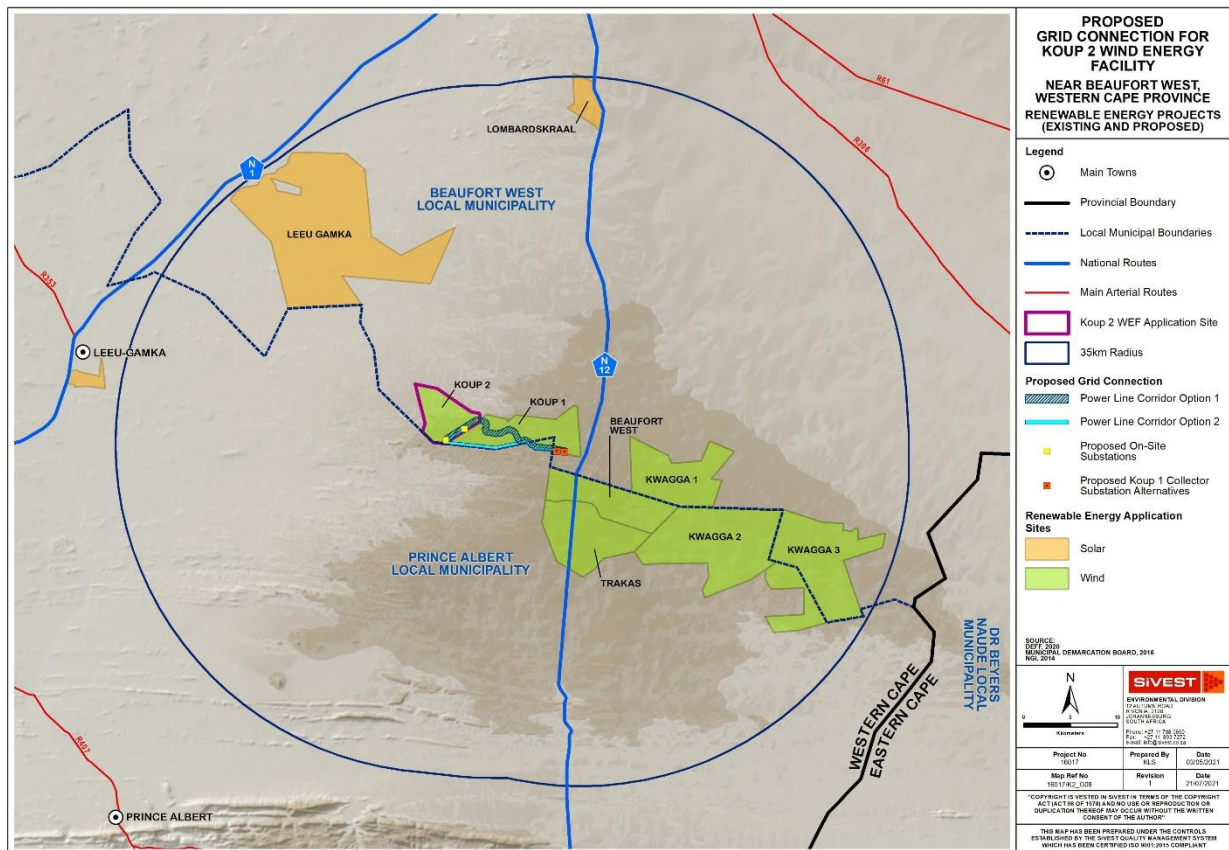


Figure 11.1 below.

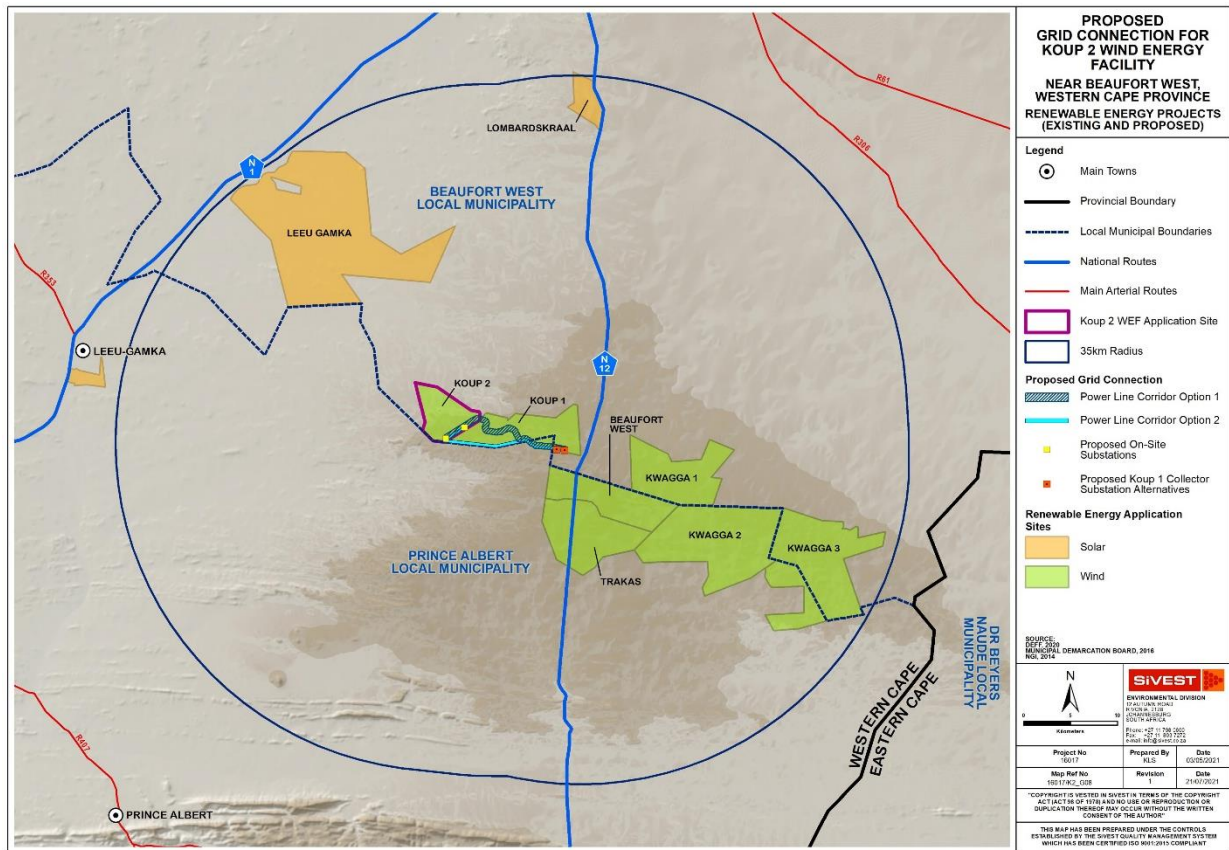


Figure 11.1 Proposed Renewable Energy Developments within 35km radius

## 12. COMPARITIVE ASSESSMENT OF ALTERNATIVES

Design and layout alternatives were considered and assessed as part of the Transportation Study. These include alternatives for the Construction Laydown and Substation locations. The various alternatives, as shown in Figure 12.1 are described below.

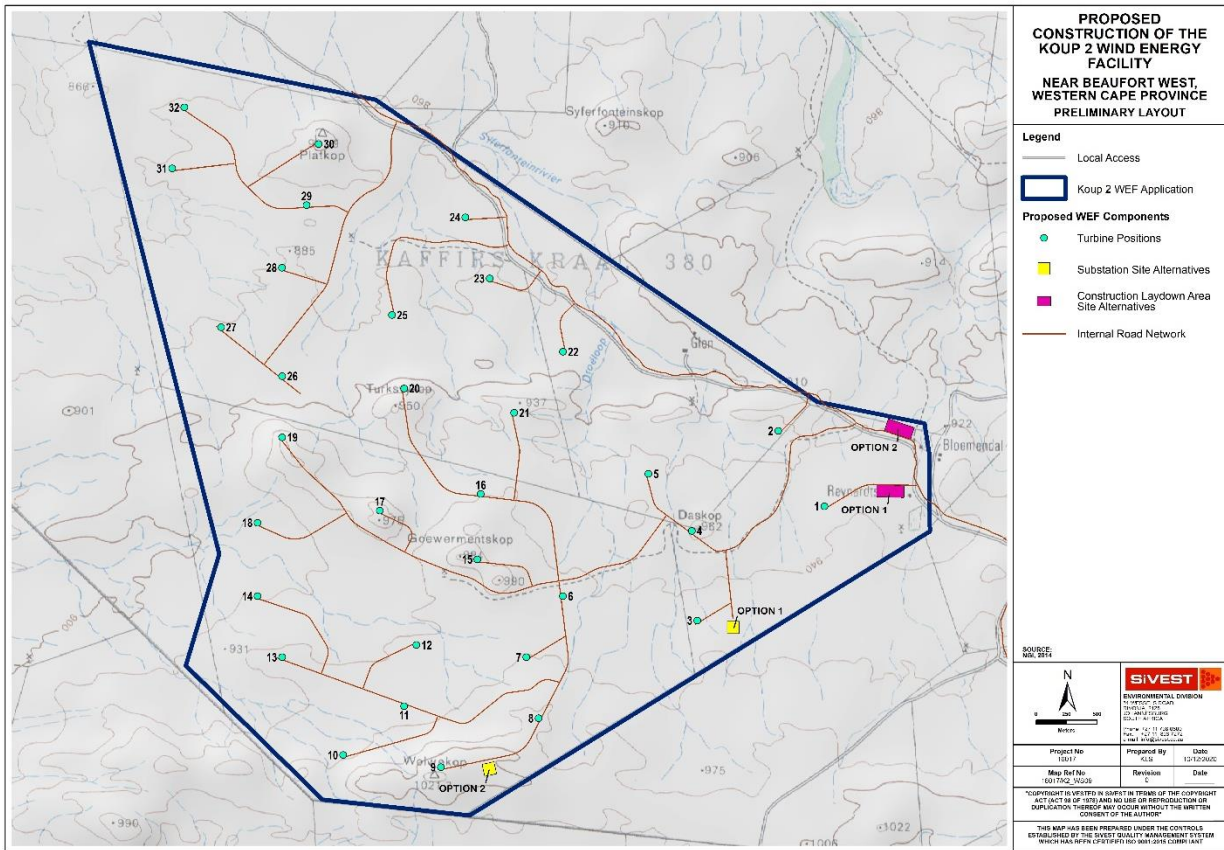


Figure 12.1 Preliminary Site Layout

Table 12.1 Comparative Assessment Key

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

Table 12.2 Comparative Assessment of Alternatives: WEF Infrastructure

Alternative	Preference	Reasons (incl. potential issues)
<b>SUBSTATION SITE ALTERNATIVES</b>		
Substation Option 1	No Preference	Will not have an effect on the transportation study
Substation Option 2		
<b>CONSTRUCTION LAYDOWN AREA SITE ALTERNATIVES</b>		
Construction Laydown Area Option 1	No Preference	Will not have an effect on the transportation study
Construction Laydown Area Option 2		

## 12.1 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 Figure 12.1.

## 12.2 Grid Components

The two power line route alignments will be assessed within 600m and 300m wide assessment corridors. These alternatives are described below:

- Power Line Corridor Option 1 is approximately 12km in length, linking either substation / collector Option 1 or Option 2 to the proposed Koup 1 Collector Option 1 or Option 2. This route alignment will be assessed within a 600m wide corridor (300m on either side of the power line).
- Power Line Corridor Option 2 is approximately 13.2km in length, linking either substation / collector Option 1 or Option 2 to the proposed Koup 1 Collector Option 1 or Option 2. This route alignment will be assessed within a 300m wide corridor (150m on either side of the power line).

## 12.3 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.

# 13. CONCLUSIONS AND IMPACT STATEMENT

Based on the information received and the foregoing results concluded, our summary of conclusions are as follows:

- In conclusion;
  - The Koup WEF development consists of two separate EIA applications namely; - Koup 1 & Koup 2. Although this report only focuses on the Koup 2 WEF, both developments are taken into account for this study as they share a common access point from the N12 Freeway.
  - The construction phase of this development will typically generate the highest number of additional vehicles. It will however be temporary and impacts are considered to be minimal / low.
  - During the operation phase, it is expected that the facility will accommodate  $\pm 35$  employees which will generate an additional  $\pm 10$  trips / day in the morning and afternoon peak period. This impact is considered to be minimal / low.
  - The Existing access from the N12 Freeway has sufficient sight distance in both directions and hence an upgrade of the existing access will be required from the Western Cape Department of Transport & Public Works.
  - Mitigation measures to be included in the construction phase:
    - Ensure staff transport is done in the 'off peak' periods and by bus.
    - Stagger material, component and abnormal loads
    - Construction of an on-site concrete batching plant to reduce trips.
    - Adequate road signage according to the SARTSM
    - Reduction in speed of vehicles
    - Adequate enforcement of the law

- Implementation of pedestrian safety initiatives
    - Implement a road maintenance program under the auspices of the respective transport department.
    - Regular maintenance of farm fences & access cattle grids
    - Use of dust suppressant techniques
  - The gravel road between the N12 Freeway and the development will require upgrades. We also recommend a review of the agreement between the developer and the owner of REM of Portion 4 of the farm 374.
  - The 'No Go' alternative would result in there being no transportation impacts.
  - No fatal flaws or preferences were identified for any of the proposed site alternatives for construction laydown areas or substation locations.
  - No environmentally sensitive areas are required and therefore no areas are to be avoided from a Transportation perspective.
- Impact Statement;
    - With reference to this report, associated assessment and the findings made within, it is SiVEST's opinion that the Koup 2 Wind Energy Facility and associated infrastructure will have a nominal impact on the existing traffic network. The project is therefore deemed acceptable from a transport perspective, provided the recommendations and mitigations measures in this report are implemented, and hence the Environmental Authorisation (EA) should be granted for the EIA application.

## 14. REFERENCES

KZN Transport – *Concrete Causeway Details (1996)*

South African National Roads Agency Limited – *Drainage Manual (5<sup>th</sup> Edition)*

Technical Recommendations for Highways (TRH11) – *Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads (7<sup>th</sup> Edition - 2000)*

Technical Recommendations for Highways (TRH17) – *Geometric Design of Rural Roads (1988)*

Western Cape Government Department Transport and Public Works– *Road Network Information System*

## **APPENDIX A: SPECIALIST CURRICULUM VITAE**

## CURRICULUM VITAE

Merchandt Le Maitre

<b>Name</b>	Merchandt Le Maitre
<b>Profession</b>	Civil Engineer
<b>Name of Firm</b>	SiVEST SA (Pty) Ltd
<b>Present Appointment</b>	Senior Civil Engineering Technician: Civil Engineering Division
<b>Years with Firm</b>	15 Years
<b>Date of Birth</b>	25 September 1982, Johannesburg, South Africa
<b>ID Number</b>	820925 5037 0 86
<b>Nationality</b>	South African



### Education

- University of Johannesburg (2006)
- University of South Africa (2016)

### Professional Qualifications

- N Dip: Civil Engineering
- B Tech: Civil Engineering (Water)
- Pr.Tech.Eng. (Reg. No. 2018300094)

### Membership in Professional Societies

- Engineering Council of South Africa (ECSA) – Pr Tech Eng; (Reg N° 2018300094)
- South African Institute of Civil Engineers (SAICE)

### Employment Record

May 2004 – present	SiVEST SA (PTY) LTD: Senior Civil Engineering Technician
Jan 2004 – April 2004	Con Roux Zambia - Junior Foreman
Dec 2002 – Dec 2003	Neda Engineering - Vacation Work

### Language Proficiency

LANGUAGE	SPEAK	READ	WRITE
English	Fluent	Fluent	Fluent
Afrikaans	Fluent	Fluent	Fluent

**Years of Working Experience:** 16

### Countries of Work Experience

- South Africa

## Fields of Expertise

- Bulk Services Studies
- Feasibility Studies
- Service Reports
- Infrastructure Design
- Contract Documentation & Procurement
- Contract Administration
- Procurement and Construction Monitoring

## Overview

Merchandt joined SiVEST as a student Civil Engineering Technician in 2004 to which he received a company bursary to complete his studies and join the company permanently thereafter. Since joining permanently he has been actively involved in numerous township projects and associated infrastructure projects.

A summary of the experience in each field is indicated below:

### Roads & Stormwater

- Design, Implement & Contract Administration of Provincial Road Intersections (Class 2 Roads)
- Design, Implement & Contract Administration of Municipal Roads (Class 3-5 Roads)
- Design, Implement & Contract Administration of Residential & Industrial Township services
- Design, Implement & Contract Administration of Bulk Stormwater Infrastructure
- Floodline determination & Stormwater assessments

### Hydrology

- Draughting and compiling of Attenuation Reports
- Flood Inundation Assessments / Floodline Reports
- Stormwater Management Reports
- Stormwater Assessments / Investigations
- Roof Gutter & Down Pipe Design / Assessments / Reports

### Water & Sanitation

- Design, Implement & Contract Administration of Water supply lines including Bulk Water
- Design, Implement & Contract Administration of Water pump stations
- Design, Implement & Contract Administration of Sanitation networks including Outfall Sewers
- Design, Implement & Contract Administration of Sewer pump stations
- Design of Farm Irrigation Network

### Renewable Energy

- Transportation Impact Assessments
- Water Demand Assessments
- Glint & Glare Assessments
- Stormwater Management Reports

## Projects Experience (by Sector)

### TOWNSHIP SERVICES

- Tijger Valley Extension 10, 20, 21, 22, 23, 27, 38-44, 72, 105-113, 19, 62, 103, 104, 34, 35, 36, 123 etc.  
- Design, Procurement, Contract Administration and Monitoring.
- Derdepoort Extension 181- Design, Procurement, Contract Administration and Monitoring.
- Project Springbok, Sasolburg - Design, Procurement, Contract Administration and Monitoring.
- Arcadia Extension 11 - Design, Procurement, Contract Administration and Monitoring.



## CURRICULUM VITAE

Merchandt Le Maitre

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- Lakeside Erf 181- Design, Procurement, Contract Administration and Monitoring.
- Longmeadow Extension 10, 11 & 12 - Design, Procurement, Contract Administration and Monitoring.
- Bushwillow Estate - Design, Procurement, Contract Administration and Monitoring.
- Forum Homini – Draughting Monitoring of Dam Spillway construction & sewer reticulation.
- Longmeadow Extension 7, 8, 9, 10, 11, 12 – Township services and design of earth retaining wall.
- Lakeside Erf 181 – Design and supervision of Township Services including Attenuation facilities.
- Mbabane Kingdom Hall – Bulk earthworks and road Design, Procurement, Contract Administration and Monitoring.
- Kungwini Bulk Water – Draughting and supervision of a Steel Bulk Water Supply Pipe.
- Mooikloof Booster Station – Design and supervision of a water booster pump facility..
- PTN 2 of 148 Athol – Compiling and analysis Stormwater Assessment.
- Mooibosch Development – Compiling of Services reports and Floodline Determination.
- Hazeldean Extension 39 – Design and supervision of Township Services.
- Hazeldean Retirement – Design of Township Services.
- Kungwini Collector Sewer – Design of Collector Sewer.
- Maroeladal Extension 9 – Design and compilation of Services Report.
- Hazeldean Oukraal – Design of Township Services
- Hazeldean Business Park – Design and compilation of Services Reports.
- Erf 181 Derdepoort – Design and compilation of Services Reports and preliminary design of Provincial Intersection.
- Erf 92 Edenburg – Floodline Determination and design and compilation of the Services reports.
- Longmeadow Extension 12 Stormwater – Design of Stormwater Reticulation.
- Astral Foods - Design, Procurement, Contract Administration and Monitoring of civil services.
- Eastgate Solar Roof – Glint & Glare Assessment
- Cotton Gin Mpumalanga – Design & Procure all services

### ROADS & INTERSECTION DESIGN

- D631 Intersection – Design, Wayleave Approval, Procurement, Contract Administration and Monitoring.
- D36 Intersection & Road Widening - Design, Wayleave Approval, Procurement.
- K34 Intersection – Design, Wayleave Approval, Procurement, Contract Administration and Monitoring.
- K101 Intersection – Design, Wayleave Approval.
- Justice Mahomed, University, Walton Jameson Rd Intersection – Design, Wayleave Approval.
- Cedar Road West – Design, Wayleave Approval, Procurement, Contract Administration and Monitoring.
- Brikor – Design of New Intersection.
- New Zealand Embassy – Design of Intersection.
- East Point Game - Design, Wayleave Approval, Procurement, Contract Administration and Monitoring.

### HYDROLOGY AND STORMWATER

- Hazeldean Floodline - Data collection, Flood determination and compilation.
- Gautrain Railway Stormwater Management – Design and compile stormwater management and attenuation facilities.
- Stormwater Modelling for Project Springbok – Attenuation of hazardous material in stormwater system.
- Sappi Ngodwana Floodline – Data collection, Flood determination and compilation. This floodline included cognisance of the Ngodwana dam.
- Irene Mall Stormwater Management - Accommodation of the Post Development stormwater flow through an existing township / suburb.
- Loftus Park Stormwater Management – Accommodation of the Post Development stormwater flow through an existing township / suburb.
- Pienaars River Floodline Modelling – Modelling of the river through two future Class 1 & 3 road bridge structures.

## CURRICULUM VITAE

Merchandt Le Maitre

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- Renewable Energy Stormwater Management – A number of Management Plans for the Renewable Energy sector has been completed.
- Longmeadow Extension 10 (Pick & Pay) – Design and compilation of Stormwater Management report.
- Erf 4173 Peter Place – Floodline Determination.
- Irene Mall Township – Design of Township Services and Stormwater Management.
- Mitsubishi McCarthy Midrand – Design and compilation of Stormwater Management report.
- Isago @ N12 – Floodline Determination.
- Innoland – Floodline Determination.
- Lot 204 Edenburg – Floodline Determination
- Erf 90 Douglasdale – Floodline Determination.
- PTN 35 Houtkoppen – Floodline Determination.
- Erf 4173 Peter Place – Floodline Determination.
- Hyde Close Floodline – Floodline Determination.
- Chartwell Floodline – Floodline Determination
- Hyundai East Rand – Roof Gutter & Down Pipe design
- Oilifants River – Floodline Determination

### WATER TRANSFER / RETICULATION AND SANITATION COLLECTORS / OUTFALLS

- Bojanala Platinum District Municipality – Water & Sanitation Bulk Master Planning.
- Hazeldean Development – Bulk Water Supply & Collector Sewer Design, Procurement, Contract Administration and Monitoring.
- Mamba Kingdom – Bulk Water Analysis.
- Lesedi Local Municipality Bulk Water - Design, Wayleave Approval, Procurement, Contract Administration and Monitoring.
- NEF Tomato Paste Project – Design of Farm Irrigation Network

### RENEWABLE ENERGY

- Tooverberg Wind Energy Facility – Transportation Impact Assessment & Water Demand Assessment
- Umsobomvu Solar Energy - Transportation Impact Assessment
- East Gate - Glint & Glare Assessment

### OTHER

- Project Springbok – Design of Services and Railway Siding.
- Phalaborwa Mining Company – Preliminary Design of Bulk Water feed and Railway Line.
- Kansanshi Copper Mine, Zambia – Junior Site Foreman.
- Final QC for Sasol Secunda.
- NDT testing – MMC Nelspruit, Global Forest Products Sabie.
- Boiler inspections and preliminary design – MMC Nelspruit, Global Forest Products, TSB Malelane.

### **Computer Skills**

- AutoCAD Civil 3D
- AutoCAD Storm and Sanitary Analysis
- Microsoft Office
- Microsoft Project
- TechnoCAD
  - Surfmate
  - Roadmate
  - Pipemate
  - Watermate

- AutoTURN (Vehicle Turning Simulation Software)
- RiverCAD
- HecRAS
  - 1D Flood Modelling
  - 2D Flood Modelling

## **APPENDIX B: SPECIALIST DECLARATION**



## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

### DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

DEA/EIA/

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

#### PROJECT TITLE

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

#### Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

#### Departmental Details

##### Postal address:

Department of Environmental Affairs  
Attention: Chief Director: Integrated Environmental Authorisations  
Private Bag X447  
Pretoria  
0001

##### Physical address:

Department of Environmental Affairs  
Attention: Chief Director: Integrated Environmental Authorisations  
Environment House  
473 Steve Biko Road  
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:  
Email: [EIAAdmin@environment.gov.za](mailto:EIAAdmin@environment.gov.za)

## 1. SPECIALIST INFORMATION

Specialist Company Name:	SIVEST SA (PTY) LTD		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)		Percentage Procurement recognition
Specialist name:	MERCHANDT LE MAITRE		
Specialist Qualifications:	B TECH – CIVIL ENGINEER		
Professional affiliation/registration:	ECSA (PR TECH ENG No: 2018300094)		
Physical address:	LOFTUS PARK, BUILDING A, 5 <sup>TH</sup> FLOOR, 416 KIRKNESS STR, ARCADIA, PRETORIA		
Postal address:	PO BOX 2921, RIVONIA		
Postal code:	2128	Cell:	072 435 8497
Telephone:	011 798 0600	Fax:	011 803 7272
E-mail:	MERCHANDTM@SIVEST.CO.ZA		

## 2. DECLARATION BY THE SPECIALIST

I, MERCHANDT LE MAITRE, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

SIVEST SA (PTY) LTD

Name of Company:

1<sup>ST</sup> OCTOBER 2021

Date

Details of Specialist, Declaration and Undertaking Under Oath

---

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, MERCHANDI LE MAITRE, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



---

Signature of the Specialist

SIVEST SA(PTY) LTD

---

Name of Company

1<sup>ST</sup> OCTOBER 2021

---

Date

**Jacqueline Chantel Jackson**

---

Signature of the Commissioner of Oaths

Signature:



---

Divisional Controller

Date

Ref. 9/1/8/2 (R/O) KZN PMB - 08/02/2019

Date: 01/10/2021 Place: PMB  
Business Address: VCC Estate, 170 Peter Brown Drive, PMB



**SiVEST Civil Engineering Division**

Loftus Park, Building A, 5th Floor  
416 Kirkness Street, Arcadia, Pretoria.  
P O Box 2921, Johannesburg. 2000  
Gauteng. South Africa

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Fax +27 11 803 7272

Email [info@sivest.co.za](mailto:info@sivest.co.za)

[www.sivest.co.za](http://www.sivest.co.za)

Contact Person: Merchandt Le Maitre  
Email: [merchandtm@sivest.co.za](mailto:merchandtm@sivest.co.za)





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Signature of the Specialist

SIVEST SA (PTY) LTD

Name of Company:

1<sup>ST</sup> OCTOBER 2021

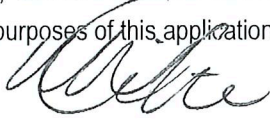
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Signature of the Specialist

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SIVEST SA(PTY) LTD

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Name of Company

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1<sup>ST</sup> OCTOBER 2021

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Date

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**Jacqueline Chantel Jackson**

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