TRAFFIC MANAGEMENT PLAN:

THE PROPOSED 400MW RICHARDS BAY POWER FACILITY ON ERVEN 17455, 17443 AND 17442 WITHIN THE RICHARDS BAY INDUSTRIAL DEVELOPMENT ZONE, UMTHLATHUZE LOCAL MUNICIPALITY IN THE KWAZULU-NATAL PROVINCE

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SYNOPSIS

Preparation of a Traffic Management Plan for the proposed 400MW Richards Bay Power Facility to be located within the Richards Bay Industrial Development Zone in the Kwazulu-Natal Province, pertaining to all relevant traffic and transportation engineering aspects.

KEY WORDS:

Richards Bay Power Facility, Traffic Management Plan

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
By Author	Senior Technologist	Adrian Johnson		07/08/2020
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TRAFFIC MANAGEMENT PLAN

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1 INTRODUCTION

Richards Bay Gas Power 2 (Pty) Ltd is proposing to develop a Gas to Power Facility, with a maximum output of 400MW, on Erven 17455, 17443 and 17442 located in the Richards Bay IDZ Phase 1F in Richards Bay, Kwazulu-Natal.

The 400MW Richards Bay Gas to Power Energy Facility, which will encompass 400MW fuel generated energy and will comprise the following:

- Six (6) Gas Turbines for Mid-merit/Peaking plant.
- The power plant will comprise multiple turbine units, each of ~70MW.
- Stacks associated with each turbine will be up to 20m in height.
- Engines fuelled by LPG, or LNG (in various forms) where a suitable source becomes available.
- Closed Fin-fan coolers.
- Water Injection.

2 PURPOSE OF THE TRAFFIC MANAGEMENT PLAN

A traffic management plan is required to ensure that the trips generated by the construction and operational activities associated with the facility are mitigated as far as possible to:

- reduce the traffic impact on the surrounding road network;
- reduce potential conflicts that may results from the development traffic and the general traffic/public; and
- to identify potential routes for vehicles travelling to the site, particularly heavy and abnormal load vehicles.

This Plan has been prepared to enable the identification and implementation of all legal and best practice requirements in respect of the management of traffic associated with the construction and operation of the facility.

The Plan has been prepared specifically to address condition 17.11 of the approved Environmental Authorisation and is to be added to the updated EMPr.

3 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations apply:

- This TMP is based on the project information provided by the Client.
- Maximum vertical height clearances along the haulage route are at least 5.2m to be able to accommodate abnormal loads.
- The imported elements will be transported from the most feasible port of entry, which is deemed to be Richards Bay.

- All haulage trips will occur on either surfaced national and provincial roads or existing gravel roads.
- Material for the construction will be sourced locally as far as possible.

4 SOURCE OF INFORMATION

Information used in a transport study includes:

- Project Information 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 Department of Transport (NDoT), Manual for Traffic Impact Studies, October 2005
- Department of Transport (DoT), Geometric Design of Rural Roads, 1988
- SANS 10280/NRS 041-1:2008 Overhead Power Lines for Conditions Prevailing in South Africa

5 SITE LOCATION

The proposed site is located in the Richards Bay Industrial Development Zone (IDZ zone 1F), a fully serviced industrial estate with prime rail, road and port access.

The proposed facility will be located on an access road off Alumina Alley. The site is bounded by the R619 to the east and the R34 to the west, as shown in **Figure 1**.

Figure 5-1: Locality Plan

The R34 is a 4-lane dual carriageway and the R619 is a 2-lane single carriageway. These roads accommodate high volumes of heavy vehicles travelling to and from the Port.

6 DESCRIPTION OF PROJECT ASPECTS RELEVANT TO THE TRAFFIC MANAGEMENT PLAN

6.1 Components

Components will be transported to site using appropriate National and Provincial routes. It is expected that the components will generally be transported to site with normal heavy load vehicles, with the exception of the fuel tanks, generators and certain components of the gas turbines which require an abnormal load vehicle.

Lifting equipment and counter weighs are required to off-load and assemble the components. The largest/heaviest items requiring specialist transport are fuel tanks (6 No), gas turbines (3 No) and generators (3 No). The transportation of the fuel tanks, generators and the larger components of the gas turbines require abnormal load permits as the dimension exceed the permissible maximum dimensions on road freight transport in terms of the Road Traffic Act (Act No. 93 of 1996).

6.2 Port of Entry

Components imported to South Africa will be via the Richards Bay Port. A deep-sea water port and boasting 13 berths, the terminal handles dry bulk ores, minerals and break bulk consignments with a draft that easily accommodates Cape size and Panamax vessels. The terminal exports over 30 varied commodities from magnetite to ferrochrome, woodchips to aluminium and steel. A large percentage of dry bulk commodities are handled via a computer-controlled network of conveyor belts extending 40 km to seven harbour bound industries. These belts transport cargo between the quayside and the respective manufacturers. Break bulk cargo on the other hand, is a skip-loading operation that due to the density of the commodities, chiefly relies on road motor transport (RMT) to and from the point of trade. The port is operated by Transnet Port Terminals.

6.3 Applicable Legislation and Permit Requirements

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

- Abnormal load permits, (Section 81 of the National Road Traffic Act)
- 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.

7 TRAFFIC MANAGEMENT PLAN

This Traffic Management Plan has been prepared in respect of the planning phase of the proposed facility. The Traffic Management Plan will be updated prior to the commencement of the construction phase, when detailed information regarding the delivery of components, traffic data and construction activities are available. A designated personnel member of the Contractor's team will be the custodian of the plan and the custodian will ensure that all personnel and subcontractors are trained to ensure compliance. The requirements of the Traffic Management Plan shall apply to all construction personnel and subcontractors appointed to provide vehicles, machinery or drivers. The Plan needs to be reviewed every four months or immediately after an incident, when corrective measures will be incorporated into the Plan.

Prior to the commencement of the operational phase, the plan will be updated to include the operational traffic requirements. A copy will be kept at the facility. A designated employee will ensure that the plan is enforced and will make sure that the Plan is available to all relevant personnel and external maintenance/repair teams. The Plan will be reviewed annually or immediately after an incident, when corrective measures will be incorporated into the Plan.

7.1 Preliminary Transport Requirements

It is expected that the delivery of the components to the site during the construction phase will not result in a significant increase in traffic. Abnormal load trips are limited to the generators, certain turbine components and the fuel tanks. Staggered delivery and transporting components outside of the peak traffic periods (peak traffic periods for rural areas are assumed to be 6:30am – 8am and 4pm-6pm) will assist in mitigating the impact on the surrounding road network.

Construction traffic will include vehicles for deliveries, removal of materials and construction staff. Construction activities such as delivery of material or removal of soil can also be staggered or transported in off-peak hours. The removal of soil from site and importing fill material is estimated at 10 000 truck trips (based on a 12t truck). Assuming that earthworks will be completed in approximately 8 months, this would amount to 55 trips per day. Should a larger truck be considered e.g. a 20t truck, trips will be reduced to 32 trucks per day.

Trips generated by construction site staff have been assumed to be less than 30 trips in the AM peak hour. This is based on a maximum of 200 workers on site per day. The impact of the staff traffic is hence deemed to be negligible.

Traffic during the operational phase will be low as trips will only be for occasional maintenance requirements, staff trips (assumed at 30 permanent staff) and 44 fuel trucks (30t) expected daily.

Proposed mitigation measures

- The delivery of components and construction materials to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods.

- The use of batch plants (if required) 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.

7.2 Existing traffic issues on the surrounding road network

A desktop study was undertaken using the typical traffic data available on Google Maps. Traffic delays are experienced along the R619, most likely to the Boardwalk Mall and the surrounding residential developments. Traffic delays are also experienced on the R34 between Empangeni and the N2 highway. These sections should be avoided as far as possible during peak periods to minimise the impact on the surrounding road network.

7.3 Transport Coordinator

It is recommended that a transport coordinator (or similar designation) be appointed to ensure compliance of the TMP. The coordinator shall make all the necessary arrangements to maintain the required traffic measures for the duration of the construction period.

7.4 Stakeholder Engagement

Interested and affected parties informed of all transport activities taking place that may affect them or require approval e.g. local community, the local authorities e.g. law enforcement and affected landowners.

Stakeholder engagement should address and provide information to stakeholders regarding general construction activities, construction vehicles routes, projected timelines, procedures for complaints and emergency procedures.

7.5 Licensing

All construction vehicles shall have the necessary licences, a valid roadworthy certificate and shall comply with the relevant traffic and transport licencing requirements (such as abnormal loads or hazardous materials).

All drivers of vehicles shall have the requisite licences to operate any vehicle (or machinery) operated by them on site or on any public roads. A professional driving permit (PrDP) is required if any of the following vehicles are operated:

- Goods vehicles, (more than 3 500 kg).
- Breakdown vehicles.
- Buses (any bus).
- Minibus taxis (more than 3 500 kg), transporting 12 or more people, including the driver.
- Vehicles used to transport people for payment.
- Goods vehicle carrying dangerous goods (more than 3 500 kg).
- Road tank vehicles for petroleum-based flammable liquids.
- Motor vehicles transporting 12 or more people, including the driver.

7.6 Construction Staff

All staff shall be transported safely to site in appropriate vehicles. Staff shall not be allowed to be transported to site on the back of open trucks. Passenger vehicles shall not exceed the carrying capacity of the vehicle.
Collections/Drop-off points for staff shall be located at a safe distance from traffic and construction activities. Roads and areas used by construction vehicles shall, as far as possible be avoided by all personnel. Designated pedestrian pathways shall be demarcated where appropriate.

All staff shall receive the appropriate site safety induction training. Drivers shall be adequately trained in the identification and avoidance of road hazards, vehicle maintenance and care and safety requirements. All staff shall be informed of the construction site risks and training shall include appropriate precautionary measures required to be undertaken to facilitate safe and efficient traffic management (e.g. understanding signage, crossing roadways and utilising designated pedestrian pathways, reporting incidents).

7.7 Inspection of all Routes

A dry run of all routes (see **section 1.1.5** for abnormal load routes) is to be undertaken to identify any areas to avoid or obstacles that might disrupt the movement of the construction vehicles. All issues affecting the movement of construction vehicles are to be addressed immediately by the Contractor and relevant stakeholders e.g. law enforcement, relevant roads department and authorities.

7.8 Maintenance of vehicles

All vehicles and construction plant shall be regularly maintained, repaired when necessary and inspected on a regular basis to ensure that the vehicles are in good working order. Construction and passenger vehicles shall be monitored to ensure that vehicles are not overloaded.

7.9 Maintenance of roads

The Contractor shall maintain the road used by construction vehicles, repairing any damage caused by construction traffic to the surrounding road network. Where gravel roads are used, the roads shall be maintained, and dust control measures shall be implemented to avoid dust pollution.

Road verges at the site shall be regularly maintained to ensure that vegetation remains short and that the roads serve as an effective firebreak.

7.10 Signage

Signage, in accordance with the South African Road Traffic Signs Manual, will be required to be conspicuously placed at appropriate locations along all access roads, the internal roads to the site and public roads used by construction vehicles (in consultation with the relevant traffic authorities) to indicate the following:

- all road and pedestrian hazards;
- site access
- site offices

- wayfinding signs on internal roads e.g. parking, toilets, emergency assembly point
- crossing points;
- speed limits;
- turning traffic;
- dedicated routes for construction vehicles and staff
- no-go areas
- any traffic control information which may be relevant to the construction activity at the time.

It is recommended that flagmen be implement when high volumes of construction traffic are expected to help direct the traffic, thus ensuring the safe movement of the vehicles and reducing the potential conflicts.

7.11 Speed limit

All drivers operating vehicles shall comply with the posted speed limits (or the maximum allowable speed as per the permit for abnormal load vehicles) on public roads as well as a proposed 30km/h speed limit within the construction site and access roads.

The failure to adhere to the prescribed speed limits is an offence and disciplinary action may be taken by the Contractor.

7.12 Abnormal Loads

Abnormal loads will be transported to site as per the following:

7.12.1 Abnormal Load Considerations

Abnormal permits are required for vehicles exceeding the following permissible maximum dimensions on road freight transport in terms of the 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 on front axle and 9t on single or rear axles

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

7.12.2 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 transport 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.

7.12.2.1 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 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.
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 Issuing Authorities.

7.12.2.2 Load Limitations

The maximum load that a road 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.

7.12.2.3 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 and 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

7.12.2.4 Preferred Abnormal load route

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 components, to ensure that the delivery 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 gravel sections (if any) 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.

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.

8 POTENTIAL ROUTES TO THE PROPOSED SITE

8.1 Proposed main access road to the proposed Facility

The potential main access roads to the site are located off the R34 and R619. As traffic delays are experienced on the R619 during peak periods, the proposed access roads located off the R69 are to be avoided during peak periods. Since residential areas are located along the R619, the two proposed access roads located along the R69 viz. Alumina Alley and Gulden Gracht (shown in yellow and cyan in **Figure 8-3**) should only be used when the other potential access roads are not accessible.

The potential access roads located off the R34 viz. Western Arterial, Alumina Alley and Bullion Road are deemed the preferred access roads to the site.

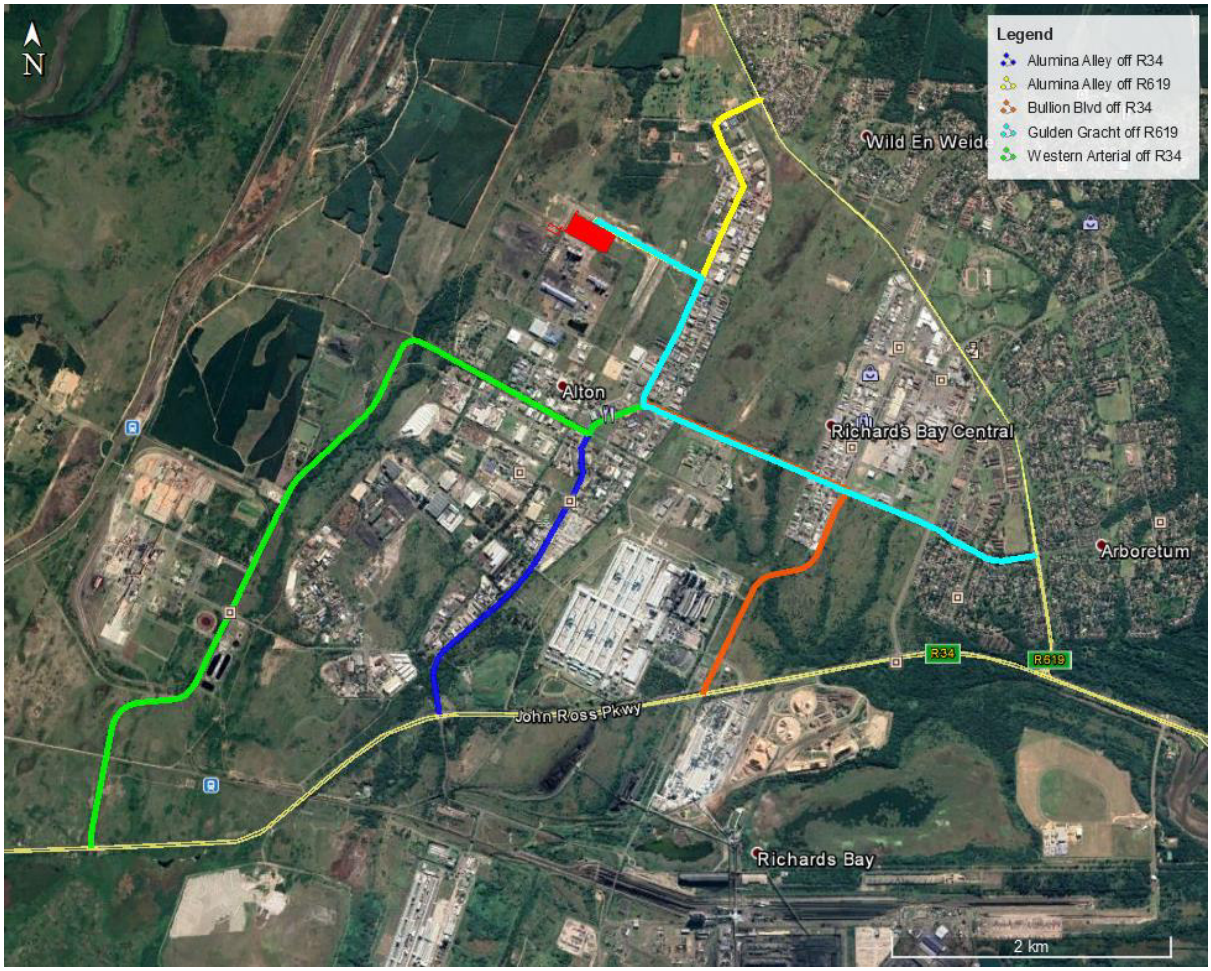

Figure 8-1: Potential Main Access Roads

The preferred main route from the Port to the site will be via the R34 and the Western Arterial. The route will have the least impact as there are fewer businesses located along the road compared to Alumina Alley and Bullion Road.

8.2 Main Route for the Transportation of Materials, Plant and People to the proposed WEF

It is envisaged that the majority of materials, plant and labour will be sourced from towns within a 50km radius of the proposed site and transported to the site via the R34 and R619 (during off peak hours only).

Should concrete batch plants (if required) 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 site. Delivery of materials to the mobile batch plant and the stockpile yard could be staggered to minimise traffic disruptions.

8.3 Route for locally manufactured components

It is anticipated that elements manufactured within South Africa will be transported to the site from the Johannesburg and/or Pinetown/Durban areas.

For any abnormal loads, it is critical to ensure that the vehicle will be able to move safely and without obstruction along the preferred route. The preferred route should be surveyed prior to construction to identify any 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 components, to ensure that the delivery will occur without disruptions.

8.4 Route from Durban to the Site – Normal loads

Normal loads will transport elements via the N2 from Durban and Pinetown to the site. No road limitations are envisaged along the route for normal load freight. The distance from Durban to the site is approximately 180km.

Figure 8-2: Route from Durban to the Site

8.5 Route from Johannesburg to the Site – Normal loads

Normal loads will transport elements via three potential routes from Johannesburg to the site, as shown in the Figure below. No road limitations are envisaged along the route for normal load freight. The distance from Johannesburg to the site is 609km via R34, 605km via N17, N11 and R34 and 621km via N17 and N2.

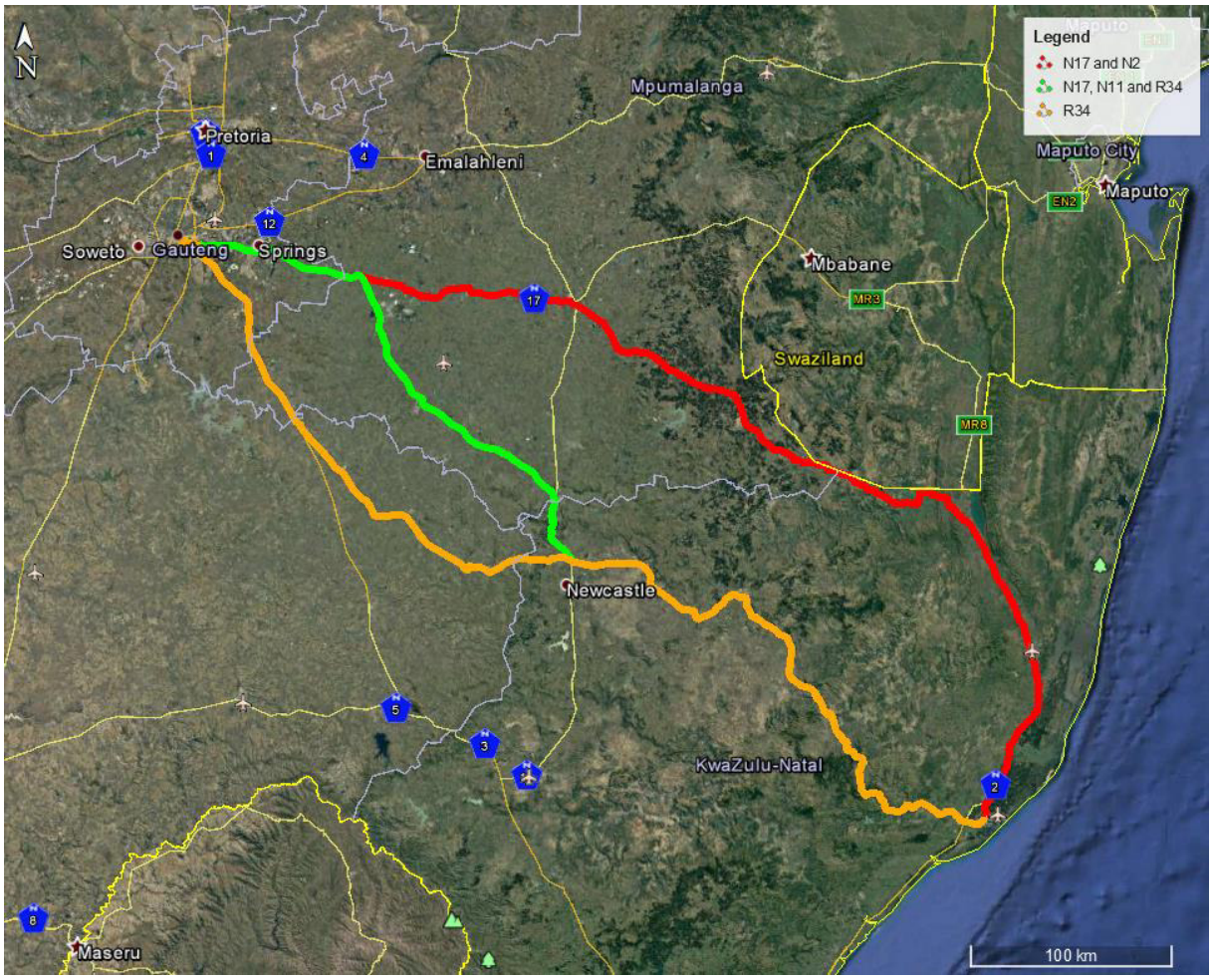

Figure 8-3: Route from Johannesburg to the Site

9 CONCLUSION

General

- Richards Bay Gas Power 2 (Pty) Ltd is proposing to develop a Gas to Power Facility, with a maximum output of 400MW, on Erven 17455, 17443 and 17442 located in the Richards Bay IDZ Phase 1F in Richards Bay, Kwazulu-Natal.

- The proposed site is located in the Richards Bay Industrial Development Zone, a fully serviced industrial estate with prime rail, road and port access.

- The proposed facility will be located on an access road off Alumina Alley. The site is bounded by the R619 to the east and the R34 to the west,

Components

- The transportation of the fuel tanks, generators and the larger components of the gas turbines require abnormal load permits as the dimension exceed the permissible maximum dimensions on road freight transport in terms of the Road Safety Act (Act No. 93 of 1996).

- Components imported to South Africa will be via the Richards Bay Port.

Traffic Management Plan

- This TMP has been prepared to enable the identification and implementation of all legal and best practice requirements in respect of the management of traffic associated with the construction and operation of the facility and to address condition 17.11 of the Environmental Authorisation.

- The Traffic Management Plan has been prepared in respect of the planning phase of the proposed facility. The Traffic Management Plan will be updated prior to the commencement of the construction phase and the operational phase.

- Traffic during the operational phase will be low as trips will only be for occasional maintenance requirements, staff trips (assumed at 30 permanent staff) and 44 fuel trucks (30t) expected daily.

- For abnormal load vehicles, it is recommended to undertake a “dry-run” with the largest abnormal load vehicle, prior to the transportation of any components, to ensure that the delivery will occur without disruptions.

Access Road

- The potential main access roads to the site are located off the R34 and R619. As traffic delays are experienced on the R619 during peak periods, the proposed access roads located off the R69 are to be avoided during peak periods. Since residential areas are located along the R619, the two proposed access roads located along the R69 should only be used when the other potential access roads are not accessible.

- The potential access roads located off the R34 viz. Western Arterial, Alumina Alley and Bullion Road are deemed the preferred access roads to the site.

Preferred Route from Port

- The preferred main route from the Port to the site will be via the R34 and the Western Arterial. The route will have the least impact as there are fewer businesses located along the road compared to Alumina Alley and Bullion Road.

Preferred Route for Materials, Plant and Labour

- It is envisaged that the majority of materials, plant and labour will be sourced from towns within a 50km radius of the proposed site and transported to the site via the R34 and R619 (during off peak hours only).

Routes for Locally Manufactured Components

- It is anticipated that elements manufactured within South Africa will be transported to the site from the Johannesburg and/or Pinetown/Durban areas. Normal loads will transport elements via the R34, the N17, N11 and R34 and via the N17 and N2 from Johannesburg to the site. Normal loads will transport elements via the N2 from Durban and Pinetown to the site.

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