THE BASIC ASSESSMENT FOR THE PROPOSED KOMAS WIND ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE NEAR KLEINSEE IN THE NORTHERN CAPE PROVINCE.

APPENDIX C.10

Transport Assessment

TRANSPORT IMPACT ASSESSMENT

Basic Assessment for the proposed development of the Komas Wind Energy Facility and associated infrastructure near Kleinsee in the Northern Cape

Report prepared for:

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TRANSPORT IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THE KOMAS WIND ENERGY FACILITY AND ASSOCIATED INFASTRUCTURE NEAR KLEINSEE IN THE NORTHERN CAPE PROVINCE

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SYNOPSIS

Preparation of a Transport Impact Assessment as part of the Basic Assessment for the proposed development of the Komas Wind Energy Facility and associated infrastructure near Kleinsee in the Northern Cape Province, pertaining to all relevant traffic and transportation engineering aspects.

KEY WORDS:

Wind Energy Facility, Transport Impact Assessment, Basic Assessment

QUALITY VERIFICATION

This report has been prepared under the controls established by a quality management system that meets the requirements of ISO 9001: 2015 which has been independently certified by DEKRA Certification.

Verification	Capacity	Name	Signature	Date
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EXECUTIVE SUMMARY

This Transport Impact Assessment (TIA) was commissioned to assess the potential impact of activities related to the transportation of turbine components and associated infrastructure to the proposed Komas Wind Energy Facility (WEF) site traffic movement for the construction, operation, maintenance and decommissioning phases of the proposed Komas WEF.

The main potential traffic impacts will be during the construction and decommissioning phases of a WEF where the delivery of the turbine components, construction and decommissioning of the Komas WEF infrastructure will generate significant traffic. The duration of these phases is short-term during the construction and decommissioning phases i.e. the impact of the Komas WEF traffic on the surrounding road network is temporary. The operational phase of the proposed Komas WEF will not add any significant traffic to the road network.

Potential traffic generated by the construction of the proposed Komas WEF will have a negative, moderate impact after mitigation, albeit short term, on the surrounding road network. Proposed mitigation measures during the construction and operational phases include:

- The delivery of wind turbine components to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods.
- Reduce the construction period
- Stagger the construction of the turbines
- The use of mobile batch plants and quarries in close proximity to the site would decrease the impact on the surrounding road network.
- The transport of staff and general trips during the construction phase should occur outside of peak traffic periods.

The location of the BESS and substation (SS) complex, from a traffic perspective, does not have any impact on the traffic volumes and the surrounding road network. The BESS and SS complex sitealternatives are deemed acceptable and may proceed as none are fatally flawed.

The proposed development of the Komas WEF and associated infrastructure is supported from a transport perspective provided that the recommendations and mitigations contained in this report are adhered to.

The potential impacts associated with the proposed Komas WEF and associated infrastructure are acceptable from a transport perspective and it is therefore recommended that the proposed Komas WEF and associated infrastructure can be authorised.

COMPLIANCE WITH THE APPENDIX 6 OF THE 2014 EIA REGULATIONS

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Addressed in the Specialist 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;	See Appendix 1 for CV
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix 2 for the specialist declaration
c) an indication of the scope of, and the purpose for which, the report was prepared;	See section 1.1
(cA) an indication of the quality and age of base data used for the specialist report;	n/a
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	See section 1.6
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	n/a
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	See section 1.1
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;	Section 1.3
g) an identification of any areas to be avoided, including buffers;	Section 1.3
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;	n/a
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.1
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;	Section 1.5
k) any mitigation measures for inclusion in the EMPr;	Section 1.6
l) any conditions for inclusion in the environmental authorisation;	n/a
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	n/a
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;	Section 1.6
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.	Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This

	specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2020, there are no sensitivity layers on the Screening Tool for Transport features. Part A has therefore not been compiled for this assessment.

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TRANSPORT STUDY

1.1. INTRODUCTION AND METHODOLOGY

1.1.1. Scope and Objectives

Genesis ENERTRAG Komas (Pty) Ltd is proposing to develop the Komas WEF near Kleinsee within the Springbok Renewable Energy Development Zone (REDZ 8) in the Northern Cape Province. JG Afrika (Pty) Ltd was appointed by the Council for Scientific and Industrial Research (CSIR) to conduct a Transport Impact Assessment (TIA) for the proposed construction, operation and decommissioning of the Komas WEF and associated infrastructure on Portion 1 of the Farm Zonnekwa No. 326, Portion 2 of the Farm Zonnekwa No. 328, Portion 3 of the Farm Zonnekwa No. 328, Portion 4 of the Farm Zonnekwa No. 328 and Portion 4 of the Farm Kap Vley No. 315, near Kleinsee in the Northern Cape Province. The TIA is to inform the Basic Assessment (BA) which the CSIR is undertaking for the proposed project on behalf of the applicant.

The proposed grid infrastructure including an Eskom Switching Substation (SS), 132 kV powerline and collector (SS) (if required) will be assessed as part of a separate BA process.

The main objective of this report is to prepare a Transport Impact Assessment (TIA) (, including the route investigation) for the proposed Komas WEF site and associated infrastructure.

The following two main transportation activities will be investigated:

- Abnormal load vehicles transporting wind turbine components to the site.
- The transportation of construction materials, equipment and people to and from the site/facility.

The transport study plan will aim to identify and provide the following outcomes:

- Activities related to traffic movement for the construction, operation and decommissioning phases of the proposed WEF of the proposed WEF.
- Provide a main route for the transportation of the wind turbine components from the entry point at the Port of Saldanha to the proposed site.
- Provide a preliminary transportation route for the transportation of materials, equipment and staff to site.
- Outline potential traffic impacts and recommend mitigation measures to manage traffic related impacts associated with the proposed WEF development.

1.1.2. Terms of Reference

The specific Terms of Reference includes the following:

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2020, there are no sensitivity layers on the Screening Tool for Transport features, and as such the site verification process must document this and provide any additional feedback as necessary.
- Compile a TIA in compliance with Appendix 6 of the 2014 NEMA EIA Regulations (as amended). The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary;

- Provide assumptions (e.g. the turbines to be transported and used on site) and limitations as relevant;
- Determine the National and Local haulage routes between port of entry/manufacturer and site;
- Determine the Trip generation for the wind farm during construction and operation;
- Assessment of proposed internal roads and site access points;
- Assessment of internal circulation of trucks and proposed roads layout in regard to turbine positions and turbine laydown areas;
- Assessment of freight requirements and permitting needed for abnormal loads;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a transport perspective (including impacts on the external road network). Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology must follow that as provided by the CSIR;
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof;
- Provide recommendations with regards to potential monitoring programmes;
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr;
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report; and
- Incorporate and address all comments made by Interested and Affected Parties (I&APs) during the BA process (e.g. following the review of the Draft BA Report or as required).

1.1.3. Approach and Methodology

The TIA identifies and assesses the potential traffic impact on the surrounding road network in the vicinity of the site during the construction of the access roads, installation of the turbines during the operational and the removal of the turbines during the decommissioning phases of the proposed Komas WEF.

The TIA included the following tasks:

Site Visit and Project Assessment

- An initial meeting with the client to gain sound understanding of the project
- Overview of project background information including location maps, component specs and any resulting abnormal loads to be transported
- Research of all available documentation and information relevant to the proposed WEF and substations

Correspondence with Authorities

- Correspondence with the relevant Authorities dealing with the external road network, such as the South African National Roads Agency SOC Ltd (SANRAL) and the Northern Cape Provincial Department of Transport and Public Works.

Traffic and Route Assessment

- Trip generation and potential traffic impact
- Possible haul routes between port of entry / manufacturing location and sites in regards of
    - National route
    - Local route
    - Site access route (internal roads)

    - Road limitations due to abnormal loads

- Construction and maintenance (operational) vehicle trips
    - Generated vehicles trips
    - Abnormal load trips
    - Access requirements
    - Possible damaging effects on road surface
    - Scheduling of transport (i.e. during night)
- Station data will be obtained as far as available from SANRAL for the closest national roads.
- Investigation of the impact of the development traffic generated during construction and operation and decommissioning phases of the project.

Access and Internal Roads Assessment

- Assessment of the proposed access points including:
    - Feasible location of access points
    - Motorised and non-motorised access requirements
    - Queuing analysis and stacking requirements if required
    - Access geometry
    - Sight distances and required access spacing
- Assessment of the proposed internal roads on site
- Assessment of internal circulation of trucks and proposed roads layout in regard to turbine positions and turbine laydown areas

Report

- Reporting on all findings and preparation of the report.

1.1.4. Assumptions and Limitations

The following assumptions and limitations apply:

- This study is based on the project information provided by Genesis ENERTRAG Komas (Pty) Ltd.
- According to the Eskom Specifications for Power Transformers, the following dimensional limitations need to be kept when transporting the transformer – total maximum height 5 000 mm, total maximum width 4 300 mm and total maximum length 10 500 mm.
- Maximum vertical height clearances along the haulage route is 5.2m for abnormal loads.
- The imported elements will be transported from the most feasible port of entry, which is deemed to be Port of Saldanha. It is expected that the inverter will be imported and shipped.
- All haulage trips will occur on either surfaced national and provincial roads or existing gravel roads.
- Material for the construction of internal access roads will be sourced locally as far as possible.

1.1.5. Source of Information

Information used in a transport study includes:

- Project Information provided by the client and report template provided by the CSIR;
- Google Earth.kmz provided by the client;
- Google Earth Satellite Imagery;
- TRH11, Dimensional and mass limitations and other requirements for abnormal loads, August 2009;

- The Technical Recommendations for Highways (TRH 11): “Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads”, 2000;
- National Road Traffic Act, Act 93 of 1996;
- National Road Traffic Regulations, 2000;
- National Department of Transport (NDoT), Manual for Traffic Impact Studies, October 2005
- Department of Transport (DoT), Geometric Design of Rural Roads, 1988; and
- SANS 10280/NRS 041-1:2008 Overhead Power Lines for Conditions Prevailing in South Africa.

1.2. DESCRIPTION OF PROJECT ASPECTS RELEVANT TO THE TRANSPORT STUDY

1.2.1. Port of Entry

It is assumed that the wind turbine components will be imported to South Africa via the Port of Saldanha, which is located in the Western Cape. The Port of Saldanha is the largest and deepest natural port in the Southern Hemisphere able to accommodate vessels with a draft of up to 21.5m. The port covers a land and sea surface of just over 19,300 hectares within a circumference of 91km with maximum water depths of 23.7m. Unique to the port is a purpose-built rail link directly connected to a jetty bulk loading facility for the shipment of iron ore. The Port is operated by Transnet National Ports Authority.

1.2.2. Selected Candidate Turbine

The possible range of wind turbines varies largely with various wind turbine manufacturers operating worldwide. The project information states that a turbine with a hub height of up to 200m and a rotor diameter of up to 200m is to be considered.

In general, each turbine unit consists of a tower, a Nacelle (final weight dependent on the supplier and whether the nacelle has gears or not) and rotor blades.

It is assumed that all turbine parts will be imported and shipped via the Port of Saldanha.

1.2.3. Transportation requirements

1.2.3.1. Abnormal Load Considerations

Abnormal permits are required for vehicles exceeding the following permissible maximum dimensions on road freight transport in terms of the National Road Safety Act (Act No. 93 of 1996):

- Length: 22m for an interlink, 18.5m for truck and trailer and 13.5m for a single unit truck
- Width: 2.6m
- Height: 4.3m measured from the ground. Possible height of load – 2.7m.
- Weight: Gross vehicle mass of 56t resulting in a payload of approximately 30t
- Axle unit limitations: 18t for dual and 24t for triple-axle units
- Axle load limitation: 7.7t front axle and 9t on single or rear axles

Any dimension / mass outside the above specifications will be classified as an Abnormal Load and will necessitate an application to the Department of Transport and Public Works to obtain a permit which will authorise the conveyance of said load. A permit is required for each Province that the haulage route traverses.

1.2.3.1.1. Further Guideline Documentation

The Technical Recommendations for Highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outlines the rules and conditions that apply to the transportation of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges and culverts.

The general conditions, limitations and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the Road Traffic Act and the relevant regulations.

1.2.3.1.2. Permitting – General Rules

The limits recommended in TRH 11 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) A permit is issued at the sole discretion of the Permitting 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.
b) A permit can be withdrawn if the vehicle upon inspection is found in any way not fit to be operated.
c) 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 Permitting Authorities.

1.2.3.1.3. Load Limitations

The maximum load that a vehicle or combination of vehicles will be allowed to carry legally under permit on a public road is limited by:

- the capacity of the vehicles as rated by the manufacturer;
- the load which may be carried by the tyres;
- the damaging effect on pavements;
- the structural capacity on bridges and culverts;
- the power of the prime mover(s);
- the load imposed by the driving axles and
- the load imposed by the steering axles.

1.2.3.1.4. Dimensional Limitations

A load of abnormal dimensions may cause an obstruction and danger to other traffic. For this reason, all loads must, as far as possible, conform to the legal dimensions. Permits will only be considered for indivisible loads, i.e. loads that cannot, without disproportionate effort, expense or risk of damage, be divided into two or more loads for the purpose of transport on public roads. For each of the characteristics below there is a legally permissible limit of what is allowed under permit.

- Width
- Height
- Length
- Front Overhang

- Rear Overhang
- Front Load Projection
- Rear Load Projection
- Wheelbase
- Turning Radius
- Stability of Loaded Vehicles

1.2.3.2. Transporting Wind Turbine Components

Wind turbine components can be transported in a number of ways with different truck / trailer combinations and configurations, which will need to be investigated at a later stage when the transporting contractor and the plant hire companies apply for the necessary permits from the Permit Issuing Authorities.

1.2.3.2.1. Nacelle

The heaviest component of a wind turbine is the Nacelle (approximately 100 tons depending on manufacturer and design of the unit). Combined with road-based transport, it has a total vehicle mass of approximately 145 000 kg for a 100t unit. Thus, route clearances and permits will be required for transporting the Nacelle by road-based transport (see example of a road-based transport below). The unit will require a minimum height clearance of 5.1 metres.

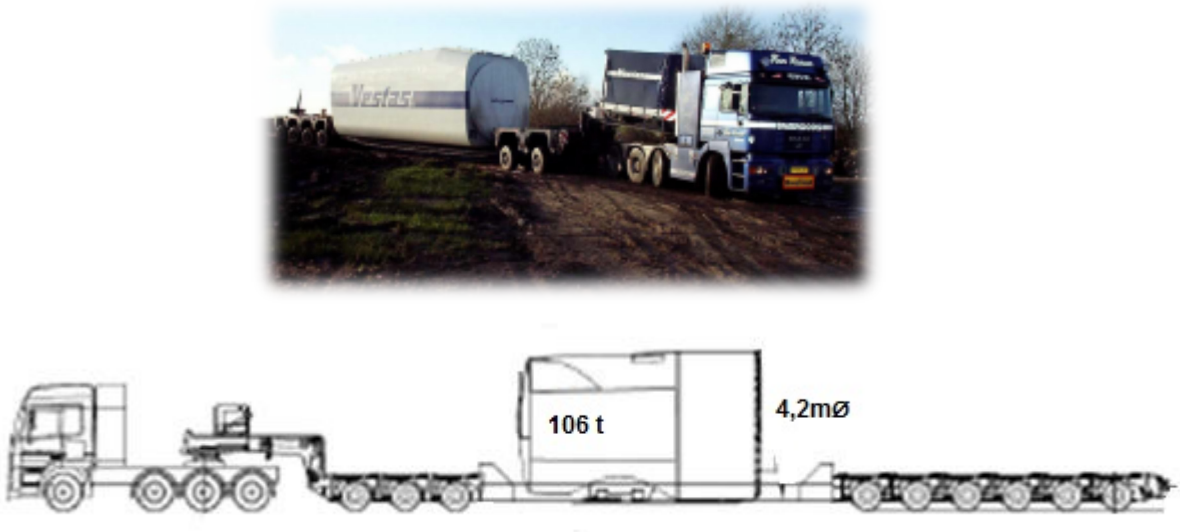

Figure 1: Example: transportation of the Nacelle

1.2.3.2.2. Blades

These are the longest and possibly most vulnerable components of a wind turbine and hence needs to be transported with upmost care. The blades need to be transported on an extendible blade transport trailer or in a rigid container with rear steerable dollies. The blades can be transported individually, in pairs or in three's; although different manufacturers have different methods of packaging and transporting the blades. The transport vehicle exceeds the dimensional limitation (length) of 22m and will only be allowed under permit, provided the trailer is fitted with steerable rear axles or dollies.

Figure 2: Example transportation of 3 x 45m wind turbine blades on extendible trailers

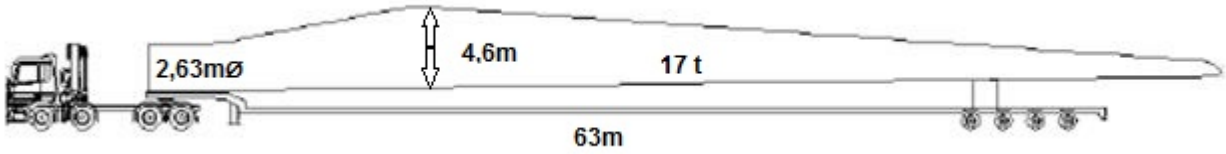

Figure 3: Example: Transportation of a wind turbine blade

Due to the abnormal length of the blades, special attention needs to be given to the route planning, especially to suitable turning radii and adequate sweep clearance. Therefore, vegetation or road signage may have to be removed before transport. Once transported to site, the blades need to be carefully stored in their respective laydown areas before being installed onto the rotary hub.

1.2.3.2.3. Tower Sections

Tower sections generally consist of sections of around 20m in length and hence the number of tower sections required depends on the selected hub height. For a hub height of up to 200m, it is assumed that 10 tower sections are required. Each section is transported separately on a low-bed trailer. Depending on the trailer configuration and height when loaded, some of these components may not meet the dimensional limitations (height and width) but will be permitted under certain permit conditions (see examples below).

Figure 4: Example transportation of the tower sections

1.2.3.2.4. Turbine Hub and Rotary Units

These components need to be transported separately, due to their significant weights - a hub unit weighs around 45t and the rotary unit weighs over 90 tons.

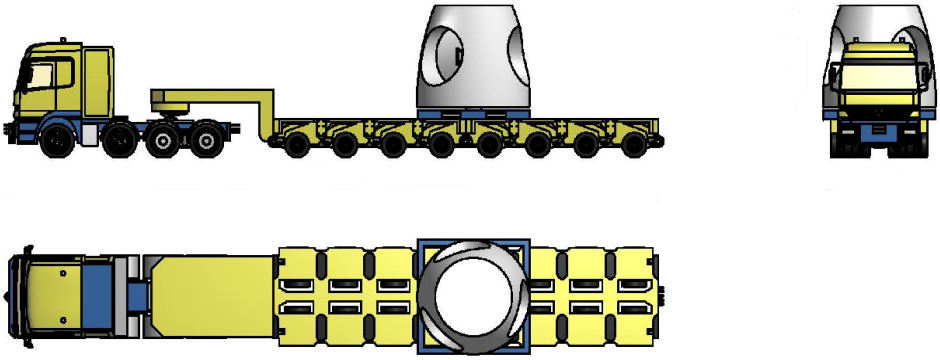

Figure 5: Illustration of the Hub and Rotary Units transportation.

1.2.3.3. Transporting Cranes, Mobile Crane and other Components

This technology has developed fairly rapidly, and a number of different heavy lifting options are available on the market. Costs involved to hire cranes vary and hence should be compared beforehand. For the purpose of this assessment, some possible crane options are outlined as follow.

1.2.3.3.1. Cranes for Assembly and Erection on Site

Option 1: Crawler Crane & Assembly Crane

One possible option is that the main lift crane that would be capable of performing the required lifts, i.e. lifting the tower sections into position, lifting the Nacelle to the hub height and lifting the Rotor and Blades into place, needs to be similar to the Liebherr Crawler Crane LR1750 with a SL8HS (Main Boom and Auxiliary Jib) configuration. A smaller 200t Liebherr Mobile Crane LTM 1200- 5.1 is also required to lift the components and assist in the assembly of the crawler crane at each turbine location.

- **Crawler Crane LR1750 with the SL8HS boom system (Main Lifting Crane):**

The Crawler Crane will be transported to site in components and the heaviest load will be the superstructure and crawler centre section (83 tons). The gross combination mass (truck, trailer and load) will be approximately 133 000 kg. The boom sections, counterweights and other equipment will be transported on conventional tri-axle trailers and then assembled on site. It will require a number of truckloads of components to be delivered for assembly of the Crawler Crane before it can be mobilised to perform the heavy lifts.

- **Mobile Crane LTM 1200-5.1 (Assembly Crane):**

The Liebherr LTM 1200-5.1 crane is a 5-axle vehicle with rubber tyres, which will travel to site on its own. However, the counterweights will be transported on conventional tri-axle trailers and then assembled on site. The assembly crane is required to assemble the main lift crane as well as assist in the installation of the wind turbine components.

Option 2: GTK 1100 Crane & Assembly Crane

For the single wind turbine located at Coega in the Eastern Cape, the GTK 1100 hydraulic crane was used (see example in Figure below). The GTK 1100 was designed to lift ultra-heavy loads to extreme heights and its potential lies in being deployed on facilities such as wind turbine farms.

Figure 6: Examples of cranes at work to erect the single turbine at Coega in the Eastern Cape

- **Mobile Crane LTM 1200-5.1 (Assembly Crane):**

As above - a smaller 200t Liebherr Mobile Crane LTM 1200-5.1 is also required to lift the components and assist in the assembly of the hydraulic crane at each turbine location.

1.2.3.3.2. Cranes at Port of Entry

Most shipping vessels importing the turbine components will be equipped with on-board cranes to do all the safe off-loading of WTG components to the abnormal transport vehicles, parked adjacent to the shipping vessels.

Figure 7: Example of cranes parked adjacent to the ship at the Port of Entry

The imported turbine components may be transported from the Port of Entry to the nearby turbine laydown area. Mobile cranes will be required at these turbine laydown areas to position the respective components at their temporary storage location.

1.2.3.4. Transporting Other Plant, Material and Equipment

In addition to transporting the wind turbine components and specialised lifting equipment, the normal Civil Engineering construction materials, plant and equipment will need to be brought to the site (e.g. sand, stone, cement, concrete batching plant, gravel for road building purposes, excavators, trucks, graders, compaction equipment, cement mixers, transformers in the sub-station, cabling, transmission pylons etc.). Other components, such as electrical cables, pylons and SS transformers, will also be transported to site during construction. The transportation of these items will generally be conducted with normal heavy loads vehicles.

1.3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

1.3.1. Description of the site

The proposed Komas WEF and associated infrastructure will be located on Farms 1/326, 2/328, 3/328, 4/328 and 4/315, located approximately 38km south-east of Kleinsee and approximately 60km west of Springbok in the Northern Cape, as shown in **Figure 8**.

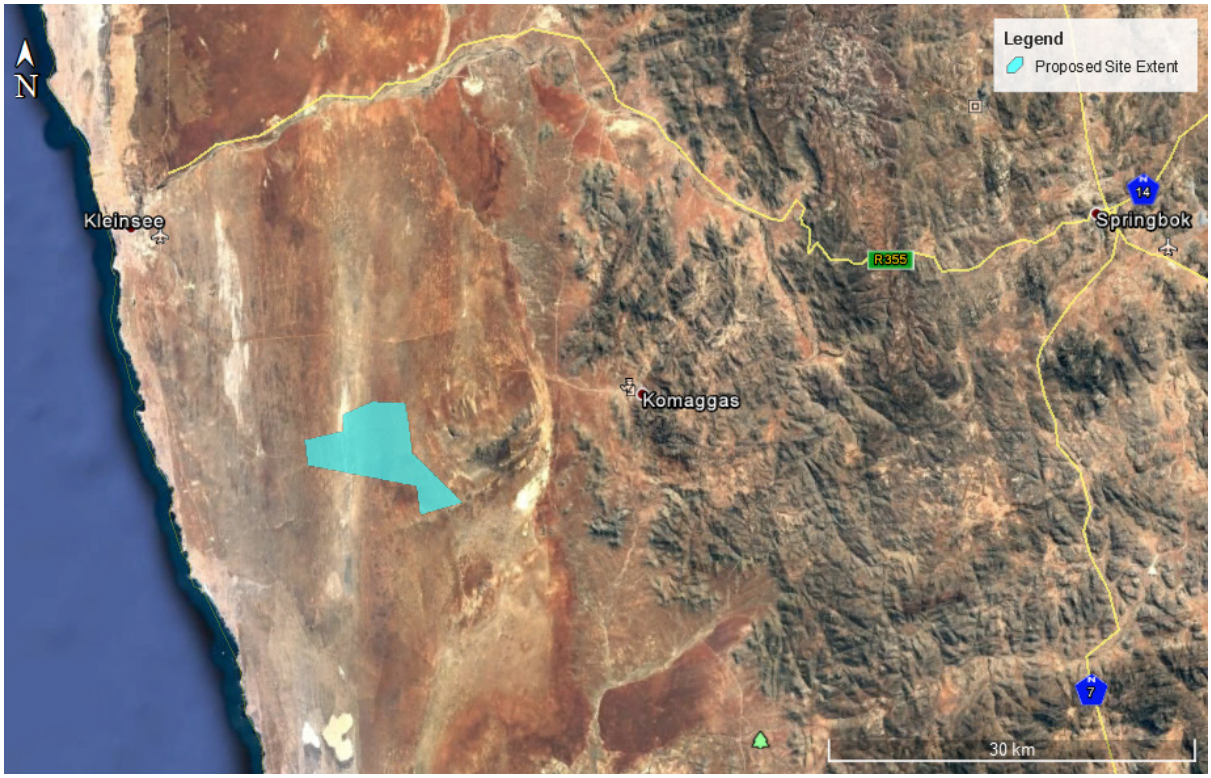

Figure 8: Aerial View of the Proposed Komas WEF site.

The proposed Komas WEF and associated infrastructure includes the following components:

- Up to 50 wind turbine generators (WTGs) with a maximum capacity of up to 300MW.
- Turbines with a hub height of up to 200m and a rotor diameter of up to 200m.
- Hardstand areas of approximately 1 500m^2 per turbine.
- Temporary construction laydown and storage area of approximately 4 500m^2 per turbine.
- Medium voltage cabling connecting the turbines will be laid underground.

- A Lithium-ion Battery Energy Storage System (BESS) comprising of several utility scale battery modules within shipped containers or an applicable housing structure on a concrete foundation.
- Internal roads with a width of up to 10m providing access to each turbine, the BESS, on-site SS and laydown area. The roads will accommodate cable trenches and stormwater channels (as required) and will include turning circle/bypass areas of up to 20m at some sections during the construction phase. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary.
- A temporary construction laydown/staging area of approximately 4.5 hectares (ha) which will also accommodate the operation and maintenance (O&M) buildings.
- A 33/132kV on-site SS to feed electricity generated by the proposed Komas WEF into the national grid.

The BESS and 33/132kV on-site SS will be located within a 4ha battery and SS complex to allow for micro-siting of the BESS components and to a accommodate internal roads (as required), a temporary construction laydown area and a firebreak around the BESS footprint. Two BESS and on-site SS complex site alternatives (Option 1 and Option 2) have been identified for assessment as part of the BA process.

The proposed grid infrastructure including an Eskom Switching SS, 132kV gridline and collector SS (if required) will be assessed as part of a separate basic assessment (BA) process.

1.3.2. National Route to Site

The most suitable port of entry is the Port of Saldanha, which is located 600km travel distance from the proposed Komas WEF site.

The preferred route for abnormal load vehicles will be from the port, heading east on the R45 and R31 to the N7 in Moorreesburg. The route follows the N7 north to Springbok, heading west on the R355. From the R355, the abnormal load will access an unnamed gravel road which leads to the site (Figure 9).

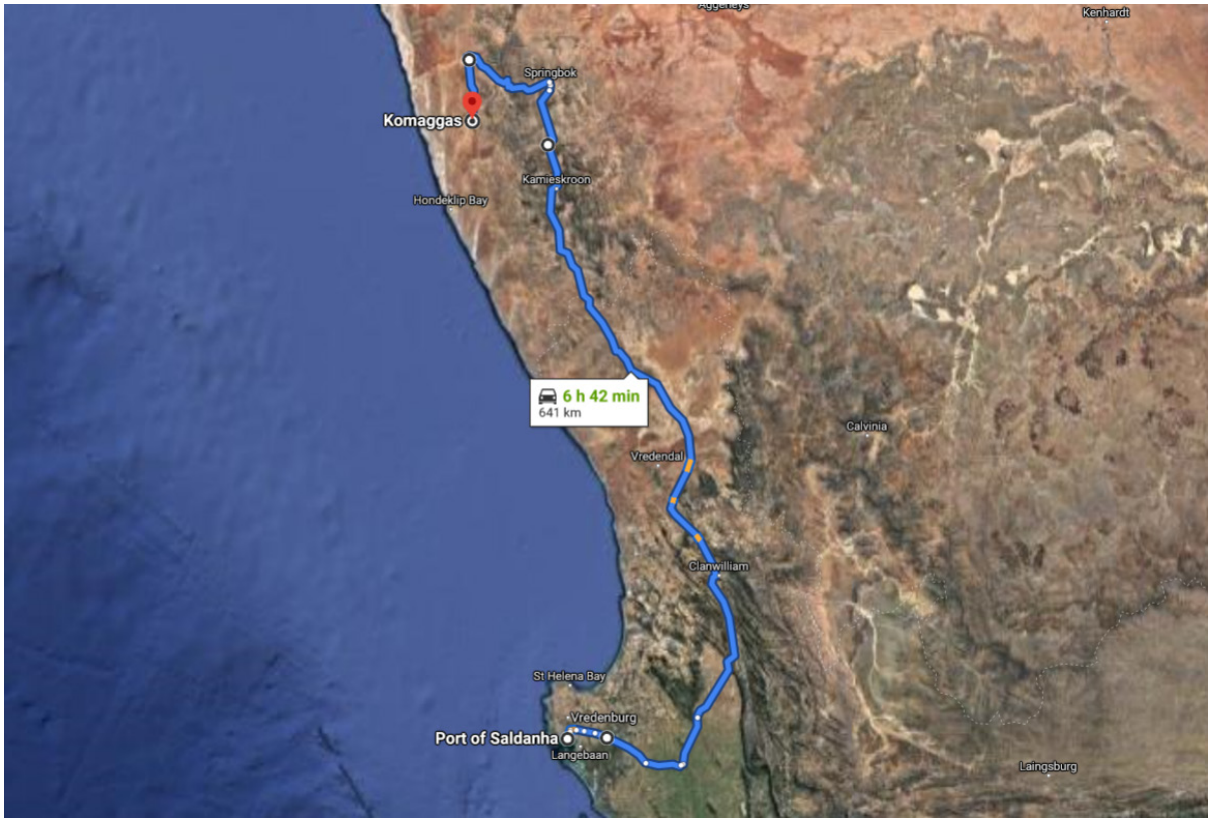

Figure 9: Preferred route from Port of Entry at Saldanha to the proposed Komas WEF site.

It is critical to ensure that the abnormal load vehicle will be able to move safely and without obstruction along the preferred routes. The preferred route should be surveyed to identify problem areas e.g. intersections with limited turning radii and sections of the road with sharp horizontal curves or steep gradients, that may require modification. After the road modifications have been implemented, it is recommended that a “dry-run” be undertaken with the largest abnormal load vehicle, prior to the transportation of any turbine components, to ensure that the delivery of the turbines will occur without disruptions.

It needs to be ensured that the gravel sections of the haulage routes remain in good condition and will need to be maintained during the additional loading of the construction phase and reinstated after construction is completed.

1.3.3. Main Route for the Transportation of the Wind Turbine Components

The investigation showed that it will be possible to transport the imported wind turbine components by road to the proposed sites via two possible main routes, both located off the R355. The 1st option is the surfaced road between the R355 and Komaggas, shown in blue in **Figure 10**. The 2nd option is the unnamed gravel road between the R355 and the intersection point of the provincial gravel roads to the west of Komaggas, shown in green in **Figure 10.** Although both options are feasible, the **surfaced road is the preferred Main Route option as it would require less infrastructure improvements.**

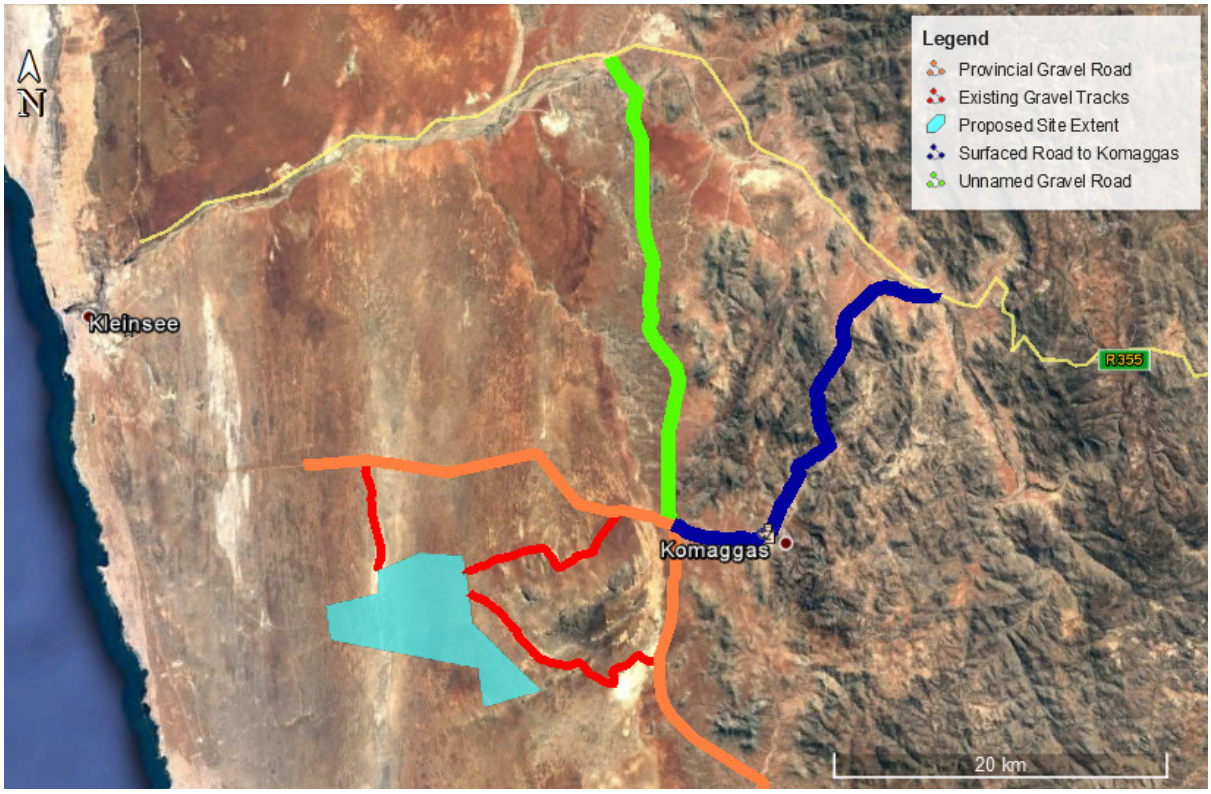

Figure 10: Main Routes to the Proposed Komas WEF Site

1.3.4. Proposed main access road to the proposed WEF

The proposed site layout indicates three possible access points to the proposed Komas WEF site, shown in the **Figure 11** below. The 3 potential access points are located off existing provincial gravel roads. The alignment of the proposed access roads follows existing gravel roads and tracks as far as possible.

Proposed access road 1 (show in red in Figure 11) is not deemed suitable as it falls within the gridline alignment options. Proposed access roads 2 and 3 are both deemed suitable.

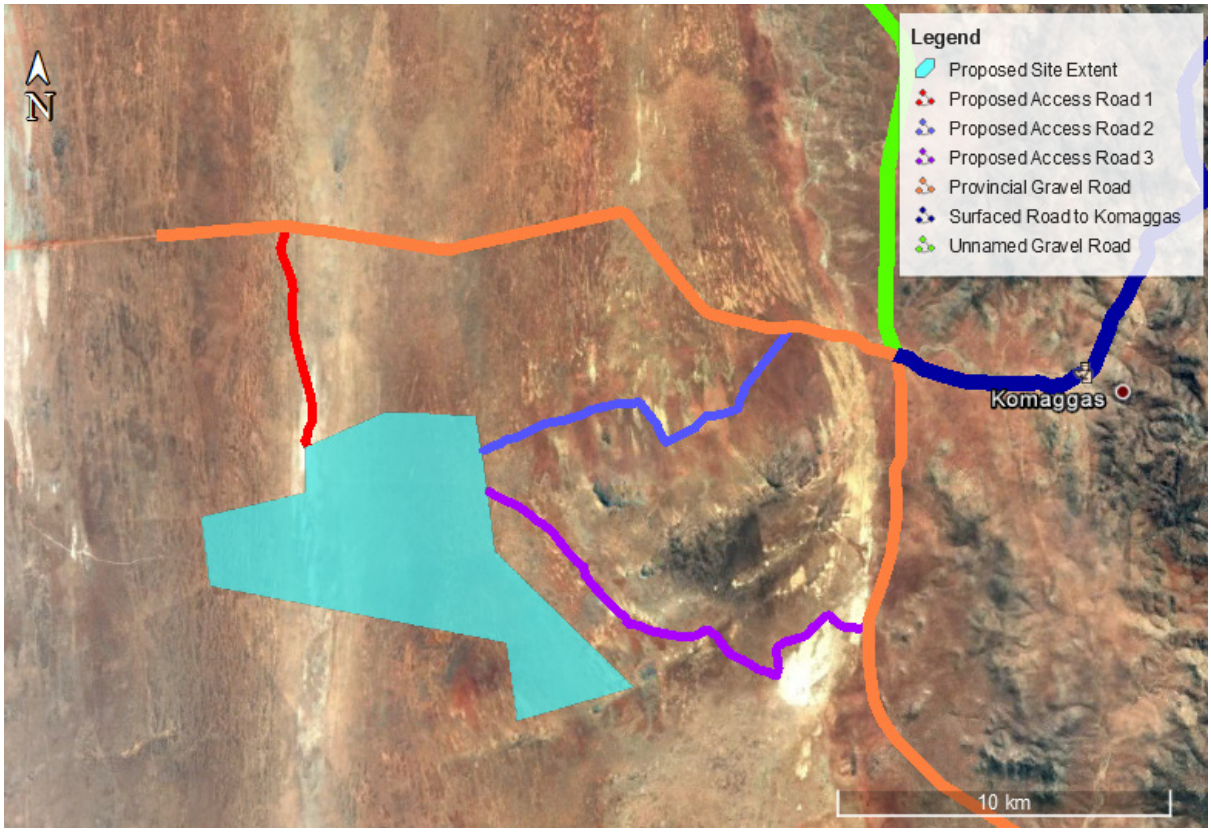

Figure 11: Proposed Access Roads to the Komas WEF site.

The proposed Komas WEF will predominately comprise of new internal gravel roads as there are few existing gravel roads.

A minimum required road width of 4 meters needs to be kept and all turning radii must conform with the specifications needed for the abnormal load vehicles and haulage vehicles. Turning radii will be dependent on the size of the abnormal load vehicle and the size of the component being transported.
It needs to be ensured that the gravel sections of the haulage routes remain in good condition and will hence need to be maintained during the additional loading of the construction phase and then reinstated after construction completion. The gravel roads will require grading with a road grader to obtain a flat even surface and the geometric design of these gravel roads needs to be confirmed at detailed design stage. The road designer should take cognizance that roads need to be designed with smooth, relatively flat gradients to allow an abnormal load vehicle to ascend to the top of a hill.

It should be noted that any overhead lines (e.g. Eskom lines) along the gravel road will have to be moved to accommodate any abnormal load vehicles.

1.3.5. Main Route for the Transportation of Materials, Plant and Staff to the proposed Komas WEF

The nearest towns in relation to the proposed Komas WEF site are Komaggas, Springbok and Kleinsee. Komaggas is situated within 18km from the proposed Komas WEF, Kleinsee within 38km and Springbok within 60km. The main route linking Kleinsee and Springbok to the proposed Komas WEF is the R355. It is envisaged that the majority of materials, plant and labour will be sourced from these towns and transported to the Komas WEF will be via the R355.

Should concrete batch plants or quarries not be available in the surrounding areas, mobile concrete batch plants and temporary construction material stockpile yards could be commissioned on vacant land near the proposed Komas WEF site. Delivery of materials to the mobile batch plant and the stockpile yard could be staggered to minimise traffic disruptions.

It is envisaged that most materials, water, plant, services and people will be procured within a 60km radius from the proposed Komas WEF.

1.4. APPLICABLE LEGISLATION AND PERMIT REQUIREMENTS

Key legal requirements pertaining to the transport requirements for the proposed WEF development are:

- Abnormal load permits, (Section 81 of the National Road Traffic Act 93 of 1996 and National Road Traffic Regulations, 2000);
- Port permit (Guidelines for Agreements, Licenses and Permits in terms of the National Ports Act No. 12 of 2005); and
- Authorisation from Road Authorities to modify the road reserve to accommodate turning movements of abnormal loads at intersections.

1.5. IDENTIFICATION OF KEY ISSUES

1.5.1. Identification of Potential Impacts

The potential traffic related impacts are described below.

1.5.1.1. Construction Phase

- *Potential impact 1*
  - Increased traffic due to the construction of the proposed Komas WEF and associated infrastructure including the transportation of turbine components to site;
  - Increased traffic due to the transportation of construction staff, equipment and materials to site;
  - The increased traffic due to the construction activities would lead to noise and dust pollution; and
  - Increased traffic due to the construction of roads, excavations of turbine foundations, trenching for electrical cables and other ancillary construction works that will temporarily generate the most traffic.

1.5.1.2. Operational Phase

During operation, it is expected that staff including security personnel will periodically visit the site, including the turbines. It is assumed that approximately ten (10) full-time employees will be stationed on site. The traffic generated during this phase will be minimal and will not have an impact on the surrounding road network.

1.5.1.3. Decommissioning Phase

- *Potential Impact 2*
  - Construction related traffic; and

- Noise and dust pollution.

1.5.1.4. Cumulative Impacts

- Traffic congestion/delays on the surrounding road network; and
- Noise and dust pollution.

1.6. ASSESSMENT OF IMPACTS AND IDENTIFICATION OF MANAGEMENT ACTIONS

1.6.1. Potential Impact 1 (Construction Phase)

- *Nature of the impact*
  - Potential traffic congestion and delays on the surrounding road network and associated noise and dust pollution.

- *Significance of impact without mitigation measures*
  - Traffic generated by the construction of the proposed Komas WEF will have an impact of high significance on the surrounding road network before mitigation measures are implemented. The exact number of trips generated during construction will be determined by the haulage company transporting the components to site, the turbine model, the staff requirements and where equipment is sourced from.

For the transportation of the turbines to the Komas WEF site, it was assumed that the turbine blades will be transported to site individually.

Consequently, for each steel wind turbine three (3) abnormal loads will be required for the blades, ten (10) abnormal loads for the tower sections and another abnormal load for the nacelle. All further components will be transported with normal limitations haulage vehicles. With approximately 14 abnormal loads trips (3 trips for blades, 10 trips for tower sections and 1 trip for the nacelle), the total trips to deliver the components of 50 turbines to the WEF site will be around 700 trips (14 trips x 50 turbines). This would amount to approximately 1.3 vehicle trip per day (700 trips / 24 months / 22 working days per month) for a typical construction period of 24 months.

The concrete tower sections are typically delivered in 2-4 precast segments, which are then assembled on-site to form the respective tower section. it was assumed that the first 140m sections will be precast in four segments each and the last 60m sections in two segments each). The total number of abnormal load trips for a concrete turbine is approximately 34 trips. The total trips to deliver the components of 50 turbines to the WEF site will be around 1 700 trips (34 trips x 50 turbines). This would amount to approximately 3.2 vehicle trips per day (1700 trips / 24 months / 22 working days per month) for a typical construction period of 24 months.

The constructions of roads and concrete footings will also have a significant impact on the surrounding road network as vehicles deliver materials to the site. A concrete footing (approximately 600 m^3) adds over 100 trips by concrete trucks to the surrounding road network.

The significance of the transport impact without mitigation measures during the construction and decommissioning phases can be rated as high. However, considering that this is temporary and short term in nature, the impact can be mitigated to an acceptable level.

- *Proposed mitigation measures*

    - The delivery of wind turbine components to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods.
    - Dust suppression of gravel roads during the construction and decommissioning phases, as required.
    - Regular maintenance of gravel roads by the Contractor during the construction and decommissioning phases.
    - The use of mobile batch plants and quarries near the site would decrease the impact on the surrounding road network.
    - Staff and general trips should occur outside of peak traffic periods as far as possible.
    - Any low hanging overhead lines (lower than 5.1 m) e.g. Eskom and Telkom lines, along the proposed routes will have to be moved to accommodate the abnormal load vehicles.
    - The preferred route should be surveyed to identify problem areas e.g. intersections with limited turning radii and sections of the road with sharp horizontal curves or steep gradients, that may require modification. After the road modifications have been implemented, it is recommended to undertake a "dry-run" with the largest abnormal load vehicle, prior to the transportation of any turbine components, to ensure that the delivery of the turbines will occur without disruptions. This process is to be undertaken by the haulage company transporting the components and the contractor, who will modify the road and intersections to accommodate abnormal vehicles. It needs to be ensured that the gravel sections of the haulage routes remain in good condition and will need to be maintained during the additional loading of the construction phase and reinstated after construction is completed.
    - Design and maintenance of internal roads. The internal gravel roads will require grading with a road grader to obtain a flat even surface and the geometric design of these gravel roads needs to be confirmed at detailed design stage. This process is to be undertaken by a civil engineering consultant or a geometric design professional. The road designer should take cognizance that roads need to be designed with smooth, relatively flat gradients to allow an abnormal load vehicle to ascend to the top of a hill.

- *Significance of impact with mitigation measures*

    The proposed mitigation measures for the construction traffic will result in a minor reduction of the impact on the surrounding road network, but the impact on the local traffic will remain moderate as the existing traffic volumes are deemed to be low. The dust suppression, however, significantly reduces the impact.

1.6.2. Potential Impact 2 (Decommissioning Phase)

The decommissioning phase will result in the same impact as the Construction Phase as similar trips are expected. The potential traffic impact will be of high significance before mitigation measures during the construction and decommissioning phases. However, considering that this is temporary and short term in nature, the impact can be mitigated to an acceptable level of moderate significance.

1.6.3. Cumulative Impacts

To assess the cumulative impact, it was assumed that all wind farms within 50km currently proposed and authorized, would be constructed at the same time. This is the precautionary approach as in reality; these projects would be subject to a highly competitive bidding process and not all the projects may be selected to enter into a Power Purchase Agreement with Eskom. There are currently eight approved WEFs and one approved solar PV facility

within the 50 km radius of the proposed Komas WEF (see the list of projects below and Figure 12). The proposed Gromis WEF is still in the pre-application phase and the Nigramoep solar PV facility is currently undergoing an assessment process. Even if all the facilities are constructed and decommissioned at the same time, the roads authority will consider all applications for abnormal loads and work with all project companies to ensure that loads on the public roads are staggered and staged to ensure that the impact will be acceptable.

The construction and decommissioning phases of a WEF are the only significant traffic generators. The duration of these phases is short term i.e. the potential impact of the traffic generated during the construction and decommissioning phases of the proposed Komas WEF traffic on the surrounding road network is temporary and WEFs, when operational, do not add any significant traffic to the road network. The cumulative impacts were assessed to be of high significance before mitigation and moderate significance after mitigation.

1.6.4. No-Go Alternative

The no-go alternative implies that the proposed development of the Komas WEF does not proceed. This would mean that there will be no negative environmental impacts and no traffic impact on the surrounding network during the construction and decommissioning phases of the proposed Komas WEF. However, this would also mean that there would be no socio-economic benefits to the surrounding communities, and it will not assist government in meeting its' targets for renewable energy. **Hence, the no-go alternative is not a preferred alternative.**

1.6.5. Assessment of the Battery and Substation Complex Site Alternatives

It should be noted that the location of the BESS and SS complex, from a traffic perspective, does not have any impact on the traffic volumes and the surrounding road network. The BESS and SS complex site Alternatives (Option 1 and Option 2) are deemed acceptable and may proceed as none are fatally flawed.

Renewable energy developments proposed within a 50km radius of the proposed Komas WEF application site

DEA REFERENCE NUMBER	PROJECT TITLE	APPLICANT	EAP	TECHNOLOGY	MEGAWATT	STATUS
12/12/20/2331/1 12/12/20/2331/1/AM1 12/12/20/2331/2 12/12/20/2331/3	Project Blue Wind Energy Facility Near Kleinsee within the Namakwa Magisterial District, Northern Cape Province. (Phase 1-3)	Diamond Wind (Pty) Ltd	Savannah Environmental Consultants (Pty) Ltd	Wind and Solar PV	150 MW Wind 65 MW Solar PV	Approved
12/12/20/2212	Proposed 300 MW Kleinzee WEF in the Northern Cape Province.	Eskom Holdings SOC Limited	Savannah Environmental Consultants (Pty) Ltd	Wind	300 MW	Approved
14/12/16/3/3/2/1046	The proposed Kap Vley WEF and its associated infrastructure near Kleinzee, Nama Khoi Local Municipality, Northern Cape Province.	Kap Vley Wind Farm (Pty) Ltd	Council for Scientific and Industrial Research	Wind	300 MW	Approved
14/12/16/3/3/1/1971	Proposed Namas Wind Farm near Kleinsee, Namakwaland Magisterial District, Northern Cape	Genesis Namas Wind (Pty) Ltd	Savannah Environmental Consultants (Pty) Ltd	Wind	140 MW	Approved
14/12/16/3/3/1/1970	Proposed Zonnequa Wind Farm near Kleinsee, Namakwaland Magisterial District, Northern Cape	Genesis Zonnequa Wind (Pty) Ltd	Savannah Environmental Consultants (Pty) Ltd	Wind	140 MW	Approved
12/12/20/2154	Proposed construction of the 7.2 MW Koingnaas Wind Energy Facility Within The De Beers Mining Area on the Farm Koingnaas 745 near Koingnaas Northern Cape Province.	Just PalmTree Power Pty Ltd	Savannah Environmental Consultants (Pty) Ltd	Wind	7.2 MW	Approved
12/12/20/1807	Proposed establishment of the Kannikwa Vlakte wind farm.	Kannikwa Vlakte Wind Development Company Pty Ltd	Galago Environmental cc	Wind	120 MW	Approved
12/12/20/1721 12/12/20/1721/AM1	The proposed Springbok Wind Energy facility near Springbok	Mulilo Springbok Wind Power (Pty)	Holland & Associates	Wind	55.5 MW	Approved

DEA REFERENCE NUMBER	PROJECT TITLE	APPLICANT	EAP	TECHNOLOGY	MEGAWATT	STATUS
12/12/20/1721/AM2 12/12/20/1721/AM3 12/12/20/1721/AM4 12/12/20/1721/AM5	Northern Cape Province.	Ltd	Environmental Consultants			
TBA	The proposed Gromis WEF and associated infrastructure near Kleinsee in the Northern Cape Province.	Genesis ENERTRAG Gromis Wind (Pty) Ltd	Council for Scientific and Industrial Research	Wind	200 MW	In process
14/12/16/3/3/1/416	Nigramoep Solar PV Solar Energy Facility on a site near Nababeep Northern Cape.	South African Renewable Green Energy (Pty) Ltd	Savannah Environmental Consultants (Pty) Ltd	Solar PV	20 MW	In process

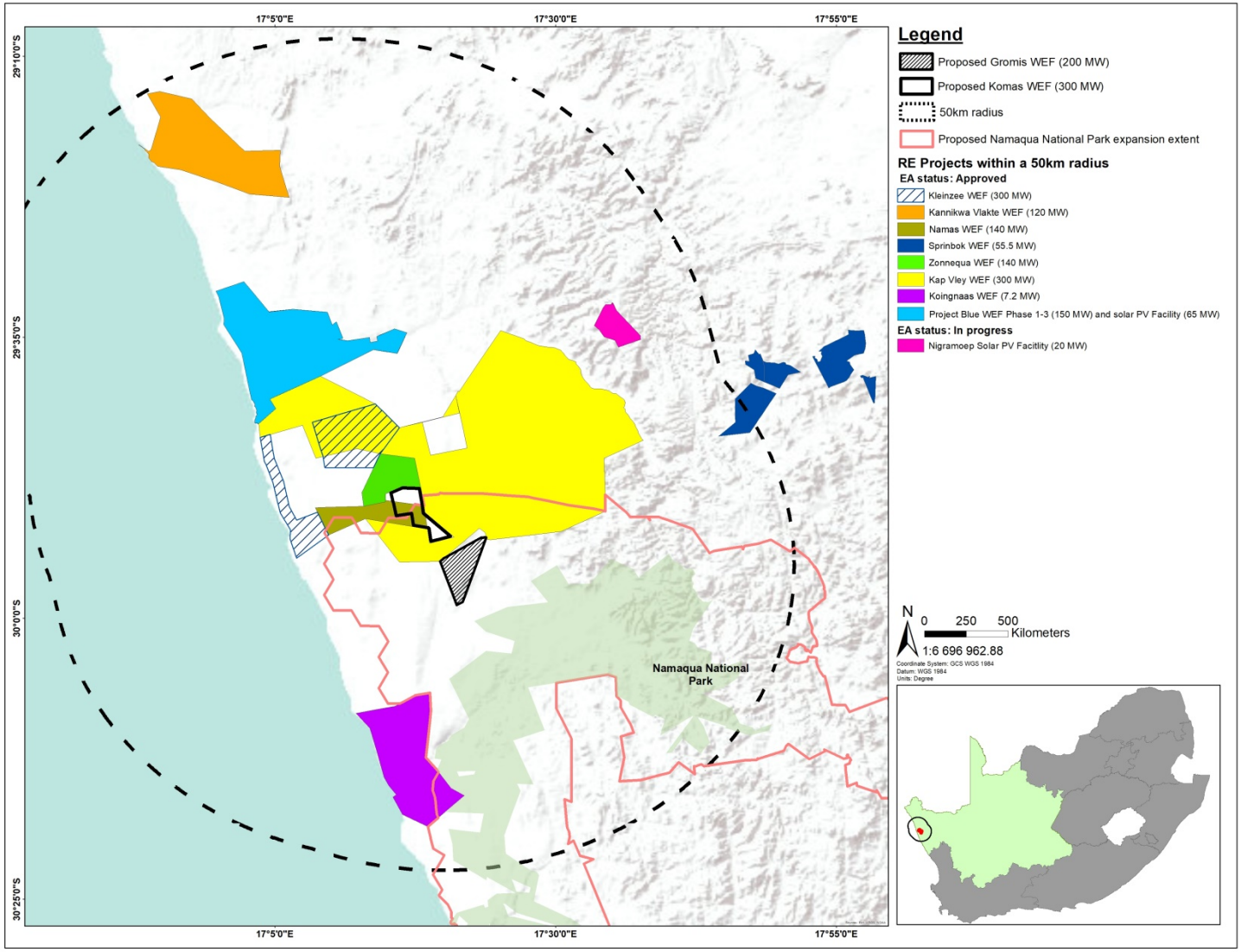

Figure 12: Other Renewable Energy Projects within 50km from the proposed Komas WEF site

1.7. IMPACT ASSESSMENT SUMMARY

The assessment of impacts and recommendation of mitigation measures as discussed above are collated in the Tables below.

Table 1. Impact assessment summary table for the Construction Phase

Impact pathway	Nature of potential impact/risk	Status[1]	Extent[2]	Duration[3]	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/ risk	Confidence level
TRAFFIC															
CONSTRUCTION PHASE															
Direct Impacts															
Construction Activities	Traffic congestion and delays	Negative	Regional	Short-term	Substantial	Very likely	High	-	High	No	Yes	- Stagger turbine component delivery to site - Reduce the construction period - Stagger the construction of the turbines - The use of mobile batch plants and quarries in close proximity to the site would decrease the impact on the surrounding road network. - Staff and general trips should occur outside of peak traffic periods Maintenance of haulage routes. - Design and maintenance of internal roads.	Moderate	3	Medium
Indirect Impacts															
Construction Activities	Traffic congestion and delays	Negative	Regional	Short-term	Substantial	Very likely	High	-	High	No	Yes	- Stagger turbine component delivery to site - Reduce the construction period - Stagger the construction of the turbines - The use of mobile batch plants and quarries in close proximity to the site would decrease the impact on the surrounding road network. - Staff and general trips should occur outside of peak traffic periods Maintenance of haulage routes. - Design and maintenance of internal roads.	Moderate	3	Medium

[1] Status: Positive (+) ; Negative (-)
[2] Site; Local (<10 km); Regional (<100); National; International
[3] Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 years); Long-term (project duration); Permanent (beyond project decommissioning)

Table 2. Impact assessment summary table for the Operational Phase

Impact pathway	Nature of potential impact/risk	Status	Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/ risk	Confidence level
TRAFFIC															
OPERATIONAL PHASE															
Direct Impacts															
The traffic generated during this phase will be minimal and will have a nominal impact on the surrounding road network.															
Indirect Impacts															
The traffic generated during this phase will be minimal and will have a nominal impact on the surrounding road network.															

Table 3. Impact assessment summary table for the Decommissioning Phase

Impact pathway	Nature of potential impact/risk	Status[4]	Extent[5]	Duration[6]	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/ risk	Confidence level
TRAFFIC															
DECOMMISSIONING PHASE															
Direct Impacts															
Decommissioning Activities	Traffic congestion and delays	Negative	Regional	Short-term	Substantial	Very likely	High	-	High	No	Yes	- Stagger turbine component transportation - Reduce the construction period - Stagger the construction of the turbines - Staff and general trips should occur outside of peak traffic periods - Maintenance of haulage routes and internal roads.	Moderate	3	Medium
Indirect Impacts															
Decommissioning Activities	Traffic congestion and delays	Negative	Regional	Short-term	Substantial	Very likely	High	-	High	No	Yes	- Stagger turbine component transportation - Reduce the construction period - Stagger the construction of the turbines - Staff and general trips should occur outside of peak traffic periods - Maintenance of haulage routes and internal roads.	Moderate	3	Medium

Table 4. Cumulative impact assessment summary table

Impact pathway	Nature of potential impact/risk	Status	Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/ risk	Confidence level

[4] Status: Positive (+) ; Negative (-)
[5] Site; Local (<10 km); Regional (<100); National; International
[6] Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 years); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status	Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/ risk	Confidence level
TRAFFIC															
CUMULATIVE IMPACTS															
Construction Activities	Traffic congestion and delays	Negative	Regional	Short-term	Substantial	Very likely	High	-	High	No	Yes	- Stagger turbine component transportation - Reduce the construction period - Stagger the construction of the turbines - Staff and general trips should occur outside of peak traffic periods	Moderate	3	Medium

1.8. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAMME

It is recommended that dust suppression and maintenance of gravel roads form part of the Environmental Management Programme (EMPr). This would be required during the Construction and Decommissioning phases when an increase is vehicle trips can be expected. No traffic related mitigation measures are envisaged during the Operation phase due to the negligible traffic volume generated during this phase.

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Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
A. CONSTRUCTION PHASE					
A.1. TRAFFIC IMPACTS					
Dust and noise pollution Traffic congestion and delays on the road network	Minimize impacts on road network.	▪ Stagger turbine component delivery to site ▪ The use of mobile batch plants and quarries near the site would decrease the impact on the surrounding road network ▪ Dust suppression ▪ Reduce the construction period ▪ Maintenance of gravel roads ▪ Apply for abnormal load permits prior to commencement of delivery via abnormal loads. ▪ Assess the preferred route and undertake a 'dry run' to test	▪ Regular monitoring of road surface quality. ▪ Apply for required permits prior to commencement of construction.	▪ Before construction commences and regularly during construction phase.	▪ Holder of the EA

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		▪ Staff and general trips should occur outside of peak traffic periods as far as possible. ▪ Any low hanging overhead lines (lower than 5.1m) e.g. Eskom and Telkom lines, along the proposed routes will have to be moved to accommodate the abnormal load vehicles.			

Table 5: EMPr Input - Decommissioning Phase

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
B. DECOMMISSIONING PHASE					
B.1. TRAFFIC IMPACTS					
Dust and noise pollution	Avoid or Minimize impacts on road network.	▪ Stagger turbine component delivery to site ▪ The use of mobile batch plants and quarries near the site would decrease the impact on the surrounding road network ▪ Dust suppression	▪ Regular monitoring of road surface quality.	▪ Before and during the decommissioning phase.	▪ Contractor

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		▪ Reduce the construction period ▪ Maintenance of gravel roads ▪ Apply for abnormal load permits prior to commencement of delivery via abnormal loads. ▪ Assess the preferred route and undertake a 'dry run' to test ▪ Staff and general trips should occur outside of peak traffic periods as far as possible. ▪ Any low hanging overhead lines (lower than 5.1m) e.g. Eskom and Telkom lines, along the proposed routes will have to be moved to accommodate the abnormal load vehicles.			

1.9. CONCLUSION AND RECOMMENDATIONS

The potential traffic related impacts for the construction, operation and decommissioning phases for the proposed Komas WEF and associated infrastructure were identified and assessed.

- The traffic generated during the construction phase, although significant, will be temporary and impacts are considered to be negative and of high significance before and of **moderate significance** after mitigation.
- During operational phase of the proposed Komas WEF, it is anticipated that staff and security personnel will visit the facility periodically. It is assumed that approximately less than ten (10) full-time employees will be stationed on site. The traffic generated during this phase will be minimal and will not have an impact on the surrounding road network.
- The traffic generated during the decommissioning phase will be less than the traffic generated during the construction phase and the impact on the surrounding road network will also be negative and of high significance before and of **moderate significance** after mitigation.

The proposed mitigation measures to be implemented during the construction and decommissioning phases are:

- Dust suppression;
- Component delivery to/ removal from the site can be staggered and trips can be scheduled to occur outside of peak traffic periods;
- The use of mobile batch plants and quarries near the site would decrease the impact on the surrounding road network;
- Staff and general trips should occur outside of peak traffic periods;
- A “dry run” of the preferred route;
- Design and maintenance of internal roads; and
- Any low hanging overhead lines (lower than 5.1m) e.g. Eskom and Telkom lines, along the proposed routes will have to be moved to accommodate the abnormal load vehicles.

The construction and decommissioning phases of a WEF are the only significant traffic generators and therefore noise and dust pollution will be higher during these phases. The duration of these phases is short term i.e. the impact of the WEF on the traffic on the surrounding road network is temporary and WEFs, when operational, do not add any significant traffic to the road network.

The location of the BESS and SS complex, from a traffic perspective, does not have any impact on the traffic volumes and the surrounding road network. The BESS and SS complex site alternatives (Option 1 and Option 2) are deemed acceptable and may proceed as none are fatally flawed.

The proposed development of the Komas WEF and associated infrastructure is supported from a transport perspective provided that the recommendations and mitigations contained in this report are adhered to.

The potential impacts associated with proposed Komas WEF and associated infrastructure are acceptable from a transport perspective and it is therefore recommended that the proposed facility be authorised.

1.10. REFERENCES

- Google Earth Pro
- Gouws. S: “Concrete Towers – a business case for sustained local investment”, Concrete growth, www.slideshare.net/SantieGouws/concrete-towers-a-business-case-for-sustained-investmentrev-5
- Road Traffic Act, 1996 (Act No. 93 of 1996)
- National Road Traffic Regulations, 2000
- SANS 10280/NRS 041-1:2008 - Overhead Power Lines for Conditions Prevailing in South Africa
- The Technical Recommendations for Highways (TRH 11): “Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads

1.11. APPENDICES

APPENDIX 1: SPECIALIST EXPERTISE

IRIS SIGRID WINK

Profession	Civil Engineer (Traffic & Transportation)
Position in Firm	Associate
Area of Specialisation	Manager: Traffic & Transportation Engineering
Qualifications	PrEng, MSc Eng (Civil & Transportation)
Years of Experience	18 Years
Years with Firm	8 Years

SUMMARY OF EXPERIENCE

Iris is a Professional Engineer registered with ECSA (20110156). She joined JG Afrika (Pty) Ltd. in 2012. Iris obtained a Master of Science degree in Civil Engineering in Germany and has more than 15 years of experience in a wide field of traffic and transport engineering projects. Iris left Germany in 2003 and has worked as a traffic and transport engineer in South Africa and Germany. She has technical and professional skills in traffic impact studies, public transport planning, non-motorised transport planning and design, design and development of transport systems, project planning and implementation for residential, commercial and industrial projects and providing conceptual designs for the abovementioned. She has also been involved with transport assessments for renewable energy projects and traffic safety audits.

PROFESSIONAL REGISTRATIONS & INSTITUTE MEMBERSHIPS

PrEng - Registered with the Engineering Council of South Africa No. 20110156
Registered Mentor with ECSA for the Cape Town Office of JG Afrika
MSAICE - Member of the South African Institution of Civil Engineers
ITSSA - Member of ITS SA (Intelligent Transport Systems South Africa)
SAWEA - Member of the South African Wind Energy Association
SARF - South African Road Federation: Committee Member of Council
IRF - Global Road Safety Audit Team Leader

EDUCATION

1996 - Matric – Matric (Abitur) – Carl Friedrich Gauss Schule, Hemmingen, Germany
1998 - Diploma as Draughtsperson – Lower Saxonian State Office for Road and Bridge Engineering
2003 - MSc Eng (Civil and Transportation) – Leibniz Technical University of Hanover, Germany

SPECIFIC EXPERIENCE

JG Afrika (Pty) Ltd (Previously Jeffares & Green (Pty) Ltd)
2016 – Date
Position – Associate

- **Kudusberg Windfarm** – Transport study for the proposed Kudusberg Windfarm near Sutherland, Northern Cape – Client: G7 Renewable Energies

- **Kuruman Windfarm –** Transport study for the proposed Kuruman Windfarm in Kuruman, Northern Cape – Client: Mulilo Renewable Project Developments
- **Coega West Windfarm** – Transportation and Traffic Management Plan for the proposed Coega Windfarm in Coega, Port Elizabeth – Client: Electrawinds Coega
- **Traffic and Parking Audits** for the Suburb of Groenvallei in Cape Town – Client: City of Cape Town Department of Property Management.
- **Road Safety Audit** for the Upgrade of N1 Section 4 Monument River – Client: Aurecon on behalf of SANRAL
- **Sonop Windfarm** – Traffic Impact Assessment for the proposed Sonop Windfarm, Coega, Port Elizabeth – Client: Founders Engineering
- **Universal Windfarm** - Traffic Impact Assessment for the proposed Universal Windfarm, Coega, Port Elizabeth – Client: Founders Engineering
- **Road Safety Audit** for the Upgrade of N2 Section 8 Knysna to Wittedrift – Client: SMEC on behalf of SANRAL
- **Road Safety Audit** for the Upgrade of N1 Section 16 Zandkraal to Winburg South – Client: SMEC on behalf of SANRAL
- **Traffic and Road Safety Studies** for the Improvement of N7 Section 2 and Section 3 (Rooidraai and Piekenierskloof Pass) – Client: SANRAL
- **Road Safety Appraisal**s for Northern Region of Cape Town – Client: Aurecon on behalf of City of Cape Town (TCT)
- **Traffic Engineering Services** for the Enkanini Informal Settlement, Kayamandi - Client: Stellenbosch Municipality
- **Lead Traffic Engineer** for the Upgrade of a 150km Section of the National Route N2 from Kangela to Pongola in KwaZulu-Natal, Client: SANRAL
- **Traffic Engineering Services** for the Kosovo Informal Settlement (which is part of the Southern Corridor Upgrade Programme), Client: Western Cape Government
- **Traffic and Road Safety Studies** for the proposed Kosovo Informal Housing Development (part of the Southern Corridor Upgrade Program), Client: Western Cape Government.
- **Road Safety Audit** Stage 3 – Upgrade of the R573 Section 2 between Mpumalanga/Gauteng and Mpumalanga/Limpopo, Client: AECOM on behalf of SANRAL
- **Road Safety Audit** Stage 1 and 3 – Upgrade of the N2 Section 5 between Lizmore and Heidelberg, Client: Aurecon on behalf of SANRAL
- **Traffic Safety Studies** for Roads Upgrades in Cofimvaba, Eastern Cape – Client: Cofimvaba Municipality
- **Road Safety Audit** Stage 1 and 3 – Improvement of Intersections between Olifantshoek and Kathu, Northern Cape, Client: Nadeson/Gibb on behalf of SANRAL
- **Road Safety Audit** Stage 3 – Upgrade of the Beacon Way Intersection on the N2 at Plettenberg Bay, Client: AECOM on behalf of SANRAL
- **Traffic Impact Assessment** for a proposed Primary School at Die Bos in Strand, Somerset West, Client: Edifice Consulting Engineers
- **Road Safety Audit** Stage 1 and 3 – Improvement of R75 between Port Elizabeth and Uitenhage, Eastern Cape, Client: SMEC on behalf of SANRAL

APPENDIX 2: SPECIALIST DECLARATION

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:	DEA/EIA/
Date Received:	

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

Komas Wind Energy Facility

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

1. SPECIALIST INFORMATION

Specialist Company Name:	JG Afrika (Pty) Ltd			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition	135%
Specialist name:	Iris Wink			
Specialist Qualifications:	MSc Eng (Civil)			
Professional affiliation/registration:	PrEng 20110156			
Physical address:	14 Central Square, Pinelands 7405			
Postal address:	PO Box 38561, Pinelands 7430			
Postal code:	7430	Cell:	082 691 9096	
Telephone:	021 530 1800	Fax:	021 532 0950	
E-mail:	wink@jgafrika.com			

2. DECLARATION BY THE SPECIALIST

I, Iris Wink, 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

JG AFRIKA (PTY) LTD

Name of Company:

04/09/2020

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, IRIS WINK, 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

JG AFRIKA (PTY) LTD

Name of Company

04/09/2020

Date

Signature of the Commissioner of Oaths

04/09/2020

Date

Ex officio COMMISSIONER OF OATHS (RSA)
Brent Allan Cocks
CERTIFIED FINANCIAL PLANNER
Unit 1, The Catacombs, Century Boulevard
Century City, 7441