Triplo4 Sustainability Consultants

Karpowership SA | Richards Bay

Traffic and Transportation Evaluation

uMhltauze Municipality

Rev 3 | 29 October 2022

FULCRUM DEVELOPMENT CONSULTANTS

Triplo4 Sustainability Consultants

Karpowership SA | Richards Bay

Traffic and Transportation Evaluation

uMhltauze Municipality

Rev 3 | 29 October 2022

Job number 20140

Fulcrum Development Consultants (Pty) Ltd
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Morningside
Durban 4001

Document Verification

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		Name			
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1 Development Details

1.1 Background

Fulcrum Development Consultants (Pty) Ltd has been appointed by the applicant Triplo4 Sustainability Consultants to undertake a Traffic and Transport Evaluation of the proposed Karpowership SA Gas to Electricity Project. This assessment considered both the construction and operational stage of the project.

1.2 Site Location

The proposed project is located at the Port of Richards Bay. The area under investigation is located on the western side of the port in the vicinity of the West Central Arterial and Harbour Arterial. Refer to **Figure 1**.

Figure 1: Site Location

1.3 Development Details

The following is an extract from the Background Information Document prepared by Triplo4 Sustainability Consultants:

The Project entails the generation of electricity by two Powerships moored in the Port of Richards Bay, fed with natural gas from a third ship, a Floating Storage & Regasification Unit (FSRU). The three ships will be moored in the port for the Project's anticipated 20-year lifespan. A Liquefied Natural Gas Carrier (LNGC) will bring in liquified natural gas (LNG) and offload it to the FSRU approximately once every 20 to 30 days, dependent on power demand which is determined by the buyer, ESKOM. The FSRU stores the LNG onboard and turns the liquid form into gaseous form (Natural Gas) upon demand from the Powership (Regassification). Natural gas will be transferred from the FSRU to the Powerships via a subsea gas pipeline. The Project's design capacity is 540MW. Electricity will be generated on Powerships by 27 reciprocating engines, each having a heat input in excess of 10MW (design capacity of 18.32MW each at full capacity). Heat generated by operation of the reciprocating engines is captured, and that energy is used to create steam to drive three steam turbines that each have a heat input of circa 15.45MW. The contracted capacity of 450MW, which cannot be exceeded under the terms of the RMIPPPP, will be evacuated via a 132kV transmission line over a distance of approximately 3,6km, from the Richards Bay Port tie-in point to the Eskom line, at a connection point (necessitating a new switching station) in proximity to the existing Bayside Substation, which feeds electricity into the national grid.

1.4 Objectives

The objective of this study is to evaluate the traffic demand during the construction and operational stage of the development and review the proposed port-related transportation movements during the construction stage

2 Traffic Demand Forecast

2.1 Construction Stage

During the construction stage of the project, the typical type of traffic that is generated is staff traffic and construction vehicle traffic.

2.1.1 Staff

During the overall construction stage of the project, 190 people will be employed. Due to the nature of the activity, it is estimated that 70% of staff would arrive using public transport. It is further estimated that the vehicle occupancy for car would be 1,1 persons per vehicle and for public transport 14 persons per vehicle. Therefore, 61 peak hour trips would be generated during the construction stage. These trips would not be concentrated in one area, rather they would be assigned to the different construction sites and therefore the impact is diluted.

If general public transport is being used, then the designated Transnet public transport pick up and drop off area should be utilised. Alternatively, if there is a dedicated Transnet shuttle available for staff working at the port, then permission may be sought to utilise such services

For staff arriving by private vehicles, space should be allocated for off-street parking.

2.1.2 Construction Vehicles

A comprehensive list of the type of vehicles that will be operational on the site was prepared by Karpowership SA and presented in **Table 1**. These vehicles will remain and operate on the site for a few months at a time. These vehicles are unlikely to arrive or leave the site during the commuter peak hours and therefore will not impact on the peak hour traffic in Richards Bay.

Table 1: Summary of Construction Vehicles that will be used on site

No	Equipment	Description	
1	Mobile crane	Liebherr 200T mobile crane - All Terain LTM 1200-5.1	
2	Excavator	Cat 330 excavator	
3	Excavator	Cat 330 GC Excavator	
4	25m3 TA/TA Interlink	Interlink Tipper truck	
5	40m3 TA/TA Interlink	Interlink Tipper truck	
6	45m3 TA/TA Interlink	Interlink Tipper truck	
7	Grader	CAT 140	
8	20 Ton Road roller	20T -XS 203	

9	Drilling Rig	C8 Hydraulic Crawler Drill	
10	32T crane truck	Mercedes Benz double diff 32T crane truck	
11	Truck Tractor	Mercedes 3340 Horse	
12	Flat Deck Trailer	Elevating Unit/ Flat Deck	

2.2 Operational Stage

2.2.1 Staff

During the operation of the Karpowership Gas to Power process, some 200 staff will be employed across all the shifts.

Of the 200 staff, 30% of staff (60 people) will reside on ship and therefore, won't need to commute to work. Therefore, 140 people will commute to work across all shifts. The site will operate with 2 shifts and therefore 70 people will commute to the site per shift.

It was assumed that 50% of staff would arrive using private vehicles and 50% would arrive using public transport. It was further assumed that the average occupancy of a private car is 1,1 person per vehicle and the average occupancy of a mini-bus taxi is 14 people. Therefore, the number of trips that will be on the broader road network during the commuter peak hour is **34 trips.**

Table 2: Summary of trip calculation

Item		Quantity	Calc Formula
a	Total Operational Staff per day	200	
b	Percentage of Staff residing on Ship	30%	
c	Number of Staff on Ship	60	a x b
d	Number of Staff that will commute daily	140	a -c
e	Number of shifts	2	
f	Number of staff per shift commuting	70	d/e
g	Percentage by Car	50%	
h	Percentage Public Transport	50%	
i	Number of persons arriving by car	35	f x g
j	Number of persons arriving by MBT	35	f x h
k	Average number of persons per car	1,1	
l	Average number of persons per MBT	14	
m	Number of car trips	32	i/k
n	number of MBT trips	3	j/l
	TOTAL Trips in peak hour	**34**	m + n

According to COTO TMH 16 South African Traffic Impact and Site Traffic Assessment Manual V1.0 August 2012, development that generate less than 50 trips in the peak hour do not require a TIA.

In this regard, if general public transport is being used then the designated Transnet public transport pick up and drop off area should be utilised. Alternatively, if there is a dedicated Transnet shuttle available for staff working at the port, then permission may be sought to utilise such a service.

For staff arriving by private vehicles, space should be allocated for off-street parking.

2.2.2 Trucks and Service Vehicles

Based on the information received from the client, the operation of the site is not expected to generate any significant amount of truck and service vehicle trips on a typical day. There may be a need for ad-hoc trips for maintenance and replenishment of supplies. Any trips made by trucks and service vehicles are likely to occur outside the commuter peak hours.

3 Construction Stage Operations

The port related construction operations will be focussed on four main area

1. Site Office
2. Stringing Yard
3. Material Laydown Area
4. Back of Quay Loading Area

An overall plan showing the location of the key areas was prepared by PRDW Engineers and presented in **Appendix A** of this report.

3.1 Site Office and Concrete Coating Yard

The location of the site office and Concrete Coating yard is indicated in **Figure 2**. It is positioned on the western side of Harbour Arterial Road. The access point to the area is positioned immediately south of the security checkpoint. This route is via an existing access road serving the harbour.

The sight distance at this access point is acceptable and the access point is supported.

As indicated in Figure 2, there is adequate space available to ensure that a geometrically adequate access driveway is constructed.

Space should be set aside in this area for parking.

Figure 2: Site Office (Source: PRDW S2117-07-DR-GA-202-S1-A)

3.2 Stringing Yard

The stringing yard is the area where the concrete pipes are laid down prior to installation.

This facility is located south-west of the site office site as shown in **Figure 3.**

The access to the Stringing Yard will be via a new temporary access point located on Harbour Arterial. The sight distance at this new access point was assessed and was deemed to be adequate

The geometry of the route to the Stringing Yard will accommodate for cars and large trucks.

There is enough space on the eastern side of the stringing yard to load and offload vehicle and for it to turn around within the allocated area.

Figure 3: Stringing Yard (Source: PRDW S2117-07-DR-GA-202-S1-A)

3.3 Material Laydown Area

This area will be used to store material that will be used during construction stage. The facility is located east of the Site Office area, adjacent to Berth 606

as indicated in **Figure 4**. Access to this area is directly opposite the access to the Site Office.

An assessment of the sight distance at this access point was assessed and deemed to be adequate.

The geometry of the route to the Material Laydown Area will accommodate for cars and large trucks.

Figure 4: Material Laydown Area (Source: PRDW S2117-07-DR-GA-202-S1-A)

3.4 Back of Quay Loading Area

The back of quay loading area is the site that will be used to launch small boat that will be transporting staff and goods to ships. The site is located at the south-western corner of the Richards Bay Coal Terminal as shown in **Figure 5**.

Access to this area is via the Richards Bay Coal Terminal road and as such the sight distance and road geometry would be adequate to accommodate for cars and large trucks. Due to the presence of coal trucks in this area, access will be managed by Karpowership SA as per Tansnet's Protocols.

Figure 5: Back of Quay Loading Area (Source: PRDW S2117-07-DR-GA-202-S1-A)

4 Regional Routing

From time to time there will be a need for trucks to travel from the site to regional road network which in this case is the N2. This would occur during both the construction stage and operational stage of the project.

There are two roads that connect Richards Bay with the N2, the John Ross Highway R34 and the North Central Arterial (R619). The John Ross Highway is a dual carriageway multilane highway that is located away from sensitive areas such as CBDs and residential area. The North Central Arterial (R619) is a single carriageway two lane road that runs adjacent to sensitive areas such as the Richards Bay CBD and a few residential areas.

Trucks that need to access the N2 should utilise the John Ross Highway interchange only as this route has the necessary traffic capacity.

The route from the N2 via the Nseleni/R619/North Central Arterial interchange should not be utilised due to the restricted traffic capacity along R619/North Central Arterial.

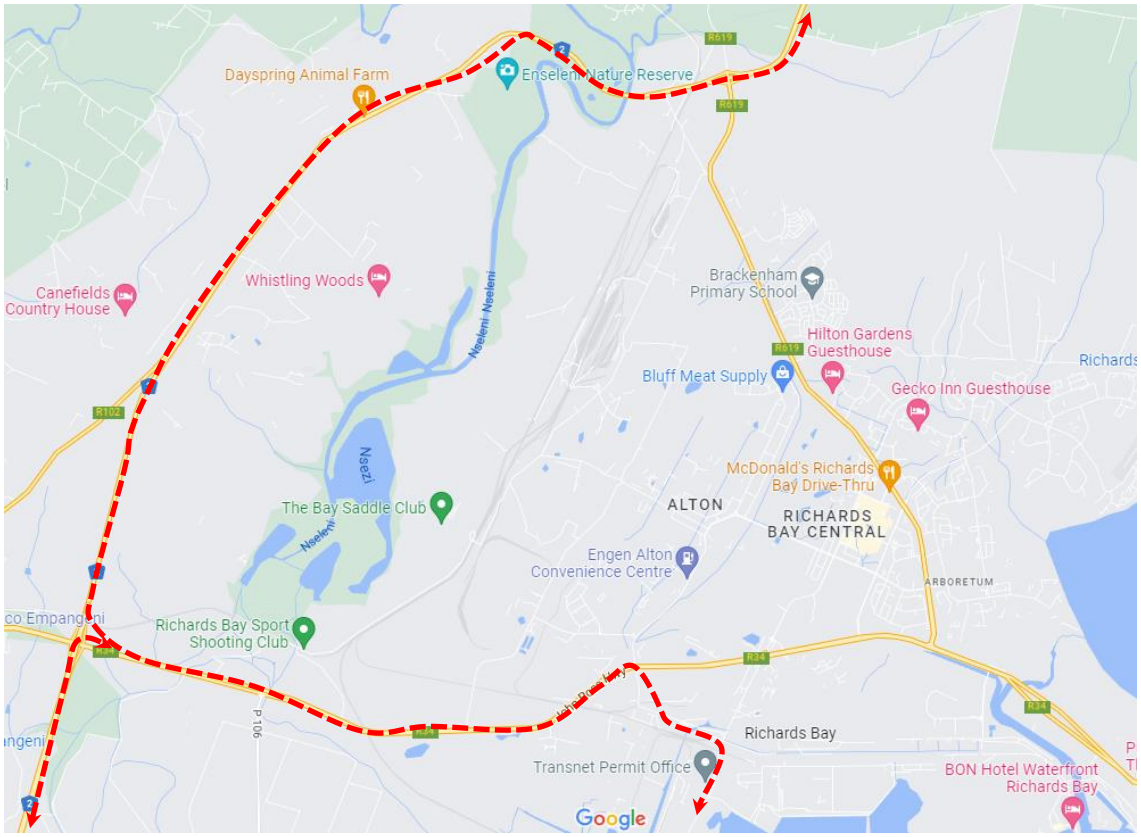


Figure 6: Recommended access route to the N2

5 Summary & Recommendations

Fulcrum Development Consultants (Pty) Ltd has been appointed by Triplo4 Sustainability Consultants to undertake a Traffic and Transportation Evaluation of the proposed Karpowership SA Gas to Electricity Project. This assessment considered both the construction and operational stage of the project.

The following are some of the key findings:

1. The construction stage of the project is expected to generate 61 peak hour trips. These trips would not be concentrated in one area, rather they would be assigned to the different construction sites and therefore the impact is diluted.
2. The development is not expected to generate a high amount of truck trips during the construction stage of the project. The trucks trips will largely remain within the footprint of the construction area
3. During the operational stage, the gas to power project is expected to generate some 34 trips onto the broader road network during the commuter peak hour.
4. During the operational stage, the gas to power project will only generate ad-hoc truck and service vehicle trips for maintenance and replenishment of supplies. These trips will occur primarily outside the normal commuter peak hours.
5. Vehicular movement routes within the port were established through engagement with Transnet.

The following are the recommendations of the Traffic and Transportation Evaluation:

1. During the construction stage and operational stage of the project dedicated off-street parking should be provided as per Transnet's requirements.
2. During the construction and operational stage of the project, if general public transport is being used, then the designated Transnet public transport pick up and drop off area should be utilised. Alternatively, if there is a dedicated Transnet shuttle available for staff working at the port, then permission may be sought to utilise such as service.
3. Trucks that need to access the N2 should utilise the John Ross Highway interchange only as this route has the necessary traffic capacity and is located away from sensitive areas such as the Richards Bay CBD and neighbouring residential areas.

6 References

1. COTO, TMH 16, Volume 1. South African Traffic Impact Assessments and Site Traffic Assessments. Version 1.0, August 2012.

2. COTO, TRH 26, South African Road Classification and Access Management Manual. Version 1.0, August 2012.

3. COTO, TMH 17. South African Trip Data Manual. Version 1.01, September 2013.

Appendix A

Construction Site Plan

A1 DO NOT SCALE IF IN DOUBT ASK

TRUE NORTH

ELECTRICAL CONNECTION POINT KIOSK SUPPLYING SEAFARER'S, ESTIMATED POWER SUPPLY AVAILABLE 60A 3 PHASE (TO BE CONFIRMED).

WATER CONNECTION POINT CONNECT TO THE WATER LINE USED BY THE EXISTING SITE OFFICES. (ISOLATION VALVES AND METER'S REQUIRED FROM THE CONTRACTOR

ELECTRICAL CONNECTION POINT

SITE OFFICE AND CONCRETE COATING AREA 11000m²

73.3m

150.0m

X 3186500m

X 3186500m

MATERIAL LAYDOWN AREA 8000m²

88.0m

136.0m

69.7m

STRINING YARD AREA 10000m²

30.0m

100.000

450.0m

216.7m

233.3m

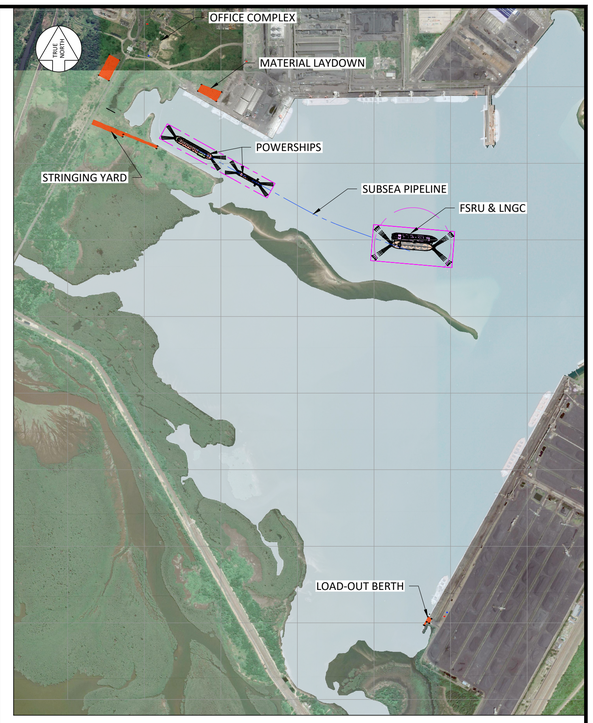
15.0m

KPS OPERATIONAL AREA

0m 100m 200m

Y 3187000m

FOR INFORMATION ONLY



LOCATION PLAN

SCALE 1:20'000

LOAD-OUT BERTH LAYOUT

SCALE 1:2000

C:\Users\JFN\PRDW\S2117 Engineering - Drawings\07 Work In Progress\TNPA - RB WIP\S2117-07-SK-GA-212-S1 A_X2.dwg

REFERENCE DRAWINGS	
DRAWING NO.	REFERENCE

NOTES:

DO NOT SCALE DRAWINGS. ONLY DIMENSIONS SHOWN TO BE USED.
ALL DIMENSIONS IN METRE UNLESS OTHERWISE NOTED.

COORDINATE SYSTEM	
GEODETIC DATUM	: HARTEBEESHOEK 94
ELLIPSOID	: WORLD GEODETIC SYSTEM 1984 (WGS 84)
PROJECTION	: GAUSS CONFORM Lo33
GEOID MODEL	: SA GEOID 2010
CENTRAL MERIDIAN	: 33°00'00" E
VERTICAL DATUM	: CHART DATUM (CD) = LAND LEVEL DATUM (LLD) -1.015m

NO.	DESCRIPTION	BY	CHK'D	DATE
A	FOR EIA SPECIALISTS	JFN	SAH	14-09-2022

REVISIONS

STATUS REVIEW: (A) INTERDISCIPLINARY (B,C, D, E...) UPDATES; (0) APPROVED (1,2,3...) CHANGES (N) NULL

	NAME	SIGNED	DATE
DRAWN BY	JFN		14-09-2022
DRAWING CHECKED	SAH		14-09-2022
DESIGN CHECKED	SAH		14-09-2022
APPROVED	WGD		14-09-2022
FILE NAME	S2117-07-SK-GA-212-S1 A_X2.dwg		
TIME STAMP	Monday, 12 September 2022 15:40:17		

CLIENT: KARPOWERSHIP (SA RICHARDS BAY (RF) PROPRIETARY LIMITED)

PROJECT: KARPOWERSHIP SA
RICHARDS BAY (RM-TA-0145-001-R-MWP)

DRAWING TITLE

EIA ASSESSMENT AREAS CONSTRUCTION FACILITY

www.prdw.com

PRDW Consulting Port and Coastal Engineers

SCALE	CODE	N°	CATEGORY	DISCIPLINE	CONSECUTIVE	SHEET	REVISION	DRAFT
1:2000	S2117-07 - SK - GA - 212 - S1 - A							

CLIENT NUMBER

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/14/12/16/3/3/2007
Date Received:	02 November 2020

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

The Proposed Gas to Power Powership Project at the Port of Richards Bay, Umhlathuze Local Municipality, King Cetshwayo District, Kwazulu-Natal.

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:	Fulcrum Development Consultant			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Contribution level (indicate 1 to 8 or non-compliant)	
Specialist name:	Mohamed Kajee			
Specialist Qualifications:	BSc Eng			
Professional affiliation/registration:	ECSA Pr Eng 20170283			
Physical address:	167 Florida Road, Morningside, Durban			
Postal address:	167 Florida Road, Morningside, Durban			
Postal code:	4001	4001	4001	
Telephone:				
E-mail:	mohamed@fulcrumdc.co.za	mohamed@fulcrumdc.co.za	mohamed@fulcrumdc.co.za	

2. DECLARATION BY THE SPECIALIST

I, __Mohamed Kajee_____, 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

Fulcrum Development Consultant

Name of Company:

08/11/2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Michael Kafle, 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

Fulcrum Development Consultant

Name of Company

8/11/2022

Date

8/11/2022

COMMISSIONER OF OATHS
SALMA BHAYAT CA (SA)
MEMBERSHIP NO. 04931041
UNIT 5, 446 MUSGRAVE ROAD
ESSENWOOD, DURBAN

Signature of the Commissioner of Oaths

8/11/2022

Date