2023

Environmental Impact Assessment for the Proposed Grootfontein Truck Port on Erf 249 Okavango Road, Grootfontein, Otjozondjupa Region

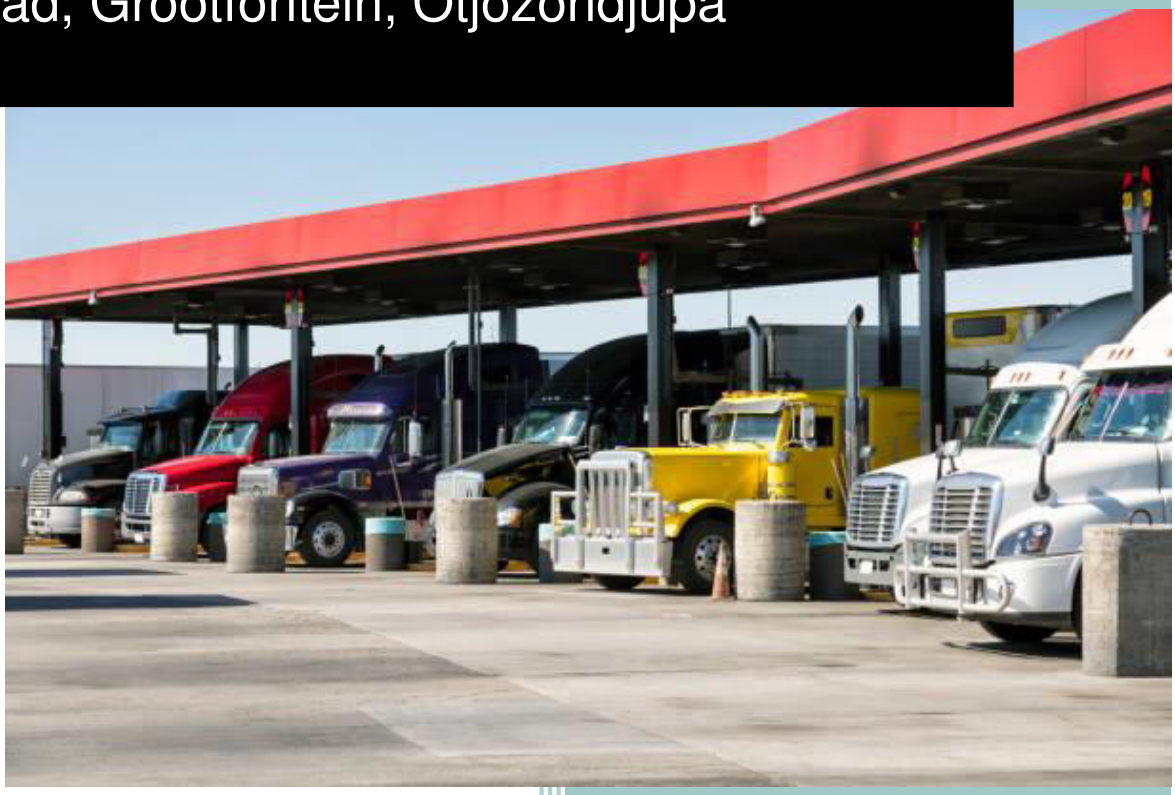

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

Annexure A: Proof of site notices/ posters

Annexure B: Proof of advertisements

Annexure C: Photo Plates

Annexure D: Public Participation process

1) I&AP database & Registered List
2) Notification sent of BID
3) Public Meeting Presentation
4) Comments received (Phase 1)
5) Notification sent of DESR

Annexure E: Curriculum Vitae of Environmental Assessment Practitioner

Annexure F: Environmental Management Plan

LIST OF ACRONYMS

AIDS	Acquired immune deficiency syndrome
CRR	Comments and response report
dB	Decibels
DESR	Draft Environmental Scoping Report
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
EAR	Environmental Assessment Report
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
FESR	Final Environmental Scoping Report
GTZ	Gesellschaft für Technische Zusammenarbeit
HIV	Human immunodeficiency virus
I&AP	Interested and Affected Party
IUCN	International Union for Conservation of Nature
MET	Ministry of Environment and Tourism
MET: DEA	Ministry of Environment and Tourism: Department of Environmental Affairs
MURD	Ministry of Urban and Rural Development
MWTC	Ministry of Works Transport and Communication
PPP	Public participation process
p/km^2	People per square kilometre

SADC	Southern African Development Community
USAID	United States Agency for International Development

1. INTRODUCTION

1.1 Project Background

Charlton Petroleum cc (CP) has a strategic partnership with Grootfontein Container Depot (Pty) Ltd (GCD). GCD is in the process of setting up a container depot in Grootfontein to handle and store transhipment of copper and other minerals as well as chemicals. Among the requirements of the potential off takers in Zambia and DRC is the safe keeping of their cargo in a secured facility with ablution amenities for their drivers. The depot will be used to house and containerize copper that will be forwarded on rail to the port of Walvis Bay, similarly, all commodities going in the opposite direction will be railed to Grootfontein and picked up by Zambian and Congolese trucks dropping off the copper. Hence, the demand of fuel volumes for these trucks will be high and critical to the operation. The proponent has thus identified a need to establish a truck port to cater for this market segment and the wider public. Charlton Petroleum cc deem it viable, considering the demand of volume and clientele they have. CP will be the operator of the truck port while Namcor will be the supplier.

The above activity is discussed in more detail in Chapter 4. The proponent appointed Environam Consultants Trading cc (ECT) to undertake the Environmental Assessment (EA) in order to apply for an Environmental Clearance Certificate (ECC) for the activity.

The process will be undertaken in terms of the gazetted Namibian Government Notice No. 30 Environmental Impact Assessment Regulations (herein referred to as EIA Regulations) of the Environmental Management Act (No 7 of 2007) (herein referred to as the EMA). The EIA process will investigate if there are any potential significant bio-physical and socio-economic impacts associated with the proposed development and related infrastructure and services.

The EIA process also provides an opportunity for the public and key stakeholders to provide comments and participate in the process. It additionally serves the purpose of informing the proponent's decision-making, and that of the Ministry of Environment, Forestry and Tourism.

1.2 Project Location

The proposed site is located on, Erf 249, Okavango Road, Grootfontein, Otjozondjupa Region. It is found opposite the Engine Service Station at coordinates -19.566998, 18.101658. The site is approximately 50 000 square meters in extent and is wholly owned by Trans Namib. Charlton Petroleum will sign a lease agreement with Trans Namib for a plot of 10 000 square meters. See **Figure 1** below for the locality map of Grootfontein, and **Figure 2** for the locality map of the proposed development.

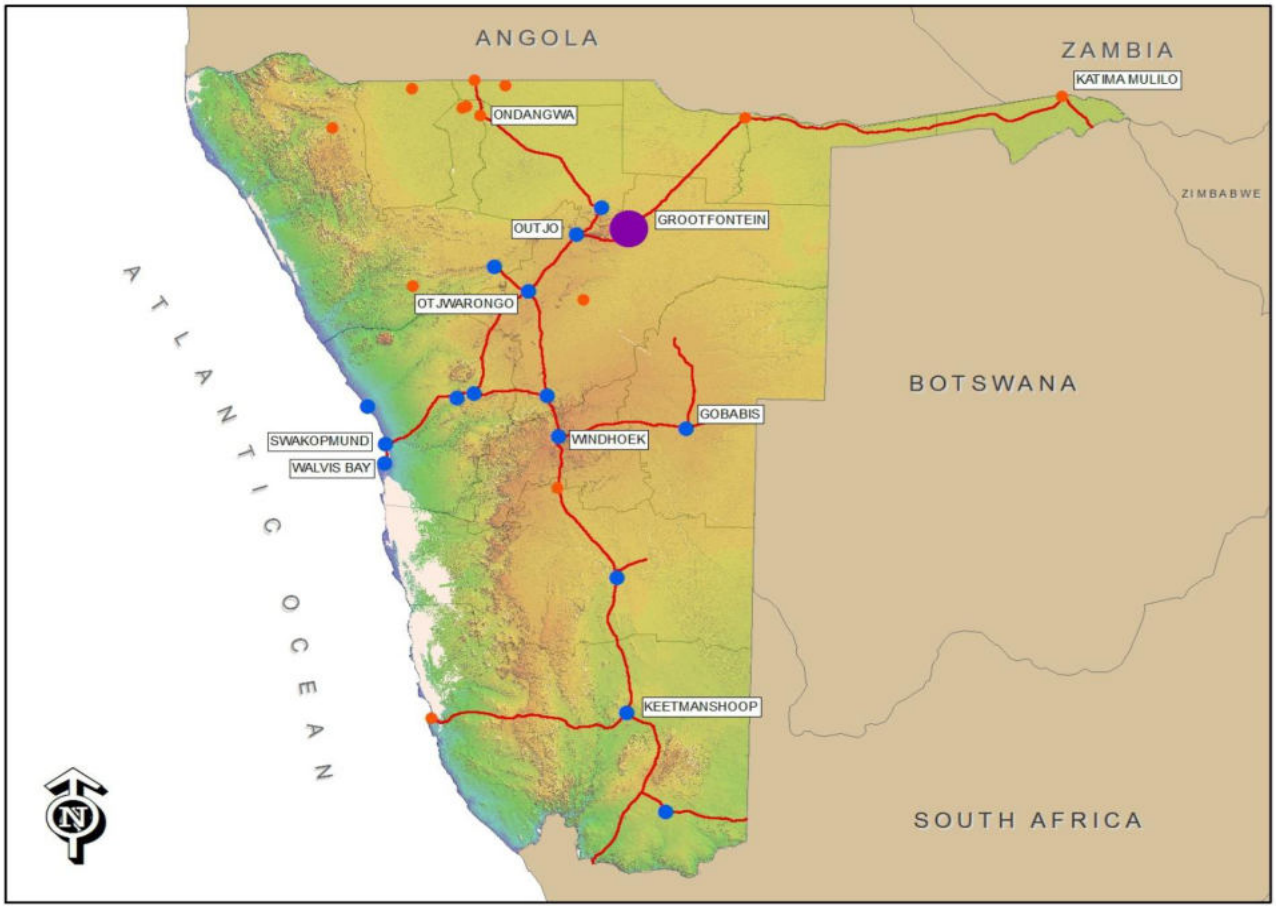

Figure 1: Locality map of Grootfontein

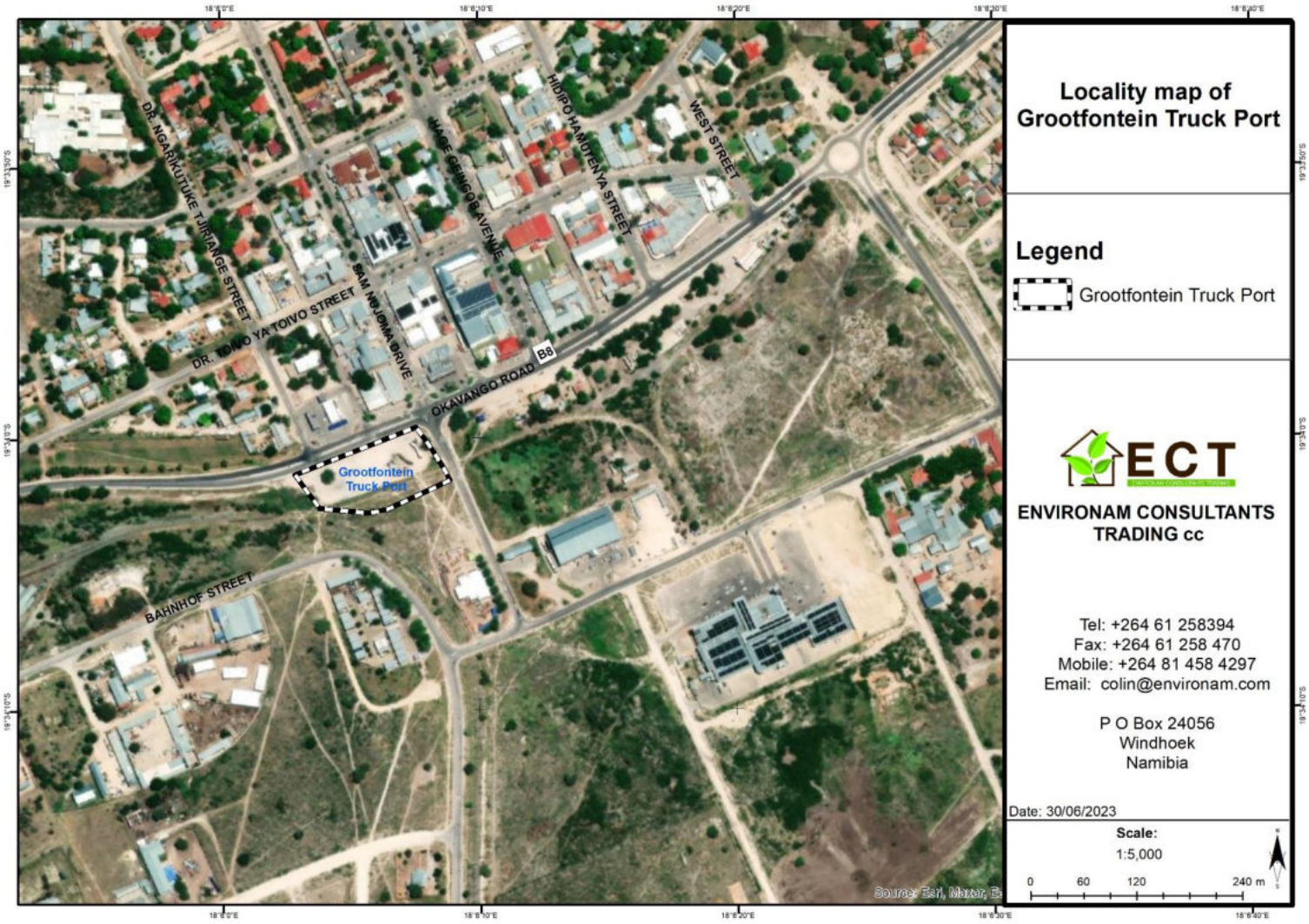

Figure 2: Locality map of the proposed development

1.3 Terms of Reference and Scope of Project

The scope of this project is limited to conducting an environmental impact assessment and applying for an Environmental Clearance Certificate for the Proposed Grootfontein Truck Port on Erf 249 Okavango Road, Grootfontein, Otjozondjupa Region and associated infrastructure as indicated in section 1.1 above. This includes consultations with client; site investigations and analysis; stakeholder consultations including a public meeting; impact analysis; mitigation formulation; report writing; and draft Environmental Management Plan.

1.4 Assumptions and Limitations

In undertaking this investigation and compiling the Environmental Assessment, the following assumptions and limitations apply:

- Assumes the information provided by the proponent is accurate and discloses all information available.
- Various site alternatives were initially considered by the proponent, having taken due regard of the natural and environmental constraints, and the unique character and appeal of Grootfontein. The current site thus presents the most feasible option.

1.5 Content of Environmental Scoping Report

In terms of Section 8 of the gazetted EIA Regulations certain aspects must be included in a Scoping Report. **Table 1** below delineate, for the purpose of ease reference, where this content is found in this Environmental Scoping Report.

Table 1: Contents of the Scoping / Environmental Assessment Report

Section	Description	Section of ESR/ Annexure
8 (a)	The curriculum vitae of the EAPs who prepared the report;	Refer to **Annexure E**
8 (b)	A description of the proposed activity;	Refer to Chapter 4
8 (c)	A description of the site on which the activity is to be undertaken and the location of the activity on the site;	Refer to Chapter 3

Section	Description	Section of ESR/ Annexure
8 (d)	A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Refer to Chapter 3
8 (e)	An identification of laws and guidelines that have been considered in the preparation of the scoping report;	Refer to Chapter 2
8 (f)	Details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including	Refer to Chapter 5
	(i) the steps that were taken to notify potentially interested and affected parties of the proposed application	Refer to Chapter 5
	(ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given;	Refer to **Annexures A** and **B** for site notices and advertisements respectively.
	(iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application;	Refer to **Annexure D**
	(iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	Refer to **Annexure D**
8 (g)	A description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the	Refer to Chapter 4

Section	Description	Section of ESR/ Annexure
	environment and on the community that may be affected by the activity;	
8 (h)	A description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity;	Refer to Chapter 7
8 (i)	terms of reference for the detailed assessment;	Refer to Chapter 1
8 (j)	An environmental management plan	Refer to **Annexure F**

2. LEGAL, POLICY AND INSTITUTIONAL FRAMEWORK

The principle environmental regulatory agency in Namibia is the Office of the Environmental Commissioner within the Directorate of Environmental Affairs of the Ministry of Environmental and Tourism. Most of the policies and legislative instruments have their basis in two clauses of the Namibian Constitution, i.e., Article 91 (c) and Article 95 (l); however, good environmental management finds recourse in multiple legal instruments. **Table 2** below provides a summary of the legal framework considered to be relevant to this development and the environmental assessment process.

Table 2: Legislation applicable to the proposed development

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against "the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia." Article 95(l) deals with the "maintenance of ecosystems, essential ecological processes and biological diversity" and sustainable use of the country's natural resources.	Sustainable development should be at the forefront of this development.
Environmental Management Act No. 7 of 2007 (EMA)	Section 2 outlines the objective of the Act and the means to achieve that. Section 3 details the principle of Environmental Management	The development should be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process.	**Activity 9.4** The storage and handling of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location. **Activity 9.5** Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, liquid petroleum gas or paraffin.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Convention on Biological Diversity (1992)	Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	The project should consider the impact it will have on the biodiversity of the area.
Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008)	Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process.	The EA process should incorporate the aspects outlined in the guidelines.
Namibia Vision 2030	Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets.	Care should be taken that the development does not lead to the degradation of the natural beauty of the area.
Water Act No. 54 of 1956	Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.	The pollution of water resources should be avoided during construction and operation of the development.
The Ministry of Environment and Tourism (MET) Policy on HIV & AIDS	MET has recently developed a policy on HIV and AIDS. In addition, it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.	The proponent and its contractor have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with construction projects has shown that a significant risk is created when construction workers interact with local communities.
Town Planning Ordinance 18 of 1954 (as amended by amongst others Town Planning Amendment Act 15 of 2000)	This Ordinance regulates rezoning of of portions of land falling within a proclaimed Local Authority area.	The ordinance makes provision for the development of Town Planning Schemes.
Grootfontein Town Planning Scheme.	The town planning scheme has as its general purpose the co-ordinated and harmonious development of the local authority area, or the area or areas situate therein.	Guidelines to manage land use are stipulated in the Town planning Scheme.
Local Authorities Act No. 23 of 1992	The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council. Sections 34-47 make provision for the aspects of water and sewerage.	The development has to comply with the provisions of the Local Authorities Act
Labour Act no 11 of 2007	Chapter 2 details the fundamental rights and protections. Chapter 3 deals with the basic conditions of employment.	Given the employment opportunities presented by the development, compliance with the labour law is essential.
Public Health Act no 36 of 1919	Section 119 prohibits persons from causing nuisance.	Developer and Contractors are to comply with these legal requirements.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Nature Conservation Ordinance no 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	Indigenous and protected plants have to be managed within the legal confines.
Atmospheric Pollution Prevention Ordinance (No. 11 of 1976).	The Ordinance objective is to provide for the prevention of the pollution of the atmosphere, and for matters incidental thereto.	All activities on the site will have to take due consideration of the provisions of this legislation.
Roads Ordinance 17 of 1972	• Section 3.1 deals with width of proclaimed roads and road reserve boundaries • Section 27.1 is concerned with the control of traffic on urban, trunk and main roads • Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads.	Adhere to all applicable provisions of the Roads Ordinance.
Petroleum Products and Energy Act, 1990 Petroleum Products Regulations (2000)	• These legislations provide for the application of retail licences	The fuel service station should obtain a retail licence from the Ministry of Mines and Energy.

This EIA process will be undertaken in accordance with the EIA Regulations. A Flow Diagram (refer to **Figure 3** below) provides an outline of the EIA process to be followed.

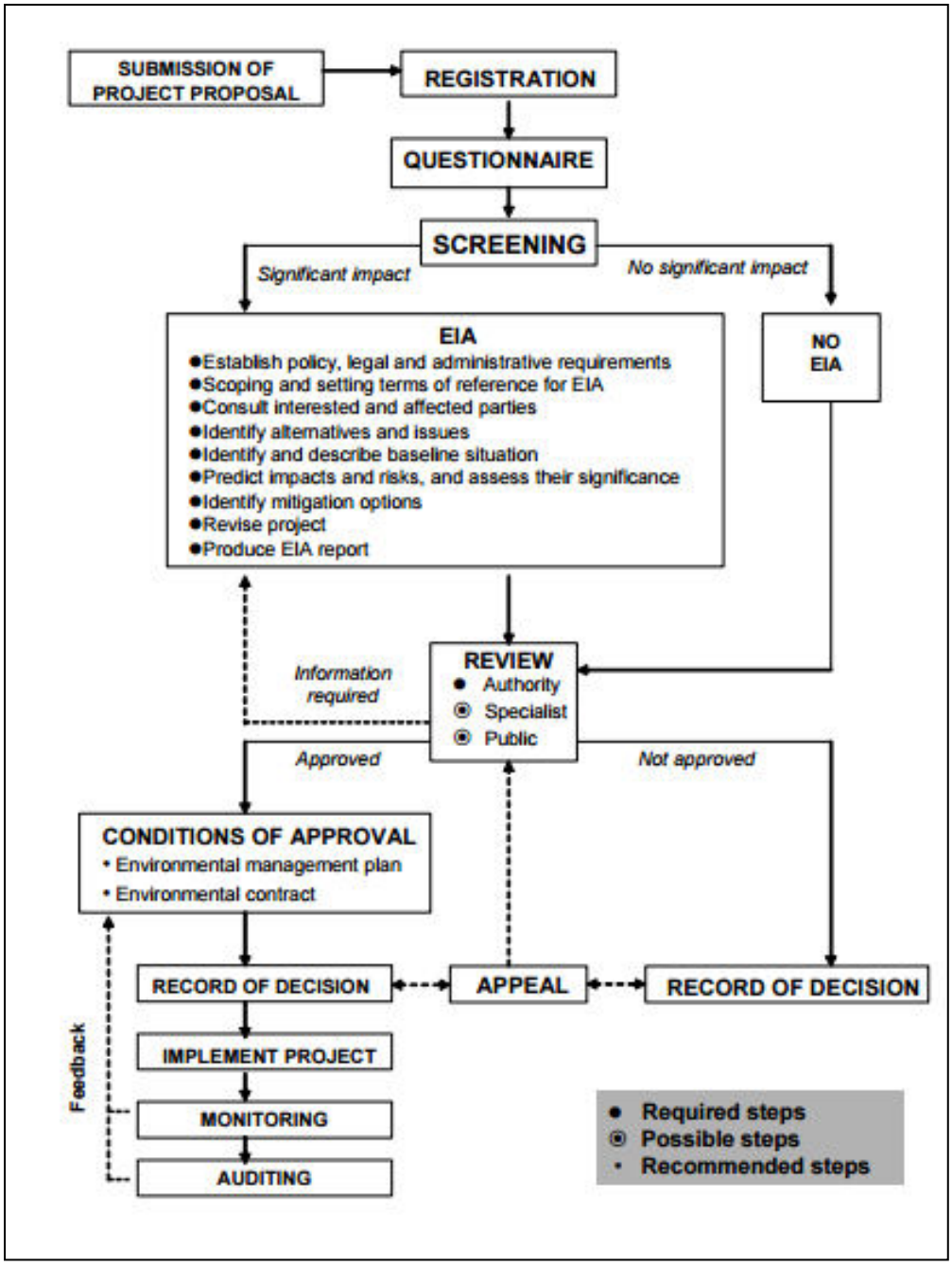

Figure 3: EIA Flowchart for Namibia (SELH, 2012)

3. ENVIRONMENTAL BASELINE DESCRIPTION

3.1. Social Environment

3.1.1. Socio-Economic Context

The statistics shown in **Table 3** below are derived from the 2011 Namibia Population and Housing Census (NSA, 2011) and delineated from a constituency and regional perspective:

Table 3: Statistics of Grootfontein Constituency and Otjozondjupa Region

GROOTFONTEIN	
ATTRIBUTE	**INDICATOR**
Population	24,878
Females	12,130
Males	12,748
Population under 5 years	14%
Population aged 5 to 14 years	21%
Population aged 15 to 59 years	61%
Population aged 60 years and above	4%
Female: male ratio	100:105
Literacy rate of 15 years old and above	80%
People above 15 years who have never attended school	19%
People above 15 years who are currently attending school	23%
People above 15 years who have left school	55%
People aged 15 years and up who belong to the labour force	71%
Population employed	69%
Homemakers	16%
Students	46%

GROOTFONTEIN	
Retired or old age income recipients	38%
Income from pension	6%
Income from business and non-farming activities	9%
Income from farming	3%
Income from cash remittance	4%
Wages and salaries	74%
OTJOZONDJUPA REGION	
ATTRIBUTE	**INDICATOR**
Population	143,903
Population under 5 years	14%
Population aged 5 to 14 years	22%
Population 15 to 59 years	58%
Literacy rate of 15 years old and above	83%

3.1.2. Archaeological and Heritage Context

Otjozondjupa Region like the rest of Namibia is home to many different cultural groups. There are a few heritage sites found within the confines and surrounds of Grootfontein. The **Hoba Meteorite** was discovered by Jacobus Hermanus Brits in the 1920's on the farm Hoba, 19 km from Grootfontein. It is the world largest meteorite and weighs 60 tonnes. It was declared a national monument in March 1955.

The **Das Alte Fort Museum** is situated in a prominent position atop a hill in Grootfontein. The 'Old Fort' was originally a Schutztruppe fortress built in 1896, while the tower was added in 1904. With its splendid view of the surrounding countryside, this tower was used to great advantage by the troops. The Fort, housing the museum, was declared a national monument in 1975 (Grootfontein, 2017).

The **Baobab Tree**, romantically called 'Tree 1063', is located on the Farm Keibeb, which is about 60km north of Grootfontein on the "Maanlig" road, (Road number 2848).The tree's trunk

circumference is 18,5 meters and has branches up to 12 meters. Baobab Trees play an important role in African legend and daily life. The **Gaub Cave** located on the historical Farm Ghaub. Local tradition accredits the discoverer of the Gaub Cave as being Dr. H. Vedder. The first known written report of the cave appeared in the German Deutsche Kolonialzeitung in 1914 (Grootfontein, 2017). No known heritage sites are however located within the proposed development area. If any heritage or culturally significant artefacts are found during the construction, construction must stop and the National Heritage Council of Namibia immediately notified.

3.2. Bio-Physical Environment

3.2.1. Climate

Grootfontein is characterised by a tropical climate, with mild winters and generally warm to hot summers. The town experiences good rainfall of between 500 – 550 mm per annum, with medium evaporation and high day time temperatures. These figures are high when compared to the rest of the country. Evaporation rates are between 2,100 mm and 2,240 mm per year, with frost being extremely rare in this area. The rainfall is mostly experienced during the summer months from November to April. Annual temperatures of between 20-22° C are experienced in this area. Grootfontein additionally has high humidity rates which reach up to 70%. See **Figure 4** below for the average temperature graph of Grootfontein and **Figure 5** for the average rainfall graph.

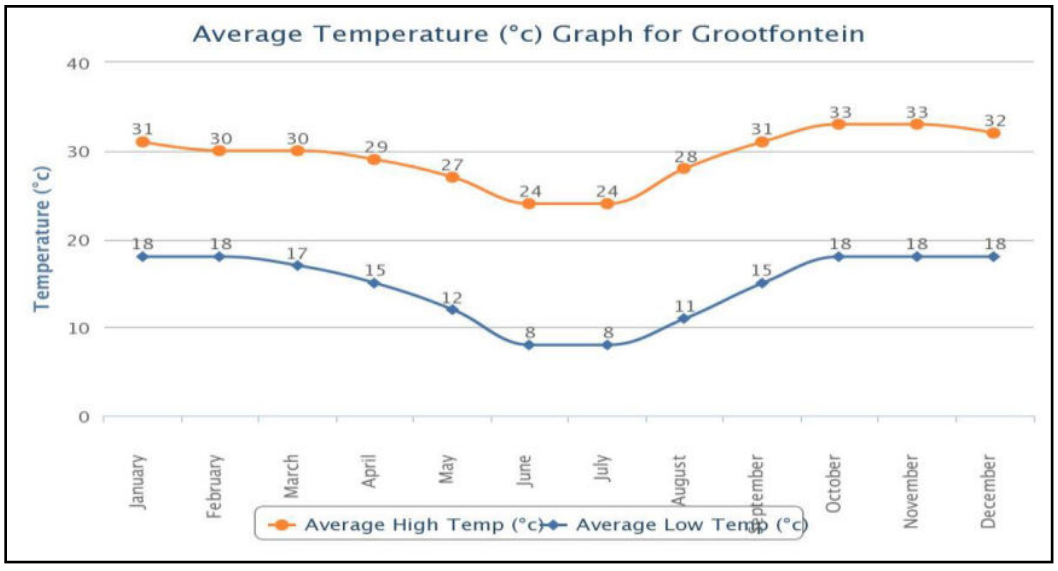

Figure 4: Average Temperature Graph for Grootfontein (World Weather Online, 2023)

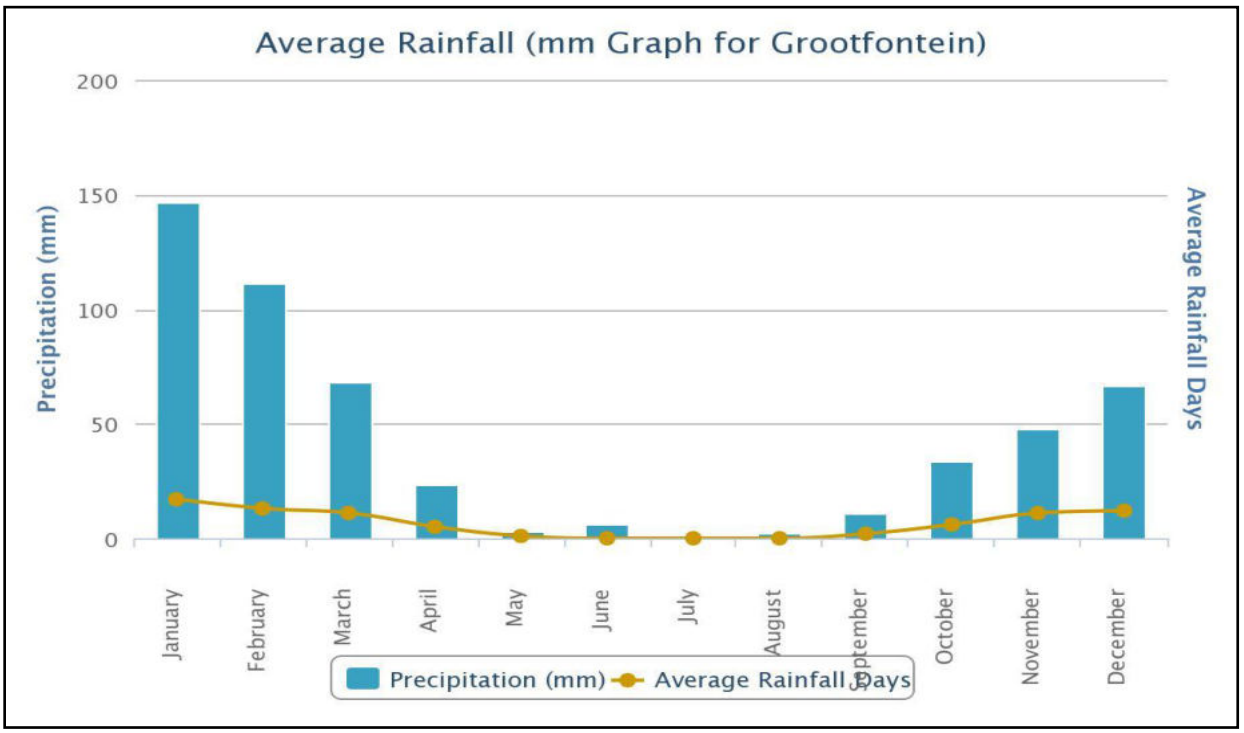

Figure 5: Average Rainfall Graph for Grootfontein (World Weather Online, 2017)

3.2.2. Topography, Geology and Hydrogeology

The Grootfontein geology is mainly characterised by some of the oldest rock formations aged between 1400 and 1800 million years known as the Oldest Rocks division; and the Damara Supergroup and Gariep Complex which is some 850 million to 600 million years old. The types of rock found within the Oldest Rocks group are mostly complex and granite rocks whereas in the Damara Supergroup and Gariep Complex, Schists are mainly found (Mendelsohn, et al, 2002).

Grootfontein falls within the Karstveld landscape. The Kalahari Sandveld landscape covers much of northern and eastern Namibia and is dominated by savannah woodland growing on sands deposited by wind over the last 65-70 million years. Several rivers cut through the sandveld however those that drain out of Namibia very seldom flow for any distance (Mendelsohn et al, 2002).

The Grootfontein area and the Otjozondjupa Region are covered with areas with moderately productive, productive fractured and productive porous aquifers. According to Mendelsohn et

al (2002), the aquifers found in the Grootfontein area were formed when the spaces between the rocks have been enlarged into caverns by water which has progressively dissolved the rock. The best-known fractured aquifer is the one that encircles the Owambo Basin and supplies water to Grootfontein, Otavi, Outjo and Tsumeb.

Potable water supply to Grootfontein by NamWater is provided mainly through two water supply schemes namely the Berg Aukas-Grootfontein Scheme and the Grootfontein-Omatako Canal. Water is transferred from the Karst area to the Omatako Dam by means of a steel rein-forced, 300 km long concrete lined parabolic canal and has a capacity of 2 m^3/s. The Grootfontein-Omatako Canal has been commissioned since 1987. The Berg Aukas- Grootfontein scheme has been commissioned since 1998 and has a capacity of 720m3/h. The water is abstracted from Berg Aukas No 2 mine shaft with submersible pump sets and transferred to Grootfontein by means of a 500 mm diameter, 18 km long GRP pipeline (Namwater, 2017).

3.2.3. Terrestrial Ecology

Grootfontein falls within the Karstveld biome. The Tree-and-shrub Savanna is the largest biome and covers most of Namibia. This biome can be further divided into Broadleaved Tree-and-shrub Savanna and Acacia Tree-and-shrub Savanna sub-biomes, Grootfontein falls within the Acacia Tree-and-shrub Savanna sub-biome. This sub-biome is characterised by 'large, open expanses of grasslands dotted with *Acacia* trees. The trees are tallest in areas of deeper sands in the east, with plant growth becoming progressively shrubby further west where the soils are shallower and the landscape is more hilly and rocky'. The vegetation structure of the region is sparse shrubland that stretches from the south-east to the north-west of Namibia (Mendelsohn et al, 2002). The town of Grootfontein's vegetation is characterised as Shrubland-Woodland Mosaic, providing good vegetation for grazing. See **Table 4** for the animal species diversity in the Grootfontein area. **Figure 6** below provides a view of the general area and surrounds of the proposed development site.

Table 4: Species diversity (Mendelsohn et al., 2003)

Fauna	No. of Species (Country Total)	No. of Species (Grootfontein Area)	Remarks
Bird	658	141-170	Tsumeb-Grootfontein-Otavi hills support many birds that are absent from surrounding Acacia Woodlands.
Frog	50	16-19	
Mammal	217	76-90	Includes Kudu, zebra, springbok
Reptile	258	71-80	Namibia has one of the richest lizard faunas in Africa
Scorpion	56	6-9	

Figure 6: General area of the proposed development site.

3.3. Surrounding Land Use

The site is located in an area that has a mix of industrial and commercial activities. Two retail fuel service stations can be found in the north-eastern direction i.e., Engen and Shell facilities, however both do not offer truck port services. Some industrial stalls are also located south-

west of the development site. The land is owned by TransNamib and railway services are operational around the general area.

3.4. Physical Environment

The infrastructure needs of the proposed project can be categorised into two broad classifications namely:

- Basic infrastructure that includes electricity and roads.
- Environmental infrastructure that consists of water supply, sewage and drainage systems, solid waste management and landscaping.

The proponent will engage registered professional engineers to design and supervise the construction of the bulk service infrastructure i.e., water, sewer, roads and electricity. This will take into account the existing built-up area adjacent to the proposed site. The service designs and connections will be carried out in consultation with the local authority and with CENORED for the electricity. Access to the site will be obtained from Okavango Road and will be carried out in consultation with the Roads Authority.

4. PROJECT DESCRIPTION

4.1. Site Description

As previously outlined in Section 1.1, the proposed project involves the construction of the Proposed Grootfontein Truck Port on Erf 249 Okavango Road, Grootfontein. The truck port will be able to supply the following petroleum products: Unleaded Petrol (ULP), Diesel 500 ppm, and Diesel 50 ppm. These will be stored in two underground tanks, one of 60 cubic meters for ULP and the other of 90 cubic meters for Diesel (60 cubic meters of 500ppm and 30 cubic meters of 50ppm). Dispensing will be by means of 5 pumps. Additional facilities and infrastructure provided include:

- Canopied Forecourt Housing Fuel Pumps
- An impermeable concrete surface under the canopy
- 24/7 Convenience Store, Kitchen and restaurant
- Banking automatic teller machine (ATM's)
- Safe overnight parking for trucks
- Three (3) open rental stores
- Ablution facilities
- Space for development as the community demands
- Adequate paved parking bays
- Breather points / vents
- Station manager office and station sales office
- Compressor and generator room

4.2. Decision Factors

The following factors served as informants and were considered when preparing the layout designs for the proposed development:

- Fuel is an essential commodity in vehicle transportation.
- The environment in which the tuck port operates is not very competitive.
- There are no other truck ports operating in the area except for Otavi, which is about 90kms away.

- The immediate target markets are the trucks transporting commodities to and from Zambia, Zimbabwe, Gauteng Province in South Africa (Using the Gobabis - Grootfontein Road) and the DRC, the whole community of Grootfontein, nearby farmers and all road users on the highway.

4.3. No – Go Alternative

The no-go alternative would essentially entail maintaining the current situation, whereby residents of Grootfontein and goods transporters from the wider SADC Region will not have access to the services offered by the truck port development, as there are only four existing Fuel service stations in Grootfontein, which are small and do not cater for trucks and their drivers. This will inhibit added growth within a certain market segment of the town population. In addition, the potential job opportunities both during the construction and operational phases of the proposed development will not be realised. While the no-go alternative will not result in any negative impacts the potential positive impacts will be lost.

5. PUBLIC PARTICIPATION PROCESS

5.1. Public Consultation Process Phase 1

In terms of Section 21 of the EIA Regulations a call for public consultation with all I&APs during the EIA process is required. This entails consultation with members of the public and providing them an opportunity to comment on the proposed project. The Public Consultation Process does not only incorporate the requirements of Namibia's legislation, but also takes account of national and international best practises. Please see **Table 5** below for the activities undertaken as part of the public participation process.

Table 5: Table of Public Consultation Activities

ACTIVITY	REMARKS
Placement of site notices in Grootfontein Town	See **Annexure A**
Placing advertisements in two newspapers for two consecutive weeks, namely the Windhoek Observer and Confidente	See **Annexure B**
Written notice to affected landowners and adjacent landowners	**See Annexure D**

ACTIVITY	REMARKS
Written notice to Interested and Affected Parties via Email	See **Annexure D**
Public meeting in Grootfontein	19 August 2022 in the Omulunga Community Hall

The public meeting was poorly attended with only the consulting team present.

5.2. Public Consultation Process Phase 2

The second phase of the Public Consultation Process involved the lodging of the Draft Environmental Scoping Report (DESR) to all registered I&AP for comment. Registered and potential I&APs were informed of the availability of the DESR for public comment. An Executive Summary of the DESR was included in the communication that went out to the registered I&APs. I&APs were given time until **05 July 2023** to submit comments or raise any issues or concerns they may have with regard to the proposed project. No comments were received by the end of the comment period.

6. ASSSESSMENT METHODOLGY

Impact assessments depend on the nature and magnitude of the proposed activity, as well as the type of environmental control envisaged for the particular project. Given the nature of the proposed activity, i.e., a construction project, the identification and assessment of the potential impacts will be based on the type and scale of the various activities associated with the project.

Assessment of the predicted significance of impacts for a proposed development is by its nature, inherently uncertain. To deal with such uncertainty in a uniform manner, standardised and internationally recognised methodologies have been developed. One such accepted methodology is applied in this study to assess the significance of the potential environmental impacts of the proposed development, outlined as follows in **Table 6**.

Table 6: Impact Assessment Criteria

CRITERIA	CATEGORY
Impact	Description of the expected impact
Nature Describe type of effect	**Positive:** The activity will have a social / economical / environmental benefit. **Neutral:** The activity will have no effect **Negative:** The activity will have a social / economical / environmental harmful effect
Extent Describe the scale of the impact	**Site Specific:** Expanding only as far as the activity itself (onsite) **Small:** restricted to the site's immediate environment within 1 km of the site (limited) **Medium:** Within 5 km of the site (local) **Large:** Beyond 5 km of the site (regional)
Duration	**Temporary:** < 1 year (not including construction)

CRITERIA	CATEGORY
Predicts the lifetime of the impact.	**Short-term**: 1 – 5 years **Medium-term**: 5 – 15 years **Long-term**: >15 years (Impact will stop after the operational or running life of the activity, either due to natural course or by human interference) **Permanent**: Impact will be where mitigation or moderation by natural course or by human interference will not occur in a particular means or in a particular time period that the impact can be considered temporary
Intensity Describe the magnitude (scale/size) of the Impact	**Zero**: Social and/or natural functions and/ or processes remain unaltered **Very low**: Affects the environment in such a way that natural and/or social functions/processes are not affected **Low**: Natural and/or social functions/processes are slightly altered **Medium**: Natural and/or social functions/processes are notably altered in a modified way **High**: Natural and/or social functions/processes are severely altered and may temporarily or permanently cease
Probability of occurrence Describe the probability of the Impact actually occurring	**Improbable**: Not at all likely **Probable**: Distinctive possibility **Highly probable**: Most likely to happen **Definite**: Impact will occur regardless of any prevention measures
Degree of Confidence in predictions State the degree of confidence in predictions based on availability of information and specialist knowledge	**Unsure/Low**: Little confidence regarding information available (<40%) **Probable/Med**: Moderate confidence regarding information available (40-80%) **Definite/High**: Great confidence regarding information available (>80%)
Significance Rating The impact on each component is determined by a combination of the above criteria.	**Neutral**: A potential concern which was found to have no impact when evaluated **Very low**: Impacts will be site specific and temporary with no mitigation necessary. **Low**: The impacts will have a minor influence on the proposed development and/or environment. These impacts require some thought to adjustment of the project design where achievable, or alternative mitigation measures **Medium**: Impacts will be experienced in the local and surrounding areas for the life span of the development and may result in long term changes. The impact can be lessened or improved by an amendment in the project design or implementation of effective mitigation measures. **High**: Impacts have a high magnitude and will be experienced regionally for at least the life span of the development, or will be irreversible. The impacts could have the no-go proposition on

CRITERIA	CATEGORY
	portions of the development in spite of any mitigation measures that could be implemented.

*NOTE: Where applicable, the magnitude of the impact has to be related to the relevant standard (threshold value specified and source referenced). The magnitude of impact is based on specialist knowledge of that particular field.

For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) are described. These criteria are used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The decision as to which combination of alternatives and mitigation measures to apply lies with the proponent, and their acceptance and approval ultimately with the relevant environmental authority.

The SIGNIFICANCE of an impact is derived by taking into account the temporal and spatial scales and magnitude. Such significance is also informed by the context of the impact, i.e. the character and identity of the receptor of the impact.

7. MITIGATION HIERACHY

The mitigation hierarchy is a tool aimed at helping to manage biodiversity risk, and is commonly applied in Environmental Impact Assessments. The most common reference point for banks providing project finance is mitigation measures; this provides the financial institutions with information on how environmental and social risks will be managed (See **Figure 7** below). These cover avoidance, minimization, restoration and compensation amongst other things. It is possible and considered sought after to enhance the environment by ensuring that positive gains are included in the proposed activity or project. If negative impacts occur then the hierarchy indicates further steps.

Figure 7: Mitigation Hierarchy

Impact avoidance: This step is most effective when applied at an early stage of project planning. It can be achieved by:

- not undertaking certain projects or elements that could result in adverse impacts;
- avoiding areas that are environmentally sensitive; and
- putting in place preventative measures to stop adverse impacts from occurring.

Impact minimization: This step is usually taken during impact identification and prediction to limit or reduce the degree, extent, magnitude, or duration of adverse impacts. It can be achieved by:

- scaling down or relocating the proposal;
- redesigning elements of the project; and
- taking supplementary measures to manage the impacts

Restoration: This step is taken to improve degraded or removed ecosystems following exposure to impacts that cannot be completely avoided or minimised. Restoration tries to return an area to the original ecosystem that occurred before impacts. Restoration is frequently needed towards the end of a project's life-cycle, but may be possible in some areas during operation.

Impact compensation: This step is usually applied to remedy unavoidable residual adverse impacts. It can be achieved by:

- rehabilitation of the affected site or environment, for example, by habitat enhancement;
- restoration of the affected site or environment to its previous state or better; and
- replacement of the same resource values at another location (off-set), for example, by wetland engineering to provide an equivalent area to that lost to drainage or infill. Offsets are often complex and expensive; it is therefore preferable to pay attention to earlier steps in the mitigation hierarchy.

8. POTENTIAL IMPACTS

This Chapter describes the potential impacts on the biophysical and socio-economic environments, which may occur due to the proposed activities. These include potential impacts, which may arise during the planning and design phase, potential construction related impacts (i.e. short to medium term) as well as the operational impacts of the proposed development (i.e. long-term impacts).

The assessment of potential impacts will help to inform and confirm the selection of the preferred project plan and design to be submitted to MET: DEA for consideration. In turn, MET: DEA's decision on the environmental acceptability of the proposed project and the setting of conditions of authorisation (should the project be authorised) will be informed by this chapter, amongst other information contained in this EA Report.

The baseline and potential impacts that could result from the proposed development are described and assessed with potential mitigation measures recommended. Finally, comment is provided on the potential cumulative impacts which could result should this development, and others like it in the area, be approved.

8.1. Planning and Design Phase Impacts

During the planning and design phase consideration should be given to aspects such as the legal framework; land use change; traffic; existing infrastructure; and heritage sites.

8.1.1. Legal Framework

The proponent should take due cognisance of the legal requirements and policies to operate such facilities as they are contained in various instruments key of which are Petroleum Products And Energy Act, 1990 Petroleum Products Regulations (2000) which deals with acquisition of a retail licence from the Ministry of Mines and Energy; SANS 10089-3:2010 covering the installation, modification, and decommissioning of underground storage tanks, pumps/dispensers and pipework at services stations and consumer installations; Grootfontein Town Planning Scheme and related policies; Water Act No. 54 of 1956 dealing with the prohibition of underground and surface waters bodies

8.1.2. Land Use Change

The development site, to a great extent, has been impacted over the years with the railway activities different types of businesses and industries in the vicinity. The area does not have any significant vegetation. The new structures on the site are not likely to significantly change the character of the area, given that a number commercial and industrial activities are already happening. Proper designs combined with landscaping will augment the aesthetic value of the area, and thus minimise any negative impact.

8.1.3. Traffic

Traffic is expected to increase during the operational phase of the project. The increase will be mainly attributed to the patrons using the services offered on site. Given the location of the site to the busy B8 National Road, relevant planning is necessary in consultation with the Local Authority and Roads Authority to minimise congestion of the road, for ingress and exit purposes.

8.1.4. Existing Service Infrastructure Impacts

There will not be any major impact on the existing infrastructure as far as water, sewerage, electricity etc. are concerned. In fact, the new development is expected to enhance the existing infrastructure through the construction of service infrastructure that is professionally designed and constructed. It is important to note that the country in general is constrained and faced with a crisis in terms of water and electricity availability; and an increased demand for these amenities will further add to the predicament. the water volumes and electrical demands for the project is not expected to have a significant negative impact on the infrastructure. It is critical that any service infrastructure be designed and construction supervised by a qualified and registered and engineering professional.

8.1.5. Heritage Sites

No known heritage sites are located within the proposed development area, however prompt reporting to the National Heritage Council should take place in the instance of any accidental archaeological finds.

8.2. Construction Phase Impacts

During the construction phase the following potential impacts have been identified: pressure on the existing infrastructure; fauna and flora; surface and ground water; public health, safety and security; impact on air quality, noise pollution, traffic congestion; solid waste management; hazardous substances; and social impact.

8.2.1. Flora and Fauna

Any type of development has potential negative environmental consequences, but identifying the most important fauna and flora species including high risk habitats beforehand, coupled with environmentally acceptable mitigating factors, lessens the overall impact of such development. However, this site has already been impacted by human activities and is not likely to host significant numbers of fauna and flora.

8.2.2. Pressure on existing infrastructure

During the construction phase there will be an additional demand for basic municipal services such as water, electricity and sewer. The services will be used for both human consumption and for construction purposes. These impacts will however only be limited to the construction phase and will thus have minimal short-term impact. The risk of wastage and pollution may occur if no proper management actions are implemented.

8.2.3. Surface and Ground Water Impacts

There are currently no visible surface water bodies to be considered with regard to the proposed site as there are no perennial water sources in the area. However, surface and ground water impacts may be encountered during the construction phase, especially if development takes place during the rainy season. The risk of contaminating such water sources can be increased by accidental spillage of oils and fuels and any other equipment used during construction; chemical contamination from construction materials such as cement, paint and mechanical fluids. This risk is minimised by the fact that the construction period will be a short-term activity.

8.2.4. Health, Safety and Security Impacts

Due to a high demand of construction workers during this phase of the project, the deployment of a temporary construction workforce in Grootfontein may be necessary. These types of projects, where construction workers have the opportunity to interact with the local community, create a significant risk for the development of social conditions and behaviors that contribute to the spread of HIV and AIDS. The Ministry of Environment, Forestry and Tourism has initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.

8.2.5. Air Quality

During the construction phase fugitive dust and exhaust gases generated has a potential impact on the air quality of the area and its surroundings. Dust is a major component of air pollution and could negatively affect the health of nearby communities if not mitigated. These are however short-term impacts. Dust is generated mainly from the following activities:

- Excavations and stockpiles during site clearance;
- Use of heavy vehicles, machinery and equipment;
- Procurement and transport of construction materials to the site.

8.2.6. Noise Impacts

Noise is perceived as one of the most undesirable consequences of a construction activity. The most common reported impacts are interference in oral communication and sleep disturbance. The construction of the services, buildings and other structures will result in associated noise impacts. These noise impacts will mainly be associated with construction machinery and vehicles, concrete and mixing; and excavation for foundations. Given that the adjacent areas are occupied, the users will be impacted. The impact is however limited to the construction period only.

8.2.7. Traffic Impacts

Traffic is expected to increase during the construction phase of the project. A number of trucks and other heavy machinery will be required to deliver, handle and position construction materials as well as to remove spoil material. Not only will the increase in traffic result in

associated noise impacts, it will also impact on the vehicular traffic in the area. The safety of road users and especially school going children needs to be considered. The use of slow-moving heavy trucks has the potential to cause traffic jams.

8.2.8. Solid Waste Management

The construction activities will lead to the generation of significant amounts of solid waste mainly in the form of construction building rubble. This could have a negative environmental impact if not managed well. Therefore, enough waste bins and skip containers should be availed to manage the solid waste. All solid waste should be disposed of at the designated landfill site of Grootfontein as approved by the local authority.

8.2.9. Storage and Utilisation of Hazardous Substances

Hazardous substances are regarded by the Hazardous Substance Ordinance (No. 14 of 1974) as those substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure in certain circumstances. It covers manufacture, sale, use, disposal and dumping as well as import and export. During the construction period, the on-site use and storage of these types of hazardous substances, such as shutter oil, curing compounds, types of solvents, primers, adhesives and diesel, could have negative impact on the surrounding environment, if these substances spill and enter the environment.

8.2.10. Social Impacts

The project will result in long-term positive impacts as far as the social welfare of the affected community is concerned. There is potential of an influx of migrant workers into the town of Grootfontein. This would boost the local economic development of the town as a result of an increase in consumers of goods. The local community will benefit through preferential recruitment of local labour and procurement as far as possible.

8.3. Operational Phase Impacts

The operational phase impacts that have been identified are: surface and ground water; air quality; noise; solid and Industrial waste; social; visual impact.

8.3.1. Surface and Ground Water Impacts

There are a number of pollutants found in fuel facilities including oil, grease, lubricants and petroleum products, engine coolant, detergents and their by-products that have potential to contaminate stormwater. The large-scale storage of fuel is mostly done in large underground tanks at fuel stations and therefore there is an increased risk of environmental pollution should any of these tanks be compromised since it will not be easy to determine when a leak occurs as even small leaks from the tanks can cause extensive contamination of soil and ground water over time.

Surface spillages can also be washed away when the surface is hosed down or when rain events take place. If petroleum products are to be stored in underground fuel storage tanks (USTs) the USTs should be, as a minimum, composite tanks (fibre-reinforced resin coated steel tanks).

8.3.2. Air Quality

During the operational phase of the development there is likely to be release of volatile organic compounds during refuelling operations and exhaust emissions from vehicles visiting the truck port and fuelling facilities. Other air quality issues include odours from the filling of fuel storage systems when the vapours in the tank are vented to atmosphere as well as from deliveries from road tankers and the escape of fumes at individual bowsers (EPA, 2017). Vapour recovery systems designed to reduce petrol emissions into the atmosphere from storage systems are therefore recommended.

8.3.3. Noise Impacts

Fuel facilities may operate for extended hours per day, subject to the applicable licence, and may comprise various noise sources including truck and car movements, fuel deliveries and rubbish collection, operation of fuel pumping equipment, refrigeration and air conditioning plant. It is therefore important that mitigation measures are applied to bring these noise levels to acceptable limits.

8.3.4. Solid and Industrial Waste

Waste generated is likely to include empty storage containers and packaging, general litter, by-products of any vehicle maintenance (including petroleum products, coolants, degreasing agents, sediment, rubber particles, detergents), and other hazardous materials.

The development should include:

- provision for implementation of the waste management hierarchy (avoidance, minimisation, reuse, recycling, recovery, treatment, disposal)
- dedicated covered areas for all non-toxic solid waste materials
- dedicated covered and bunded areas for all toxic waste materials
- liquid wastes should be contained and / or treated before transport off-site by an approved transporter
- solid toxic wastes should be removed from the site regularly by an approved transporter.

All waste should be disposed of in line with the local authority's directives.

8.3.5. Social Impact

The proposed project is seen as an improvement on the current status of the area's development. From a social perspective, the provision of a truck port facility is highly important to improve access to the much-needed amenities of truck drivers and to the business operations in the Grootfontein area, as well as to provide job opportunities for the community to enhance their livelihoods, and in turn also uplift the general economy of the town.

8.3.6. Visual and Sense of Place Impacts

The new development will be visually prominent from many angles. While there are some existing structures in the surrounding area, the additional buildings and infrastructure to be erected on site will cause a higher visual impact to the natural area. The development will have an impact on the sense of place of the local community. Therefore, the aesthetics quality of the new structures has to pleasing and designed to blend in with the natural surrounds.

9. SUMMARY OF POTENTIAL IMPACTS

A summary of the significance of the potential impacts from the proposed project assessed above is included in **Table 7**. The **Tables 8 – 10** provide a summary of the mitigation measures proposed for the impacts.

Table 7: Overview of potential impacts

Impacts	Negative		Positive		No Impact
	Short Term	Long Term	Short Term	Long Term	
Planning and Design Phase					
1. Land use change	X				
2. Traffic	X				
3. Existing infrastructure				X	
4. Heritage sites	X				
Construction Phase					
5. Pressure on existing infrastructure	X				
6. Fauna and flora	X				
7. Surface and ground water	X				
8. Public health, safety and security	X				
9. Air quality	X				
10. Noise	X				
11. Traffic	X				
12. Solid waste management	X				
13. Hazardous substances		X			
14. Social impacts					

Operational Phase					
15. Surface and ground water		X			
16. Air Quality		X			
17. Noise		X			
18. Solid and industrial waste		X			
19. Social				X	
20. Visual				X	

Table 8: Proposed mitigation measures for the planning and design phase

PLANNING AND DESIGN PHASE IMPACTS	
Impact	**Mitigation Measures**
Environmental Monitoring and Evaluation	• Regular monitoring and evaluation of environmental performance should be conducted. • Targets for improvements should be established and monitored throughout this process. • Provide bi-annual reports to the Environmental Commissioner.
Legal Framework	Conform to the following legal and policy instruments: • Petroleum Products and Energy Act, 1990 Petroleum Products Regulations (2000) which deals with acquisition of a retail licence from the Ministry of Mines and Energy; • SANS 10089-3:2010 covering the installation, modification, and decommissioning of underground storage tanks, pumps/dispensers and pipework at services stations and consumer installations. • Grootfontein Town Planning Scheme and related policies, in terms of land use;
Land use change	• Introduce additional vegetation and landscaping to supplement lost vegetation.
Traffic	• Ensure compliance with the Local Authority requirements. • Provide for painted guidelines in terms of access and exit points. • Consider the construction of raised islands to prevent motorist from entering and accessing through the wrong lane. • Provide for pedestrian crossing.

PLANNING AND DESIGN PHASE IMPACTS	
Impact	**Mitigation Measures**
Existing service infrastructure	• Ensure professional design and construction of service infrastructure from qualified and registered engineers. • Ensure consultation and compliance with relevant authorities responsible for services, this includes the Municipality of Grootfontein, Ministry of Mines and Energy, CENORED etc. • It is recommended that alternative and renewable sources of energy be explored and introduced into the proposed development to reduce dependency on the grid. • Solar geysers and panels should be introduced to provide for general lighting and heating of water and buildings. • Other 'green' technologies to reduce the proposed development's dependency on fossil fuel should be explored where possible. • Designs and building materials should be as such to reduce dependency on artificial heating and cooling in order to limit the overall energy demand. • Water saving mechanisms should be incorporated within the proposed development's design and plans in order to further reduce water demands. • Re-use of treated waste water should be considered wherever possible to reduce the consumption of potable water. • Train employees in the importance of water and energy savings.
Heritage sites	• The project management should be made aware of the provisions of the National Heritage Act regarding the prompt reporting of archaeological finds. • In the event of such finds, construction must stop and the project management or contractors should notify the National Heritage Council of Namibia immediately.

Table 9: Proposed mitigation measures for the construction phase

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
Pressure on existing infrastructure	• Ensure all potable water points are metered and regularly read. • Ensure that the workforce is provided with temporary toilets during the construction phase. • Waste from the temporary toilets should be disposed of at the relevant Wastewater Treatment Works in Grootfontein. • A sufficient number of waste bins should be placed around the site for the soft refuse.

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
	• A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site. • Solid waste will be collected and disposed of at an appropriate local land fill in Grootfontein, in consultation with the local authority.
Fauna and flora	• Prevent contractors from collecting wood, veld food, etc. during the construction phase.
Surface and ground water impacts	• It is recommended that construction takes place outside of the rainy season in order to limit ground and surface water pollution. • No dumping of waste products of any kind in or in close proximity to surface water bodies should be allowed. • Heavy construction vehicles should be kept out of any surface water bodies and the movement of construction vehicles should be limited where possible to the existing roads and tracks. • Ensure that oil/ fuel spillages from construction vehicles and machinery are minimised and that where these occur, that they are appropriately dealt with. • Drip trays must be placed underneath construction vehicles when not in use to contain all oil that might be leaking from these vehicles. • Contaminated runoff from the construction sites should be prevented from entering water bodies. • All materials on the construction site should be properly stored. • Construction workers should be given ablution facilities at the construction sites that are located at least 30 m away from any surface water and these should be regularly serviced. • Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment this should be done at an area properly suited and prepared to receive and contain polluted waters.
Health, Safety and Security	• Construction personnel should not overnight at the site, only the security personnel. • Ensure that all construction personnel are properly trained depending on the nature of their work. • Provide for a first aid kit and a properly trained person to apply first aid when necessary. • A wellness program should be initiated to raise awareness on health issues, especially the impact of sexually transmitted diseases, and Covid-19. • Provide free condoms in the workplace throughout construction and project operation. • Facilitate access to Antiretroviral medication • Restrict unauthorised access to the site and implement access control measures • Clearly demarcate the construction site boundaries along with signage of “no unauthorised access”.

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
	• Clearly demarcate dangerous areas and no go areas on site. • Staff and visitors to the site must be fully aware of all health and safety measures and emergency procedures. • The contractor must comply with all applicable occupational health and safety requirements. • The workforce should be provided with all necessary Personal Protective Equipment where appropriate.
Traffic	• Limit and control the number of access points to the site. • Ensure that road junctions have good sightlines. • Construction vehicles' need to be in a road worthy condition and maintained throughout the construction phase. • Transport the materials in the least number of trips as possible. • Adhere to the speed limit. • Implement traffic control measures where necessary. • Minimise the movement of heavy vehicles during peak time.
Noise	• No amplified music should be allowed on site. • Inform immediate neighbours of construction activities to commence and provide for continuous communication between the neighbours and contractor. • Limit construction times to acceptable daylight hours. • Install technology such as silencers on construction machinery. • Do not allow the use of hooters as a general communication tool, but use it only where necessary as a safety measure. • Provide protective equipment such as ear muffs and ear plugs to workers.
Air quality	• All loose material should be kept on site for the shortest possible time. • It is recommended that a dust suppressant such as Dustex be applied to all the construction clearing activities to minimise dust emissions. • Construction vehicles to only use designated roads. • During high wind conditions the contractor must make the decision to cease works until the wind has calmed down. • Cover any stockpiles with plastic to minimise windblown dust. • Provide workers with dust masks. • Ensure construction vehicles are well maintained to prevent excessive emissions of smoke.

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
Solid Waste	• A sufficient number of waste bins should be placed around the site for the soft refuse. • A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site. • Solid waste will be collected and disposed of at an appropriate local land fill in Grootfontein, in consultation with the local authority.
Hazardous Substances	• All chemicals and other hazardous substances must be stored and maintained in accordance with the Hazardous Substances Ordinance (No. 14 of 1974), with all relevant licences and permits to be obtained where applicable. • Given the potential harm to human health during handling and use of any of hazardous substances it is essential that all staff be trained with regards to the proper handling of these substances as well as First Aid in the case of spillage or intoxication. • Storage areas for all substances should be bunded and capable to hold 120% of the total volume of a given substance stored on site.
Social	• Ensure locals enjoy priority in terms of job opportunities, for skills that are available locally, to the extent possible. • Ensure local procurement where commodities are available locally.

Table 10: Proposed mitigation measures for the operational phase

Impact	• Management Actions
Education and Training	• All employees including all contractors appointed for maintenance work on the respective infrastructure and their employees must be made aware of necessary health, safety and environmental considerations applicable to their respective work. • Records of environmental training and incidents should be maintained. • Post instructional/ informational signs regarding storm water pollution around the facility for customers and employees. • Place signs on faucet (hose bibbs) reminding employees and customers to conserve water and not to use water to clean up spills. • Label drains within the facility boundary by paint/ stencil (or equivalent), to indicate whether they flow to an on-site treatment device, directly to the sanitary sewer, or to a storm drain.
Monitoring and Auditing	• An Environmental Practitioner should monitor the implementation of the EMP, and recommend any changes to this document. • The Environmental Practitioner should inspect the site on a regular basis (preferably monthly or bi-monthly). • Biannual reports are to be submitted to the Ministry of Environment, Forestry and Tourism and shared with the Local Authority. • These reports are to be submitted with the application for the renewal of the ECC.
General Facility	• Ensure the Premises have obtained a fitness registration form the Local Authority and is kept current. • Spot clean leaks and drips routinely. • Maintain a spill response plan and keep it current. • The above to take into consideration air, surface and groundwater, and soil quality, as well as the transportation of products to and from the facility. • Inspect and clean storm drain inlets and catch basins within the facility boundary at least once each year. • Ensure adherence to the Covid-19 protocols, as they are applicable from time to time. • Ensure availability of fully stocked first aid kits. • Ensure a designated and trained official is available to administer first aid. • Personnel are to be provided with relevant protective equipment.
Fuel Dispensing Area	• Ensure paving of the land within the confines of the property, priority to be given to concrete slabs as opposed to interlocks especially at the fuel dispensing areas.

Impact	• Management Actions
	• Maintain fuel dispensing areas using dry clean-up methods such as sweeping for removal of litter and debris, or use of rags and absorbents for leaks and spills, and never wash down unless the wash water is collected and disposed of properly. • Fit underground storage tanks with spill containment and overfill prevention systems. • Fit fuel dispensing nozzles with "hold-open latches" (automatic shutoffs). • Post signs at the fuel dispenser or fuel island warning vehicle owners/operators against "topping off" of vehicle fuel tanks. • Ensure metering of incoming and outgoing fuel and maintain records. • Ensure metering equipment are calibrated as per industry standards. • Maintain all equipment, such as tanks, pumps, meters, hoses etc. in a clean state (regular inspections to be carried out).
Hazardous Substances	• All chemicals and other hazardous substances must be stored and maintained in accordance with the Hazardous Substances Ordinance (No. 14 of 1974), with all relevant licences and permits to be obtained where applicable. • Given the potential harm to human health during handling and use of any of hazardous substances it is essential that all staff are trained with regards to the proper handling of these substances as well as First Aid in the case of spillage or intoxication. • Storage areas for all substances, in particular fuel, should be bunded and capable to hold 120% of the total volume of a given substance stored on site. • Ensure fuel tanks do not leak (regular inspections to be carried out).
Housekeeping	**Equipment Cleaning** • **Indoor Cleaning:** Clean equipment in a designated area, such as a mop sink, pot sink, or floor area with a drain connected to the sanitary sewer. • **Outdoor Cleaning:** Clean equipment in a designated covered, bermed area with a drain connected to the sanitary sewer. • Do not clean equipment cleaned outdoors in any area where water may flow to a street, gutter, storm drain, or stream. • Use floor mats that are small enough to be cleaned inside in a mop sink or near a floor drain.

Impact	• Management Actions
	• Take floor mats that are too big to be cleaned indoors, to a self-service car wash to clean? **Grease Handling and Disposal** • Prevent oil, grease, or waste grease from being poured down a storm drain, or into a skip container. • Ensure waste grease from grease interceptors and traps are being properly disposed of by a responsible/ recognised disposal company. • Waste is to be disposed of in terms of the Local Authority: Solid and Hazardous Waste Management Regulations: Local Authorities, 1992 (Government Notice No. 151) of 2011, and in consultation with the Municipal Hazardous Waste Inspector. • A waste water discharge permit has to be obtained from the Local Authority before any waste water is discharged into the sanitary sewer. **Spill Clean-up and Surface Cleaning** **Spill Prevention** • Maintain a Spill Response Plan and keep it current. • Minimise the distance between waste collection points and storage areas. • Contain and cover all solid and liquid wastes. • Ensure absorbent materials and other spill response equipment are maintained in accordance with local regulations and procedures for containment and clean-up of different spills, and that they are easily accessible from anywhere in the facility. • Spot clean leaks and drips routinely. • Make sure floor drains are connected to or discharge to the sanitary sewer system, and not to the storm drain system. **Spill Clean-up**

Impact	• Management Actions
	• Stop spills at the source. • Prevent wash water from spill clean-up from flowing to a gutter or a storm drain. • Use granular absorbents (e.g. cat litter) to absorb spills. • • Promptly inform the Local Authority of major spills.
Cooling and Refrigeration Equipment Maintenance	• **Ensure all discharges from cooling and refrigeration equipment are going to the sanitary sewer and not to the street or storm drains.**
Access	• Provide for painted guidelines in terms of access and exit points. • Consider the construction of raised islands to prevent motorist from entering and accessing through the wrong lane. • Provide for pedestrian crossing. • It is highly recommended that the premises, especially the area housing the tanks and pumps be paved, with impermeable slabs as opposed to interlocks. • The movement of traffic should be managed taking into consideration the other development in the area.
Water	• No dumping of waste products of any kind in or in close proximity to any surface water bodies. • Contaminated runoff from the various operational activities such as greases, fuels, oils etc. should be prevented from entering any surface or ground water bodies. • Ensure that surface water accumulating on-site are channeled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment. • Treat oily water through an oil/water separator before it is drained to the sewer or collected by a licensed contractor. • Prevent fuel spills: look at work practices, staff training, equipment and storage. • Consider the use of environmentally friendly degreasers for washing and cleaning. • Regularly monitor underground tanks and supply lines to detect leaks. • Ensure groundwater monitoring wells are in place and are regularly monitored and sampled. • Consider the installation of an automatic leak detection system. • The leak detectors must be tested and monitored regularly. • In the instance of an accidental spill, the effluent should be contained as far as possible in a separator pit.

Impact	• Management Actions
	• Water to be treated in accordance with the municipal water quality guidelines, in association with the national Water Quality Guidelines.
Washing Cars and other Vehicles	**Regular Activity** • If car washing is a central activity of the business, consider the treatment and recycling of wash water. • Designate a vehicle washing area, and ensure cars and trucks are washed only in that area. • Ensure the "wash pad" is bermed to prevent discharges to storm drains and that it discharges to the sanitary sewer drains after adequate treatment and approval of the local authority. (Note: An outside wash pad should be covered, or its area minimized to reduce the amount of rainwater reaching the sanitary sewer. Consult the local authority for guidance) • Prohibit acid-based wheel cleaners and other specialized cleaners, or if not, ensure they are provided proper treatment before discharge to the sewer. (Note: Consult the local authority for guidance) **Occasional Activity** • If soap is used in washing, ensure the wash water collected is discharged, preferably with treatment, to the sanitary sewer, and not discharged to a storm drain. • Ensure rinse water from spray-on acid-based wheel cleaners are prevented from flowing to a street, gutter, or storm drain. **Washing New Vehicles** • Protect storm drains from solvents used to remove protective coatings from new cars. (Note: Discharges of these solvents to the sanitary sewer must receive adequate treatment and approval of the local authority).
Fire prevention and control	• A Fire/ Emergency plan conforming to approved Municipal standards should be in place. • Smoking and vaping should not be allowed on the premises. • Ensure availability of sufficient fire hydrants. • Ensure sufficient supply of water for fire hydrants. • Ensure availability of sufficient fire extinguishers. • Control high fire risk activities that have to be carried out such as welding on the premises.

Impact	• Management Actions
	• Train employees in the use of fire-fighting equipment. • Store flammable inventory in a secure area with proper firefighting equipment and signage.
Energy efficiency and water management	The owner should consult the relevant national and/or international development guidelines which addresses the following: • The incorporation of water saving initiatives and technology within the development in order to reduce water demand. • Ensure sufficient metering systems are in place to monitor the energy and water use. • Train employees on the importance of water and energy savings.
Noise	• Do not allow activities that generate excessive noise levels. • Continuous monitoring of noise levels should be conducted to make sure the noise levels do not exceed acceptable limits. • No activity having a potential noise impact should be allowed after 18:00 if possible. • Maintain equipment used during the operation and keep them in a good state such that they do not emit excessive noise. • The World Health Organisation (WHO) guidelines values for community noise in industrial environments is 70dB. This should be adhered to.
Emissions	• Manage activities that generate emissions. • Use vapour recovery equipment and techniques to avoid air pollution and minimise fuel loss. • Position vent pipes at points that are far from buildings and adjacent properties. • Train fuel area staff in vapour recovery procedures. • Conduct regular air quality monitoring.
Waste management	• Explore recycling solutions for waste. • Spot clean leaks and drips routinely. • Minimise storm water pollution from outside waste receptacles by doing at least one of the following: a) Use of only watertight waste receptacle(s) and keep the lid(s) closed; b) Grading and paving the waste receptacle area to prevent run-on of storm water; c) Installing a roof over the waste receptacle area; d) Installing a low containment berm around the waste receptacle area; e) Using and maintaining drip pans under waste receptacles.

Impact	• Management Actions
	• Provide for adequate number of refuse bins at all pumps as well as around the site. • Use recognized waste management service providers to handle solid waste. • Solid waste to be disposed of at the designated landfill of the Local Authority. • All hazardous waste to be collected and disposed of as per industry standards. • Provide suitable on-site ablution facilities to cater for all personnel and customers using the facilities. • Keep spill cleanup materials handy near the tank and loading areas. • Notwithstanding the above, waste is to be disposed of in terms of the Grootfontein Municipality: Solid and Hazardous Waste Management Regulations: Local Authorities, 1992 (Government Notice No. 151) of 2011.
Visual Impact	• Use colours that blend in with the natural environment for the painting of buildings.

10. CONCLUSION AND RECOMMENDATIONS

10.1. Construction Phase Impacts

With reference to **Table 9**, most of the construction phase impacts were deemed to have a negative impact without mitigation. However, these were mostly short-term and can be significantly reduced with the mitigation measures proposed.

10.2. Operational Phase

During the operational phase the impacts of surface and ground water; air quality; noise; and solid and industrial waste were assessed to have a long-term negative effect without mitigation. The impacts will however be significantly reduced when the recommended mitigation measures in the scoping report and environmental management plan (EMP) are implemented.

10.3. Level of Confidence in Assessment

With reference to the information available at this stage, the confidence in the environmental assessment undertaken is regarded as being acceptable for the decision-making, in terms of the environmental impacts and risks. The Environmental Assessment Practitioner believes that the information contained within this ESR is adequate to allow MET: DEA and the Ministry of Mines and Energy to determine the environmental viability of the proposed project.

It is acknowledged that the project details may evolve during the detailed design and construction phases. However, these are unlikely to change the overall environmental acceptability of the proposed project and any significant deviation from what was assessed in this ESR should be subject to further assessment. If this was to occur, an amendment to the Environmental Authorisation may be required in which case the prescribed process would be followed.

10.4. Mitigation Measures

With the implementation of the recommended mitigation measures in this report as well as in the EMP, the significance of the planning and design, construction and operational phase impacts is likely to be reduced to a ***Low (negative)***. It is further extremely important to include

an Environmental Control Officer (ECO) on site during the construction phase of the proposed project to ensure that all the mitigation measures discussed in this report and the EMP are enforced.

It is strongly advised that the proponent appoint a suitably qualified consulting engineer to design and supervise the construction of the service infrastructure, including storm water management. It is also advised to develop and implement a preventative maintenance plan, which shall be monitored and evaluated regularly.

It is noted that where appropriate, these mitigation measures and any others identified by MET: DEA could be enforced as Conditions of Approval in the Environmental Authorisation, should MET: DEA issue a positive Environmental Authorisation.

10.5. Opinion with respect to the Environmental Authorisation

Regulation 15(j) of the EMA, requires *that the EAP include an opinion as to whether the listed activity must be authorised and if the opinion is that it must be authorised, any condition that must be made in respect of that authorisation*.

It is recommended that this project be authorised, as the provision of these services is not only important to ensure the convenience of the user community, but also to promote local economic development. It is envisaged that the establishment of the new Grootfontein Truck Port will form the cornerstone of uplifting and expanding the town of Grootfontein and create a more sustainable livelihood for the community socially and economically.

The significance of negative impacts can be reduced with effective and appropriate mitigation provided in this report and the EMP attached. If authorised, the implementation of an EMP should be included as a condition of approval.

11. REFERENCES

1. EPA, 2017. Assessment of retail petrol stations. Available at: www.epa.sa.gov.au/files/11117_planning_petrolstations.pdf.
2. Giess, W. 1971. A preliminary vegetation map of South West Africa. Dinteria 4: 1 – 114.
3. Legal Assistance Centre (LAC), 2015. Scraping the Pot: San in Namibia Two Decades after Independence.Available at: http://www.lac.org.na/projects/lead/Pdf/scraping_two_chap4.pdf. Accessed (02/10/2015).
4. Liebenberg, L. W. 1992. *A field guide to the animal tracks of southern Africa*. Cape Town: New Africa Books.
5. Mendelson, J. 2006: digest information on key aspects of Otjozondjupa and Omaheke geography. RAISON.
6. Ministry of Works and Transport (MWT), 2017. Ministry of Works & Transport: Tabulation of Climate Statistics for Selected Stations in Namibia" (PDF). 2012. Available at: http://www.meteona.com/attachments/035_Namibia_Long-term_Climate_Statistics_for_Specified_Places%5b1%5d.pdf.
7. Municipality of Grootfontein (Grootfontein), 2017. Grootfontein Municipality home page.
8. NAMIBIA WATER RESOURCES MANAGEMENT REVIEW (NWRMR), 2000. THEME REPORT: STRATEGIC WATER RESOURCES ASSESSMENT IN NAMIBIA. Available at: http://www.iwrm-namibia.info.na/downloads/theme-report-strategic-water-resources-assessm.pdf
9. National Heritage Council Namibia (NHC), 2015. Declared National Monuments. Available at: www.nhc-nam.org (Accessed 02/10/2015).
10. National Statistics Agency (NSA), 2011. Namibia 2011 Population and Housing Census Main Report. Available at : http://nsa.org.na/page/publications.
11. SADC Environmental Legislation Handbook (SELH), 2012. Environmental Legislation. EIA process flowchart for Namibia. Available at: www.saiea.com/dbsa_handbook_update2012/pdf/chapter11.pdf.

Sosiak A., and Dixon J., 2006. Impacts on water quality in the upper Elbow River. *Water Science & Technology*. 53:10. Pp 309-316.