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REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

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ISSUED

In accordance with Section 37(2) of the Environmental Management Act (Act No. 7 of 2007)

TO

Namibia Water Corporation
Private Bag 13389, Windhoek

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

Proposed Rundu Purification Plant Upgrade, Rundu, Kavango East Region

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM
Private Bag 13306
13 FEB 2023

ENVIRONMENTAL COMMISSIONER

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Environmental and Social Impact Assessment for the Proposed Rundu Purification Plant Upgrade, Rundu, Kavango East Region

Scoping Report

Version – Final

23 September 2022

Namibia Water Corporation Ltd

GCS Project Number: 21-0009

Client Reference: P-NA-E00-005





Environmental and Social Impact Assessment for the Proposed Rundu Purification Plant Upgrade, Rundu, Kavango East Region

Scoping Report
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NON-TECHNICAL SUMMARY

1. Overview of the project

The Proponent proposes to upgrade the existing water supply schemes at Rundu and Nkarapamwe (inclusive of construction of a new water treatment plant at Rundu with a capacity of 1 800 m3/h, upgrading of water supply abstraction, reservoirs and conveyance systems) and the decommissioning of the old water treatment plant and associated redundant infrastructure at Rundu. At present, the total potable water supply capacity of the Rundu and Nkarapamwe schemes is approximately 840 m3/h. Both NamWater schemes have difficulties in coping with the water demand at Rundu Town; the reservoirs' levels are at best between 4% and 30%, and that is a concern for a town with a high population growth rate of 5.4% per annum (First Capital Treasury Solutions, 2018). The population of the area is rapidly increasing and as a result the water demands of the region now significantly exceed the capacity of the existing aging schemes resulting in very low reservoir storage levels and ongoing supply issues. The proposed development is thus needed in order to meet the ever growing water demand within the town.

The main objective of this ESIA is to determine the potential environmental and social impacts emanating from the construction, operation, and decommissioning of the proposed development. The ESIA is required to ensure sound environmental management by NamWater and to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities. Relevant environmental and social data have been sourced from primary and secondary sources such as personal observations during site visits, inputs from NamWater officials, inputs from stakeholders and interested and affected parties (I&APs) as well as review of relevant literatures and legal instruments.

The project will focus on providing the necessary water supply infrastructure to meet the current and future water demands up to the 2037 horizon for the Rundu town area and a few surrounding villages (Kayegona, Mupini/Sikondo and Masivi). The proposed new infrastructure will consist of the following:

- Component 1: The Raw Water Abstraction and Conveyance System- A new river intake structure on the Okavango River, immediately downstream of the existing intake tower, including new raw water pipelines to the new water purification plant.
- Component 2: The New Rundu Treatment Plant - A new water purification plant with sufficient capacity for the 2037 horizon and allowances made for future potential expansion beyond this.

- Component 3: The Rundu Treatment Plant Product Water Conveyance System - A new treated water pump station and pipelines to convey treated water from the new water purification plant to the existing Rundu and Nkarapamwe ground level reservoirs.
- Component 4: Existing Water Supply Schemes - New pump stations and additional ground level reservoirs at Rundu and Nkarapamwe for storage. New dedicated pipelines to the elevated storage tanks as well as additional new elevated storage tanks within the Rundu town area. In addition new pipelines supplying potable water to Kayengona, Mupini/Sikondo and Masivi.
- Component 5: Decommissioning of Redundant Infrastructure - Decommissioning of any redundant infrastructure.

2. **Brief description of the project site and the major environmental and social stakes/challenges**

Rundu is the largest town in the Kavango East Region and is thus also the capital of the region. It is situated on the southern side of the Kavango River (also referred to as the Okavango River) on the border with Angola. Namibia Water Corporation Ltd (NamWater) operates two river water supply schemes, Rundu and Nkarapamwe, to supply the town and a number of surrounding villages. Both schemes abstract raw water from the Kavango River and after treatment and disinfection, potable water is supplied to various consumers, including the Rundu Town Council, the Military Base at the Airport, Government Institutions, Industries, Businesses and Private Consumers. Currently both NamWater schemes have difficulties in coping with the water demand at Rundu Town. The existing schemes are old, and it is running at maximum capacity. As a result, internal NamWater studies suggested the upgrading of the existing Rundu and Nkarapamwe water supply schemes and construction of a new water treatment plant (WTP) at Rundu with an increased capacity of 1 800 m3/h to eventually meet the ever-growing demand up to 2037. The project will focus on providing the necessary water supply infrastructure (inclusive of a new WTP, water abstraction facilities, reservoirs and conveyance systems) to meet the current and future water demands up to the 2037 horizon for the Rundu town area and a few surrounding villages (Kayengona, Mupini/Sikondo and Masivi).

At present, the total potable water supply capacity of the Rundu and Nkarapamwe schemes is approximately 840 m3/h. The combined production from the two NamWater schemes have difficulties in coping with the Rundu Town water demand; the reservoirs' levels are at best between 4% and 30%, and that is a concern for a town with a high population growth rate of 5.4% per annum (Martin, Milner, Clarinda, et al., 2018). The population of the area is rapidly increasing and as a result the water demands of the region now significantly exceed the capacity of the existing aging schemes resulting in very low reservoir storage levels and ongoing supply issues. The proposed development is thus needed in order to meet the ever-growing water demand within the town.

3. Institutional and legal framework for implementation of the project

The proposed activities will trigger certain activities listed under the EIA Regulations (GN No. 30 of February 2012), and therefore cannot be undertaken without an EIA being undertaken. NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. ("NOD") in association with GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS") for the design, tender document preparation, administration and supervision for the construction of the new scheme and decommissioning of the old scheme. GCS will further conduct the Environmental and Social Impact Assessment (ESIA) process for the project.

The ESIA is required to ensure sound environmental management and meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

Under the Environmental Management Act (2007) and its Regulations (2012), an Environmental Impact Assessment (EIA) is required for:

8.1 The abstraction of ground or surface water for industrial or commercial purposes.

8.3 Any water abstraction from a river that forms an international boundary.

8.5 Construction of dams, reservoirs, levees and weirs.

10.1 The construction of (a) oil, water, gas and petrochemical and other bulk supply pipelines.

4. Enumeration of the major and moderate impacts

The potential impacts that could arise as a result of the proposed project have been identified based on existing sources of information and knowledge of the affected environment. Impacts specifically relating to social aspects, ecology and hydrology will be investigated and analysed in further detail at the ESIA stage. The preliminary list of potential impacts has been used to guide the type of specialist studies required in the ESIA. Mitigation measures have been proposed, however detailed mitigation measures for each impact identified will be outlined in the Environmental and Social Management Plan (ESMP). The following key potential impacts have been preliminarily identified per project phase.

- Pre-Construction - Siting of plant infrastructure, electricity/power availability/sufficiency, traffic flow, climate change and land use.
- Construction - Biodiversity disturbance and loss, surface and groundwater contamination, traffic, soil erosion, archaeological, health and safety, dust, noise, waste generation and disposal, temporary employment creation, disturbance of local residents and interruption of business activities.
- Operation - Soil, surface and groundwater, noise, health and safety, hazardous substance handling and storage, increased water supply, increased energy usage and waste.
- Decommissioning - Noise and dust, health and safety risks, soil, surface and groundwater impacts and waste generation.

5. Consultations

Public involvement is an essential part of any Environmental Assessment process. Interested and Affected Parties (I&APs) include any person or organisation that will be directly or indirectly involved and/or affected by the project.

The general public as well as any I&APs were invited to attend the public meeting during which the potential environmental and social impacts of the project was presented for comments and inputs from the public. The meeting took place as follows:

Date: Wednesday 27 April 2022

Time: 17h30

Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

The Draft Scoping Report (DSR) was made available to the public and stakeholders for a 14-day comment period. No comments were received on the DSR during the comment period.

This report constitutes the final Scoping Report (FSR), which provides information to enable the Directorate of Water Affairs (DWA) and the Directorate of Environmental Affairs and Forestry (DEAF) to make informed decisions about the project.

The Final Scoping Report is herewith submitted to the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF) for consideration and decision-making, before commencing with the ESIA phase.

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ABBREVIATIONS AND ACRONYMS	
AfDB	African Development Bank
AWWA	American Water Works Association
BID	Background Information Document
CBD	Convention on Biological Diversity
$C0_2$	Carbon Dioxide
CRR	Comments and Response Report
DAF	Dissolved Air Flotation
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No 7 of 2007)
EMP	Environmental Management Plan
ESAP	Environmental and Social Assessment Procedures
ESMP	Environmental and Social Management Plan
GCS	GCS Water Environmental Engineering Namibia (Pty) Ltd
GRM	Grievance Redress Mechanism
Ha	Hectares
HCL	Hydrochloric Acid
I&AP	Interested and Affected Parties
IUCN	International Union for Conservation of Nature
$KmnO_4$	Potassium Permanganate
LFPR	Labour Force Participation Rate
km	Kilometers
kW	Kilowatt

ABBREVIATIONS AND ACRONYMS	
m	Meters
m^3	Cubic meters
M^3/d	Cubic meter per day
m^3/h	Cubic meter per hour
mm	Millimeters
masl	Meters Above Sea Level
mg/l	Milligrams per liter
MAWLR	Ministry of Agriculture, Water and Land Reform
MCL	Maximum Contaminant Level
MEFT: DEAF	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry
Na_2CO_3	Soda Ash
NaOH	Caustic Soda
NamWater	Namibia Water Corporation
NOD	Nicholas O'Dwyer Ltd
NORED	NORED Electricity (Pty) Ltd
NTU	Nephelometric Turbidity Unit
PPP	Public Participation Process
OKACOM	Okavango River Basin Water Commission
OS	Operational Standards
SADC	Southern African Development Community
SR	Scoping Report
THM	Trihalomethanes
TWL	Top Water Level
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
WTP	Water Treatment Plant

ABBREVIATIONS AND ACRONYMS	
WTW	Water Treatment Works

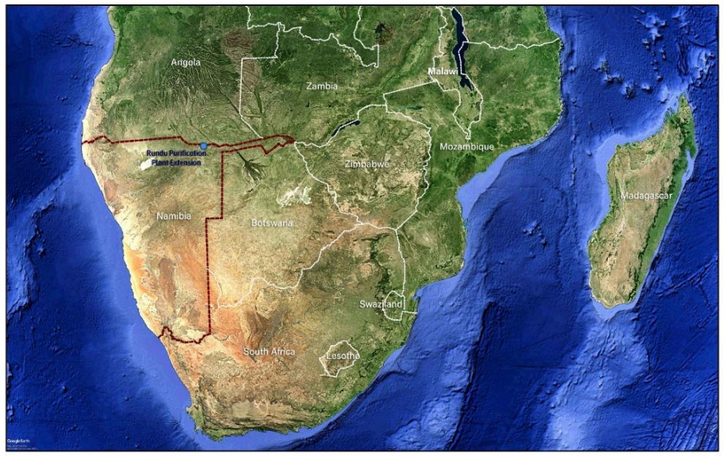
1 INTRODUCTION

Rundu is the largest town in the Kavango East Region and is thus also referred to as the capital of the region. It is situated on the southern side of the Kavango River on the border with Angola. Namibia Water Corporation Ltd (NamWater) operates two river water supply schemes, Rundu and Nkarapamwe, to supply the town. Both schemes abstract raw water from the Kavango River and after treatment and disinfection, potable water is supplied to various consumers, including the Rundu Town Council, the Military Base at the Airport, Government Institutions, Industries, Businesses and Private Consumers. The current total average water supply from both schemes is 824 m^3/h. The water demand calculations indicate that a total supply of 1058 m^3/h is required to meet the current demands. Therefore, there is a supply shortfall of approximately 234 m^3/h at present. The existing schemes are old and are running at maximum capacity. The total production output from both schemes has difficulties in coping with the Rundu Town water demand. As a result, internal NamWater studies suggested the upgrading of the existing Rundu and Nkarapamwe water supply schemes and construction of a new water treatment plant (WTP) at Rundu with an increased capacity of 1 800 m^3/h to eventually meet the ever-growing demand up to 2037.

NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. ("NOD") in association with GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS") for the design, tender document preparation, administration and supervision for the construction of the new scheme and decommissioning of the old scheme. GCS will further conduct the Environmental and Social Impact Assessment (ESIA) process for the project. The ESIA is required to ensure sound environmental management by NamWater and to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the legal requirements of the Namibian Environmental Authorities.

2 PROJECT DESCRIPTION

The Proponent proposes to upgrade the existing water supply schemes at Rundu and Nkarapamwe (inclusive of construction of a new WTP at Rundu with a capacity of 1 800 m^3/h, upgrading of water abstraction, reservoirs and conveyance systems) and the decommissioning of associated redundant infrastructure at Rundu and Nkarapamwe. The locality and overview of the existing schemes and proposed infrastructure can be seen on **Figure 2-1** to **Figure 2-4**.



1 Area Location Map
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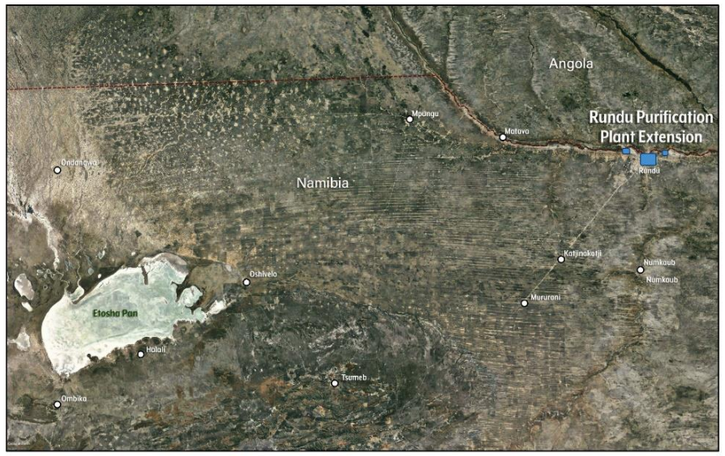
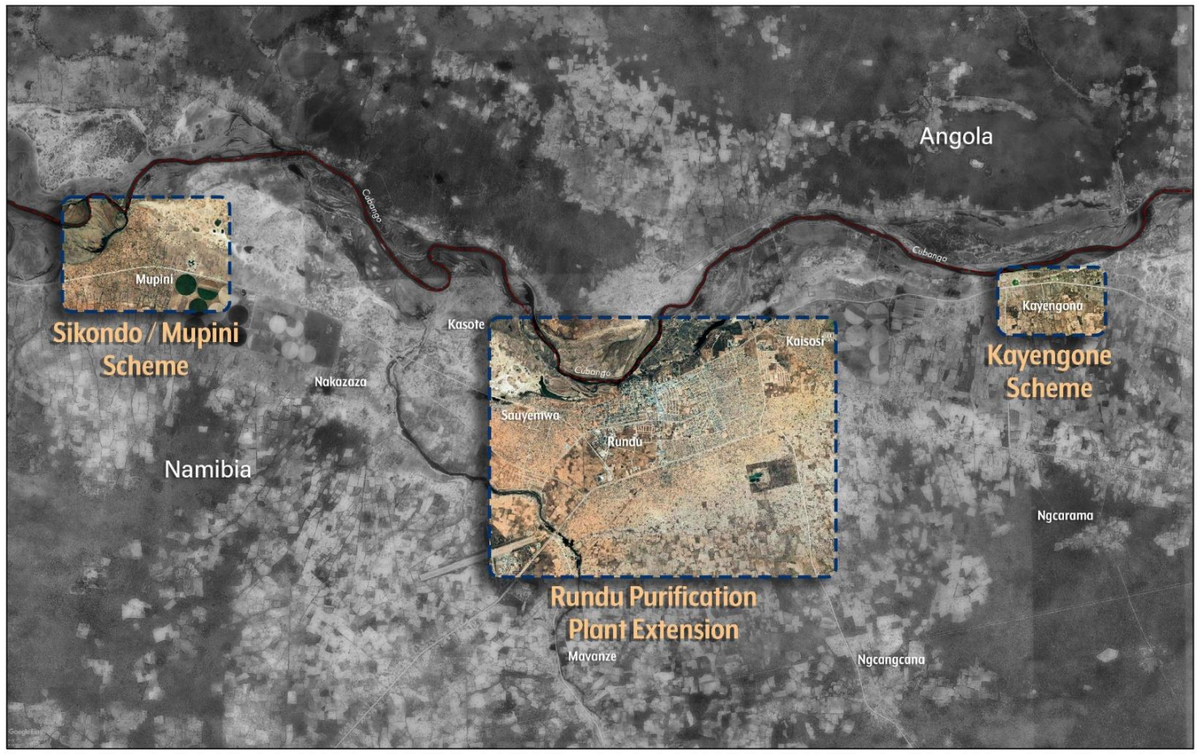


2 Area Location Map - Site Location
N.T.S.



3 Area Location Map - Scheme
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CLIENT: NAMWATER Namibia Water Corporation Ltd

PROJECT: RUNDU PURIFICATION PLANT EXTENSION

TITLE: AREA LOCATION MAPS

SCALES @ A1	DRAWN	CHECKED	APPROVED
N.T.S.	M. Cheevers	P. Chetty	N. Bhojaram
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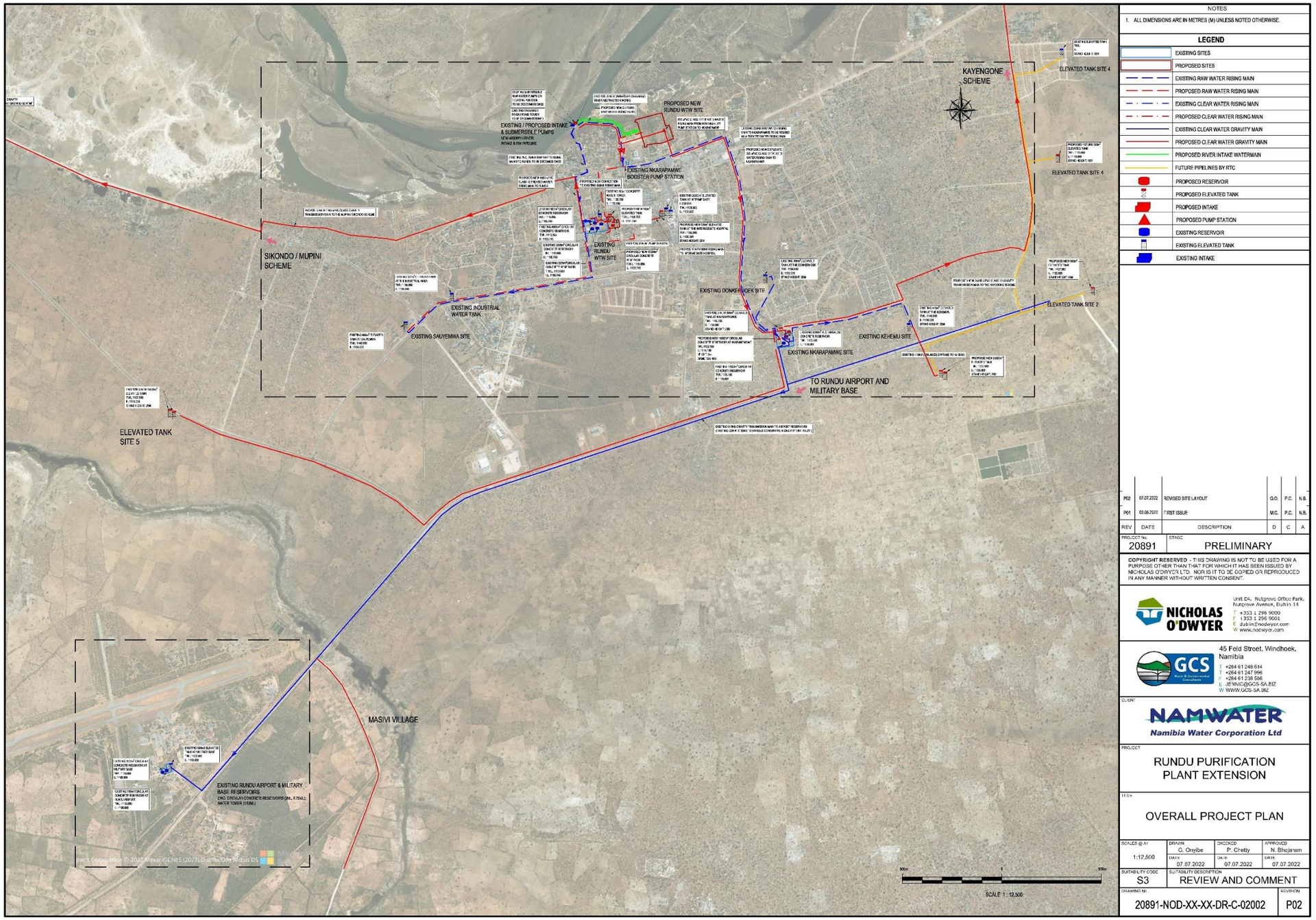
Figure 2-1: Locality of the existing Rundu Purification Plant



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LEGEND

- EXISTING SITES
- PROPOSED SITES
- EXISTING RAW WATER RISING MAIN
- PROPOSED RAW WATER RISING MAIN
- EXISTING CLEAR WATER RISING MAIN
- PROPOSED CLEAR WATER RISING MAIN
- EXISTING CLEAR WATER GRAVITY MAIN
- PROPOSED CLEAR WATER GRAVITY MAIN
- PROPOSED RIVER INTAKE WATERMAIN
- FUTURE PIPELINES BY RTC
- PROPOSED RESERVOIR
- PROPOSED ELEVATED TANK
- PROPOSED INTAKE
- PROPOSED PUMP STATION
- EXISTING RESERVOIR
- EXISTING ELEVATED TANK
- EXISTING INTAKE

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CLIENT: NAMWATER Namibia Water Corporation Ltd

PROJECT: RUNDU PURIFICATION PLANT EXTENSION

TITLE: OVERALL PROJECT PLAN

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Figure 2-2: Overview of existing Rundu water supply network inclusive of proposed upgrades

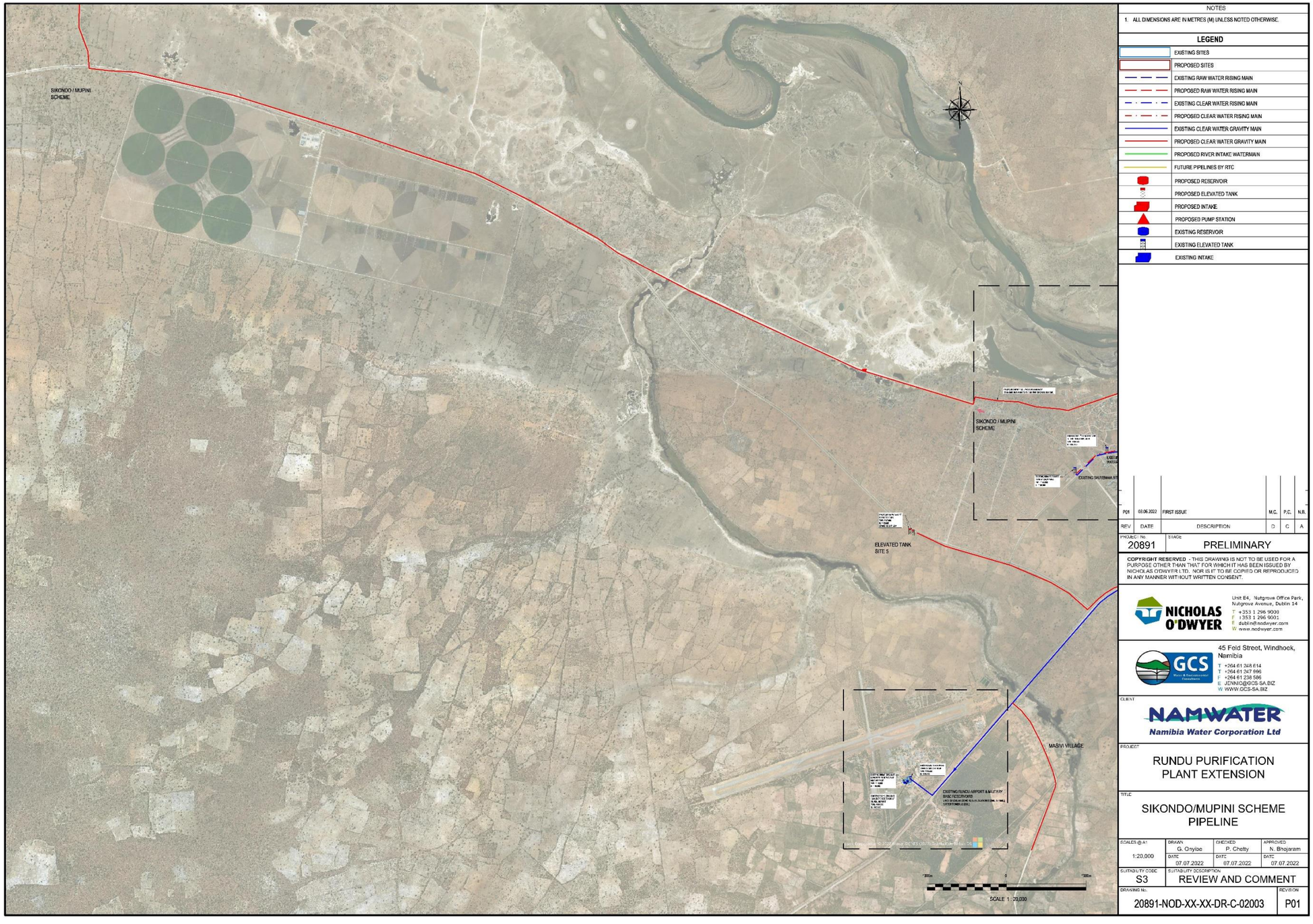


Figure 2-3: Sikondo/Mupini Scheme Pipeline

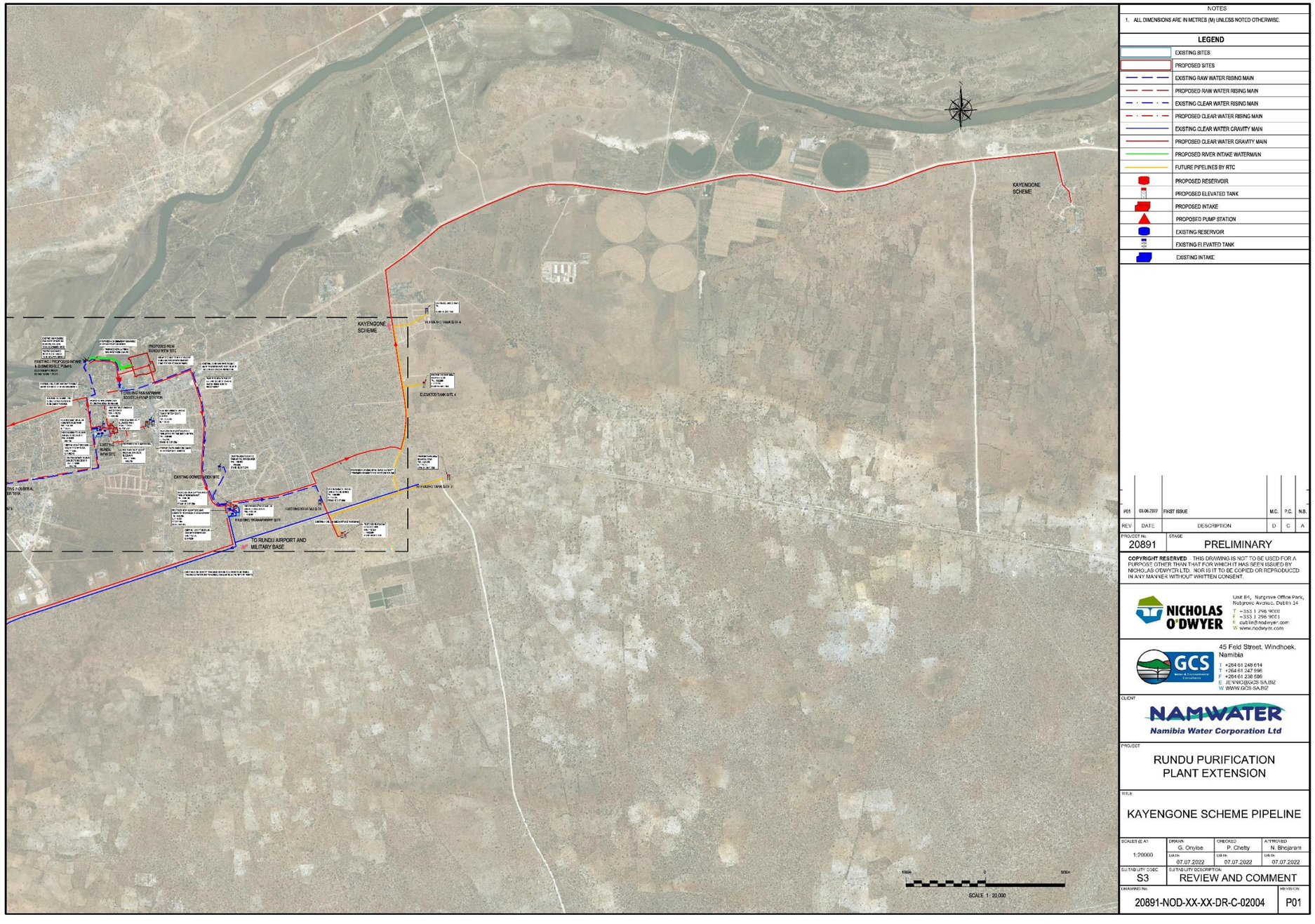


Figure 2-4: Kayengona Scheme Pipeline

The coordinates of the existing and proposed infrastructure are outlined in **Table 2-1** below.

Table 2-1: Coordinates of existing and proposed infrastructure

Infrastructure	Latitude	Longitude
Existing River Intake	-17.909285	19.761674
Proposed River Intake	-17.909144	19.762107
Rundu		
Proposed Rundu WTW	-17.909910	19.768728
Existing Nkarapamwe Booster Pump Station	-17.912553	19.766458
Existing circular 900m^3 concrete Reservoir at Rundu site	-17.917057	19.763379
Existing circular 6000m^3 concrete at Rundu site	-17.917169	19.763894
Existing circular 2500m^3 concrete at Rundu site	-17.917547	19.763369
Existing circular 2270m^3 concrete at Rundu site	-17.917516	19.763648
Proposed circular 16000m^3 concrete at Rundu site	-17.917396	19.765073
Intermediate Hospital		
Existing Elevated Tank Intermediate Hospital	-17.916044	19.768971
Proposed Elevated Tank Intermediate Hospital	-17.916092	19.769053
Donkerhoek		
Existing Elevated Tank Donkerhoek	-17.921568	19.777786
Nkarapamwe		
Proposed new Elevated Tank Nkarapamwe	-17.926215	19.779753
Proposed new circular 16000m^3 concrete reservoir at Nkarapamwe	-17.926772	19.779701
Existing circular 9000m^3 rectangular reservoir at Nkarapamwe	-17.926777	19.779111
Existing circular 12000m^3 concrete reservoir at Nkarapamwe	-17.926143	19.778925
Industrial Area		
Existing Elevated Tank Industrial Area	-17.923172	19.751547
Sauyemwa		
Existing Elevated Tank Sauyemwa	-17.925485	19.747619
Kehemu		
Existing Elevated Tank Kehemu	-17.925692	19.789511
Military Base		
Existing Elevated Tank Military Base	-17.960249	19.728140
Existing circular 200m^3 concrete Reservoir Military Base	-17.960060	19.727754
Existing circular 750m^3 concrete Reservoir Military Base	-17.960488	19.727308

Infrastructure	Latitude	Longitude
New Elevated Tanks		
Proposed new elevated tank at site no. 1	-17.929417	19.792279
Proposed new elevated tanks at site no. 5	-17.928295	19.722855
Villages		
Kayengona	-17.892193	19.878565
Mupini/Sikondo	-17.872411	19.630409
Masivi	-17.976028	19.713845

2.1.1 Overview of the existing water supply scheme

The Nkarapamwe Scheme currently comprises of submersible pumps on floating pontoons in the Kavango River that supplies raw water to sand pressure filters at the Nkarapamwe plant through an intermediate booster pump station. After treatment, the clear water is then stored in two ground level concrete reservoirs (i.e., a 9,000m^3 rectangular reservoir and a 12,000m^3 circular reservoir). A pump station at the Nkarapamwe plant transmits water to the Donkerhoek elevated tanks, Kehemu elevated tanks and pumps into the distribution network; while a gravity main feeds two ground level reservoirs at the Rundu Airport/Military Camp which is then pumped into the Military elevated tanks by a local booster pump station.

The Rundu Scheme currently comprises of a raw water abstraction tower (**Figure 2-5**) that supplies raw water to sand pressure filters at the Rundu plant. The clear water is stored in four ground level circular concrete reservoirs (i.e., 6000m^3, 2500m^3, 2250m^3 and 750m^3). A pump station at the Rundu site transmits the clear water to an elevated concrete tower and elevated tanks at the Industrial Area. A local booster pump station at the industrial tower supplies water to the Sauyemwa elevated tanks.



Figure 2-5: Rundu Abstraction Tower

2.1.2 Overview of the proposed development

The project will focus on providing the necessary water supply infrastructure to meet the current and future water demands up to the 2037 horizon for the Rundu town area and a few surrounding villages (Kayengona, Mupini/Sikondo and Masivi). The proposed new infrastructure will consist of the following:

- **Component 1: The Raw Water Abstraction and Conveyance System** - A new river intake structure on the Kavango River, immediately downstream of the existing intake tower, including new raw water pipelines to the new water purification plant.
- **Component 2: The New Rundu Treatment Plant** - A new water purification plant with sufficient capacity for the 2037 horizon and allowances made for future potential expansion beyond this.
- **Component 3: The Rundu Treatment Plant Product Water Conveyance System** - A new treated water pump station and pipelines to convey treated water from the new water purification plant to the existing Rundu and Nkarapamwe ground level reservoirs.
- **Component 4: Existing Water Supply Schemes** - New pump stations and additional ground level reservoirs at Rundu and Nkarapamwe for storage. New dedicated pipelines to the elevated storage tanks as well as additional new elevated storage tanks within the Rundu town area. In addition, new pipelines supplying potable water to Kayengona, Mupini/Sikondo and Masivi.
- **Component 5: Decommissioning of Redundant Infrastructure** – Decommissioning of any redundant infrastructure.

Each component outlined above is described in more detail below.

2.1.2.1 Component 1: The Raw Water Abstraction and Conveyance System

The current available total raw water abstraction capacity is approximately 715 m^3/h between the existing Kavango River Abstraction Tower Pumps and Submersible River Pumps on Pontoons. The raw water conveyance includes 2 200mm diameter pipelines to Rundu and a 355mm diameter pipeline to Nkarapamwe passing through an intermediate booster pump station. Since the raw water abstraction and conveyance system requires a 2037 capacity of 2000 m^3/h with an ultimate capacity of 4000m^3/h, the existing system is not adequate. Furthermore, the system is unable to cope with the current demand of 1,176 m^3/h.

The new raw water conveyance system will consist of the abstraction pumping system, to abstract the water from the river, and the raw water pipeline to convey the raw water to the new treatment plant in Rundu. The new treatment plant raw water requirement is 2000 m^3/h, which includes 10% treatment plant losses (for 20 hours plant operation), and the raw water conveyance system will be designed to cater for 4000 m^3/h, to accommodate any future expansions. The new plant capacity is 1800 m^3/h.

The alternatives considered in terms of the water abstraction works location and design are discussed in Chapter 6.

2.1.2.2 Component 2: The New Rundu Treatment Plant

The current available total water treatment capacity is approximately 558 m^3/h between the existing facilities at Rundu and Nkarapamwe, which consist of pressure sand filters and chlorination facilities. The potential to upgrade or expand these facilities to the 2037 capacity of 1800 m^3/h is constrained due to the availability of space at the current sites. A new WTP will thus be constructed.

The plant will be designed to ensure a maximum potable water output of 1800m^3/h. A site has been identified (approximately 6 Hectare in size) to the north of the Rundu Police Station for the construction of the new plant. The land was acquired after negotiation with the Rundu Town Council.

Water Quality

The new Rundu WTP will be designed to ensure that the water quality as well as the quality of the effluent adheres to the specified regulations as per the draft Water Resource Management Act, 2013 (Act No.11 of 2013) and its draft regulations.

Process Design Criteria

The raw water quality was analysed and indicated that there are some parameters which have an impact on process and treatment performance. These parameters include turbidity, colour, iron and hardness. It is thus necessary that the water treatment processes be designed to accomplish the following:

- Turbidity control
- Filtration
- Disinfection and trihalomethanes (THM) control
- Iron removal
- Corrosion and scaling control
- Residuals management

Turbidity Control

Based on NamWater's previous experiences, Ferric Chloride performed poor in removing turbidity, and it has some disadvantages such as handling difficulties and safety issues. On the other hand, alum was noted to perform well but only at high dosage rates. Using only polyelectrolyte as coagulant performed good turbidity removal, based on the tests conducted in January 2015, October 2017 and September 2019. Once settled and filtered turbidity concentrations together with floc size were considered, optimum polyelectrolyte dosage rate was noted between 6 and 8 mg/l.

Using polyelectrolyte as coagulant has also further advantage on metal salts besides its performance that no pH adjustment is needed for effective coagulation / flocculation process. Therefore, it is suggested to use:

- Cationic type polyelectrolytes. The awarded works Contractor shall perform jar tests to select the suitable polyelectrolyte in terms of efficiency and cost.

Selection of the polyelectrolyte will be based on its availability and price. The final decision shall be made after discussion with NamWater.

Filtration

Development of an efficient filter design depends on four interrelated design factors: (1) filter rate control, (2) filtration rate and surface area, (3) filter-media selection, and (4) filter backwash, media support, and underdrain system. The selection criteria for key design factors are briefly summarized below:

Filter Rate Control.

Three practical filter rate control systems could be used at the Rundu WTP. These are:

- effluent-controlled constant-rate or constant-level,
- influent-flow-splitting constant-rate,
- variable declining-rate.

Comparison of the three filter rate control systems led to propose an effluent-controlled constant-rate control for the Rundu WTP. The reasons for this selection are; superior filtrate quality throughout a filter run is expected as the filtration rate is kept constant by gradually reducing the head loss at the controller as the filter becomes clogged, and a longer filter run is expected, because head loss through the underdrain system is kept constant which also minimizes the backwash requirement.

Filtration Rate and Surface Area.

Proper filter media selection, and improved backwashing methods enable to design and operate of full-scale plants with a rate of filtration as high as 24 $m^3/m^2.h$. The American Water Works Association (AWWA) Direct Filtration Subcommittee recommended that the nominal filtration rates for direct filtration should range from 9.6 to 15 $m^3/m^2.h$. However, direct filtration is not expected for this design, so a filtration rate of 8 $m^3/m^2.h$ at normal operation, as also recommended by NamWater, and filtrate rate of 10 $m^3/m^2.h$ at n-2 case (i.e., one filter at backwashing and one filter out of operation for maintenance or other reason) will be used to design the filters. The estimated time between the backwashes is 24 hours for each filter, with an estimated maximum head loss of 2.5 m through the dirty media.

Filter Media Selection.

For both high-rate and conventional filter designs, a medium-grained sand layer overlaid by a coarser, but lighter, anthracite coal layer has been used with success. Anthracite shall support removing of taste, odour (if exist), organic matter and colour from the water with its absorption effect. The effective size, uniformity coefficient, and specific gravity of the sand and anthracite should be specified in such a way that the two media are compatible. An anthracite layer with sufficient depth over a sand layer should be provided for an adequate degree of protection and storage volume to accommodate solids for conventional filtration.

Filter Backwash, Media Support, and Underdrain.

The selected backwash method should be capable of removing a large quantity of solids in a reasonable length of time. Using polyelectrolyte as coagulant, it is possible that the solids removed during filtration will be "sticky" and will have a tendency to adhere to the media, thus increasing the potential for mudball formation. Therefore, it is necessary that auxiliary scour systems, such as surface-wash scour, be provided in the design. The auxiliary surface wash should be used during conventional mode. This arrangement will provide the necessary flexibility for fluidization of a dual-media bed.

The media support and underdrain system will consist of double-reserve graded gravel over a precast underdrain designed for backwash. It is estimated that a backwash rate of 36 to 42 $m^3/m^2.h$ will be required for a minimum of 10 minutes.

Disinfection and THM control

The disinfection process will be closely interrelated with THM control at the WTP. Use of free chlorine as the primary disinfectant in the plant (to meet contact time (CT) requirement), followed by chloramines for residual disinfection in the distribution system, will produce water that will consistently meet the maximum contaminant level (MCL) for the THMs. The general disinfection scheme was also shown to be most cost-effective for disinfection, THM control, and maintenance of desired residual in the distribution system. Multiple chlorine and ammonia feed points should be provided to control undesired slime growth and allow flexibility for meeting CT requirements, lower THM formation potentials, and chlorine demand. The chlorine and ammonia feed points should, therefore, include (1) raw water at the flash mix and (2) at the chlorine contract tank to clear water storage.

Iron removal

The iron in raw water occasionally exceeds the maximum acceptable concentration reaching 0.6 mg/l, although average was 0.18 mg/l which is within the standards. An oxidation process needs to be implemented to precipitate and remove the iron as iron hydroxide from water. Potassium permanganate ($KMnO_4$), chlorine or cascade aeration could be used for this purpose. As explained in sub-section C above, chlorine is expected to be dosed in raw water for pre-disinfection and THM control purpose. However, $KMnO_4$ has additional advantages, besides oxidation of iron, there may be slight reduction in taste and odour causing compounds if any exists in raw water, chlorine demand, and THM formation potential.

Best point of $KMnO_4$ application is in the raw water line at the plant property, prior to flash mixing. It is expected that at 0.5 to 1 mg/l $KMnO_4$ dosage will oxidize and precipitate iron.

Corrosion and scaling control

Production and supply of non-corrosive and non-scaling water is essential for water quality control and to prolong the life of the water distribution system. The Kavango River water is not stable and mildly corrosive. The corrosive effect of water is clearly visible in the 2500 m^3 Rundu Reservoir. Water must be stabilized to minimize its adverse effect by adding either of the following chemicals:

- Carbon Dioxide (CO_2)
- Lime (CaO)
- Soda Ash (Na_2CO_3)

- Caustic Soda (NaOH)
- Hydrochloric Acid (HCl)

Soda ash is easier to handle and safer. It is also available in powder form and readily soluble in water. Therefore, it is proposed to use soda ash to stabilize the water.

Residuals management

There are two major residual sources that must be controlled at the WTP. These include the filter-backwash water from the filters and sludge from the sedimentation basins. Two options are proposed to handle and dewater the sludge, as outlined below.

In Option 1, sludge from sedimentation tanks and dirty water from filter backwashes will be transferred to four identical sludge ponds operated as one duty, one standby, one drying and one redundant. Assuming 10% losses in a 2000 m^3/h raw water inlet and 20 hr/day operation period, each pond shall have net volume of 4000 m^3. Sludge depth shall be set as 0.6 m and gross depth will be 1.0 m, giving a total area of 16,000 m^2 (1.6 ha). The footprint of the ponds will occupy a very large area on the site. Therefore, another approach/option on sludge dewatering is herewith proposed.

In Option 2, backwash water recovery tank is introduced to settle the residuals and deliver the supernatant to the inlet of the coagulation – flocculation units. Settled residuals together with the solids withdrawn from the sedimentation tanks will be thickened in gravity thickeners up to 2 to 2.5% dry solids (DS). Overflow from the thickeners will also be returned to system. Estimated total sludge at 95th percentile case and on 24 h/d operation is approximately 1100 kg/d. Considering 2%DS for thickened sludge at the outlet of gravity thickeners, 55 m^3/d thickened sludge flow rate is anticipated.

Assuming a sludge loading rate of 80 kg DS/m^2 and a total of four ponds with an average of 100 days filling cycle and detention per pond, estimated area for each one, including additional area required for berms and access roads, is approximately 2,000 m^2. Therefore, a total of 8,000 m^2 (0.8 ha) area will be required for sludge drying. In addition, it is expected that, water loss will be in the range of 2% if backwash water recovery tank is implemented.

Process Options

- Iron Removal

There are mainly two process alternatives for iron removal, as listed below:

- Aeration
- Oxidation with chemical addition

Aeration

Aeration oxidizes iron, rendering it insoluble form to precipitate and reduces the concentration of taste and odour if it exists in raw water. The most common used type of aeration process is cascade aeration. Besides its advantages, the major disadvantage is head loss of about 1 to 3 m and energy required to raise water.

Oxidation with Chemical Addition

As explained previously, potassium permanganate (KMnO4) together with chlorine is an effective method to remove iron from water. Furthermore, as stated therein, KMnO4 has the ability to reduce taste and odour causing compounds if any exists in raw water, chlorine demand, and THM formation potential.

- Solid Separation

After coagulation and flocculation, solids either tend to settle or float. Two solid separation processes exist that are sedimentation and flotation. Dissolved Air Flotation (DAF) process is the most known flotation process. It introduces pressurized air and water mixture to create floating media for solids to float. Surface scraper is used to remove the solids. The process is widely used in industrial applications where oily water is the source. The process is sensitive to air pressure and air / water mixture ratio, therefore high-tech process control philosophy is required.

Enhanced sedimentation utilizing laminar flow devices, named “lamella sedimentation tanks” are effective in solid separation for municipal drinking water requirements from an engineering perspective. Therefore, for the Rundu WTP, lamella sedimentation tanks are proposed following coagulation and flocculation processes.

Process Train

Optimum turbidity and to some extent of colour removal can be achieved in flash mixing with polymer aid then followed by flocculation, sedimentation, and filtration. Flash mixing can be either accomplished with pipe contraction i.e., in-line mixing or flash mixing tank. The most cost-effective disinfection and THM control method will involve maintaining free chlorine residual in a chlorine contact tank upstream of the clear water tank, followed by chloramines in the tank and distribution system for desired residuals. When the iron concentration is exceeded periodically, potassium permanganate in the raw water line at the plant property will be used for oxidation and conversion into insoluble forms of ferric hydroxide for removal with turbidity. Filter backwash will have a backwash recovery system.

In the sludge stream, as explained above two options are evaluated. In Option 1, sludge from sedimentation tanks and filter backwash will be transferred to sludge lagoons. In Option 2, filter backwash water recovery tank and gravity thickeners are proposed to thicken the sludge hence reduce the sludge flow and minimize the water loss. Sludge lagoons are designed in line with the design criteria and common operational approach.

In this context, proposed process units including options for iron removal, is listed below:

Water Stream

- Iron Oxidation Options
    - Option 1: Cascade Aeration
    - Option 2: Chemical Oxidation with Potassium permanganate
- Flash Mixing
    - Option 1: Flash Mixing Tank
    - Option 2: Pipe Contraction (in-line mixing)
- Flocculation
- Lamella Sedimentation
- Rapid Granular Filters Dual Media Filters
- Chlorine Contact Tanks
- Clear Water Tank
- High Service Pump Station

Option 2 is recommended for water stream treatment considering lower CAPEX, less head loss and additional advantages of using KMnO4 as mentioned above in Iron Removal.

Sludge Stream

- Option A
    - 4 pieces, each with 4,000 m^3 (i.e., 4,000 m^2 in area) sludge ponds
- Option B
    - Backwash Water Recovery Tank
    - Gravity Thickeners
    - 4 pieces, each with 2,000 m^3 (i.e., 2,000 m^2 in area) sludge ponds

Option B has lower CAPEX, better sludge supernatant control through separating thick sludge from sedimentation and dirty backwash water, almost half of the land required for sludge drying (when considered very small surface area of gravity thickeners) and capability to doubling the entire plant for future capacity. Therefore, for sludge stream Option B is recommended.

<u>Buildings and Auxiliary Structures</u>

- Administration Building

- Chemical Building
- Chlorine Building

The process options can be summarized as presented in **Table 2-2** below.

Table 2-2: Summary of Process Options

Process	Option 1A	Option 1B	Option 2A	Option 2B
Cascade Aeration	✓	✓		
$KMnO_4$ Dosing			✓	✓
Flash Mixing Tank	✓	✓		
In-line Mixing			✓	✓
Flocculation	✓	✓	✓	✓
Lamella Sedimentation	✓	✓	✓	✓
Dual Media Filtration	✓	✓	✓	✓
Chlorine Contact Tank	✓	✓	✓	✓
Clear Water Tank	✓	✓	✓	✓
Backwash Water Recovery Tank		✓		✓
Gravity Thickener		✓		✓
Sludge Pond	✓	✓	✓	✓

All processes used at the treatment plant are interrelated. As a result, a change in process operation in any one process unit may cause a change in other processes. In addition, the performance and optimum process design parameters of all processes are related to the raw water quality. The operational flexibility under variable raw water conditions will be achieved by providing multiple alternative chemical feed points and equipment with the versatility to accommodate variable raw water conditions.

The process layout utilizes two identical process trains arranged in parallel. This essentially gives two plants, each providing half of the total capacity. There are two flash mixing units, four units of flocculation and sedimentation tanks and 6 units of filters. The plant can thus be operated with any single unit out of service. Furthermore, the plant can also be operated at ¼ and ½ capacity, if necessary. Two circular storage reservoirs with a total storage capacity of 4000 m^3 are provided at the plant site. The treated water will be delivered to the distribution system by means of a high pump station to Rundu and Nkarapamwe.

Operation and Maintenance

Personnel

The treatment facility will be operated by trained operators on a 7-days-per-week basis and in 4 shifts (1 shift for managing annual leaves, sick leaves, etc.). Supporting staff, including mechanics and electricians, will be provided on a 24-hour basis. The laboratory facility, the administration building, and equipment maintenance workshops shall be fully staffed in accordance with the requirements of the Water Resources Management Act Regulations (Annexure 4 and 5).

Electrical Power

Estimated total power requirements are 411 kW and 422 kW for Option 1A and 1B respectively, 398 kW and 409 kW for Option 2A and 2B. The before mentioned power requirement is only for the water treatment works. An additional power requirement of approximately 600kVA is required for the high-lift pump stations and 150kVA for the administration building. Provision for future standby power will be provided to enable the placement of diesel standby generation sets to be placed at the required positions. Please note that no diesel standby generator sets are planned to be placed at the facilities.

Flood Hazard

The entire areas of the proposed raw water pumping station and WTP are well above the 1:100-year flood level which is 1068.50 meters above sea level (masl). Both sites are fully accessible under all weather conditions.

Control Systems

The supervisory control and data acquisition (SCADA) system shall be a fully automated control system to collect key, on-line quality parameters of raw and treated water and flow records of raw, filter feed, treated water, plant internal water use, and sludge lines. The operation of all pumps connected to SCADA system can be able to be selected from the computer in the Main Control Room.

The system implemented shall be able to operate within the control strategy described but shall be flexible enough to be easily changed should the control philosophy change.

2.1.2.3 Component 3: The Rundu Treatment Plant Product Water Conveyance System

The product water conveyance system comprises of a new pump station at the new treatment plant with two groups of pump sets (each group shall incorporate at least three pump sets, of which at least one shall be a stand-by unit) to pump into the existing and proposed storage reservoirs at Rundu and Nkarapamwe. A new rising main is proposed for Rundu and a duplicate main to operate in parallel with the existing main is proposed for Nkarapamwe.

2.1.2.4 Component 4: Existing Water Supply Schemes of Rundu and Nkarapamwe

Rundu Water Supply Scheme

A new pump station is proposed for Rundu with two groups of pump sets, one pumping simultaneously into the existing and proposed elevated tanks at the Rundu site and the hospital and other group to pump into the existing Industrial and Sauyemwa elevated tanks. The elevated tanks will be fed via proposed new dedicated transmission mains. It is also proposed to construct an additional 16 000 m^3 reservoir at Rundu plus 2x 500 m^3 elevated tanks, one at Rundu and one at the hospital. The Sikondo/Mupini area could be supplied under gravity from the Rundu elevated tank.

Nkarapamwe Water Supply Scheme

A new pump station is proposed for Nkarapamwe with three groups of pump sets, one pumping into the proposed elevated tank at the Nkarapamwe site, one group pumping to the proposed tank at Site No. 5 and the other group to pump simultaneously to the elevated tanks at Donkerhoek and Kehemu and proposed elevated tank at Site No. 1. The elevated tanks will be fed via proposed new dedicated transmission mains. It is also proposed to construct an additional 16 000 m^3 reservoir at Nkarapamwe plus 5x 500 m^3 elevated tanks, one at Nkarapamwe, two at Site No. 1 and two at Site No. 5. Kayengona will be supplied from Nkarapamwe elevated tank via a new gravity pipeline.

Masivi Village Scheme

Masivi is an informal settlement along the main road B8. This area is not within the Rundu Town Council supply and its demand has been taken into account in the water demand projections for the scheme. There is currently a 90mm diameter pipeline supplying this area which will be retained.

Kayengona Scheme

The Kayengona scheme is presently a borehole supply scheme. The scheme is operated by NamWater and it has been reported that water quality and availability of water is problematic. The water is pumped to elevated storage tanks (10x10 m^3 tanks) on a support stand about 15.8 m high. It is estimated that the Top Water Level (TWL) of these tanks is about 1090 Meters Above Sea Level (masl). The water demand as reported by NamWater for this area is 30 m^3/hr.

Water could be made available from the proposed new Rundu WTP for the Kayengona area. However, the clear water reservoir level at the water purification works is somewhat lower than the top water level of the existing reservoirs at Kayengona and will require pumps to transfer water to the Kayengona area.

Under the Nkarapamwe scheme the eastern area can be served by the proposed new elevated tank at Nkarapamwe. These elevated tanks will be at a level which could allow a gravity flow from these elevated tanks at Nkarapamwe to the elevated tanks at Kayengona. A new gravity pipeline, 250 mm in diameter and 14 km long will be required along a route which avoids high points.

Sikondo/Mupini Scheme

The Mupini/Sikondo scheme is presently a borehole supply scheme. The scheme is operated by NamWater. The water is pumped to elevated storage tanks on a support stand. The water demand as reported by NamWater for this area is 17 m^3/hr.

Water could be made available from the proposed new Rundu WTP for the Mupini/Sikondo area. However, as with the Kayengona scheme, the clear water reservoir level at the water purification works is somewhat lower than the TWL of the existing elevated tank at Mupini/Sikondo. Pumps will be required to transfer water to the Mupini/Sikondo area.

Under the Rundu scheme the western area can be served by the elevated tanks at Rundu. This elevated tank will be at a level which could allow a gravity flow to the elevated tank at Mupini/Sikondo. A new gravity pipeline, 110 mm in diameter and approximately 14 km long will be required along a route which avoids high points. Whilst this proposal is also a pumped supply scheme to Mupini/Sikondo via the Rundu Purification Works Pump station to Rundu and beyond via the Rundu pumps to Rundu Elevated Tower, it has the advantage of merely upsizing proposed pumping plant which is in any event required for the Sauyemwa and Industrial areas, instead of building an additional pump station.

2.1.2.5 Component 5: Decommissioning of redundant infrastructure

Once the new abstraction and treatment plant with all relevant infrastructure are commissioned, the redundant equipment will be derecognised in accordance with applicable asset derecognition procedure in NamWater and in the end must be de-commissioned and removed.

While some of the equipment will not be re-usable there might be some pumps and motors that NamWater can re-use at other sites and this equipment will thus be transferred to NamWater in Windhoek in accordance with the applicable asset derecognition and transfer procedure.

The decommissioning activities should be conducted in a manner that prevents the pollution of surface or groundwater, air or land as per the Pollution Control and Waste Management Bill and Public and Environmental Health Act, 2015. The main activities during decommissioning will consist of the following:

- Removal of all infrastructure no longer required, from the site.

- Disposal, recycling, relocation, or selling of infrastructure.
- Removal of scrap metal to be recycled.
- Containerize chemical waste which is to be disposed as per the Material Safety Data Sheet (MSDS).
- Collect all windblown litter and debris from the site, the access roads, and from adjacent properties where necessary and to the extent possible.

2.1.3 Land Acquisitions and Wayleaves

A site approximately 6.16 ha in size is in the process of being acquired by NamWater from the Rundu Town Council for the proposed new Rundu WTP i.e., adjacent north of the Rundu Police Station.

It is envisaged that all proposed pipelines will be constructed within municipal road reserves. Wayleaves will be obtained for new pipelines in road reserves once the routes have been confirmed.

The remote elevated tanks proposed at Nkarapamwe and the Intermediate hospital will be constructed on NamWater owned sites. Whereas the additional x7 proposed elevated tanks will be constructed on sites owned by the Rundu Town Council which are zoned for Public Open Space purposes.

For the additional ground level storage required at Rundu and Nkarapamwe, the existing sites at both these locations are not adequate for the proposed new reservoir, elevated tank and pump stations.

NamWater is pursuing the acquisition of privately owned Erf 1200, which is located adjacent to the existing Rundu Water Treatment Works (WTW) site, for the new proposed ground level reservoir, pump station and elevated storage tank at the Rundu site. The land acquisition process is currently has not been finalised yet.

For the Nkarapamwe WTW site, all new infrastructure will be constructed on land owned by NamWater. The existing Nkarapamwe site at present accommodates unoccupied dwellings which will be demolished to accommodate the proposed new works.

2.1.4 Water Abstraction Rights

The Okavango River is a shared water course for the three adjoining countries namely Namibia, Botswana, and Angola. The river starts in Angola, then acts as a border between Angola and Namibia, crosses Namibia and finally enters Botswana. As this river is shared between the countries, therefore all aforementioned countries have a right to abstract from it.

In September 1994 an agreement was signed by the three countries to establish a Permanent Okavango River Basin Water Commission (OKACOM) with its primary focus on the sustainable long-term yield of water from all the potential sources within the Okavango River Basin. All signatories to the agreement are obliged to inform the commission about proposed utilization changes.

NamWater currently has a water abstraction permit in place which is valid until July 2022. NamWater is in the process of engaging the Commission with regards to the key elements of the proposed project as well as with regards to the renewal of their water abstraction permit.

2.2 Project Need and Desirability

At present, the total potable water supply capacity of the Rundu and Nkarapamwe schemes is approximately 840 m^3/h. Total production from both schemes have difficulties in coping with the Rundu Town water demand ; the reservoirs' levels are at best between 4% and 30%, and that is a concern for a town with a high population growth rate of 5.4% per annum (Martin *et al.*, 2018). The population of the area is rapidly increasing and as a result the water demands of the region now significantly exceed the capacity of the existing aging schemes resulting in very low reservoir storage levels and ongoing supply issues. The proposed development is thus needed in order to meet the ever-growing water demand within the town.

2.3 Project Design

The project involves the design of the required water supply infrastructure (inclusive of a new WTP, water abstraction, reservoirs and conveyance systems). The project is currently in the preliminary design stage, after which the detailed designs will be formulated for approval by NamWater.

2.4 Construction Phase

2.4.1 Construction schedule

Construction is expected to take 21 months. Work will not necessarily be undertaken in a linear sequence as most of the activities can happen concurrently and in parallel, depending on the phasing of construction.

2.4.2 Pre-construction activities

The following activities will take place prior to construction once the necessary environmental authorisation, permits and/or licenses are in place:

- Wayleave applications where required;
- Land Acquisition processes (as required);
- Final design of plant and associated infrastructure.

2.4.3 Construction workforce

A mixture of unskilled temporary employees, semi-skilled and highly skilled employees will be required for construction. The unskilled labourers are generally trained by the contractors and sourced from local communities. All staff will be accommodated in rented accommodation in Rundu. The project is to adhere to the AfDB's Operational Standard (OS) No 5 with regards to labour conditions and health and safety.

2.4.4 Construction camps and laydown areas

Construction site camps and laydown areas are to be sited in areas that are mostly disturbed i.e. lowest natural vegetation cover. Sensitive areas such as drainage lines should be avoided.

2.5 Operation and Maintenance Phase

The operational phase refers to the operation of the proposed new treatment plant and associated infrastructure of the various water supply schemes.

2.6 Decommissioning Phase

2.6.1 Decommissioning of existing infrastructure components

The proposed project involves the decommissioning of redundant infrastructure. While some of the equipment will not be re-usable there might be some pumps and motors that NamWater can re-use at other sites and this equipment will thus be transferred to NamWater in Windhoek in accordance with the applicable asset derecognition and transfer procedure. At this stage it is envisaged that the following infrastructure will be decommissioned:

- Raw water abstraction system on completion of the new river intake.
- Raw water rising main from the current intake tower to Rundu.
- Filters at Rundu and Nkarapamwe on completion of the new WTP.
- Pump stations at Rundu and Nkarapamwe on completion of the new pump stations.
- Other infrastructure to be identified as designs progress.

The decommissioning stage will thus consist of the following:

- Dismantling and removal of infrastructure;
- Rehabilitation of disturbed areas;
- Transport and disposal of material off-site; and
- Monitoring (site surveys) may be required after rehabilitation has been completed. The aim of monitoring and maintenance is to ensure that the rehabilitation objectives were met and that the rehabilitation process was successful.

2.6.2 Decommissioning of the proposed new water supply schemes, WTP and associated infrastructure

Additionally, the decommissioning phase refers to if/when the newly constructed infrastructure is decommissioned. Should this infrastructure be decommissioned in future, appropriate investigations and approvals need to be undertaken and obtained in line with the legislative framework at the time and mitigation measures need to be implemented to ensure environmentally friendly disposal of the infrastructure and effective rehabilitation of the affected areas. An EIA for the decommissioning process would have to be undertaken by the proponent. The EMP for the WTP will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

3 LEGISLATIVE FRAMEWORK

A review of applicable and relevant national and international legislation, policies and guidelines to the proposed development are given in this chapter. This review serves to inform the Proponent (NamWater), Interested and Affected Parties and the decision makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled in order to undertake the proposed activities.

3.1 National Legislation, Policies, Guidelines, Plans and Strategies

3.1.1 The Environmental Management Act No. 7 of 2007

This scoping assessment was carried out according to the Environmental Management Act (EMA) and its Environmental Impact Assessment (EIA) Regulations (GG No. 4878 GN No. 30). The EMA has stipulated requirements to complete the required documentation in order to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain listed activities. Under the Environmental Management Act (2007) and its Regulations (2012), an Environmental Impact Assessment (EIA) is required for:

> ***8.1 The abstraction of ground or surface water for industrial or commercial purposes.***
>
> ***8.3 Any water abstraction from a river that forms an international boundary.***
>
> ***8.5 Construction of dams, reservoirs, levees and weirs.***
>
> ***10.1 The construction of (a) oil, water, gas and petrochemical and other bulk supply pipelines.***

3.1.2 The Water Resources Management Act (No. 11 of 2013)

The Act provides for the management, development, protection, conservation and use of water resources, and established various regulatory and advisory institutions. Relevant principles of the Act include, inter alia:

- Equitable access for all people to safe drinking water is an essential basic human right to support a healthy productive life;
- Harmonisation of human water needs with the requirements of environmental ecosystems and the species that depend on them, while recognising that the water resource quality for those ecosystems must be maintained;
- Promotion of the sustainable development of water resources based on an integrated water resources management plan which incorporates social, technical, economic, and environmental issues;
- Development of the most cost-effective solutions, including conservation measures, to infrastructure for the provision of water; and

- Promotion of water awareness and the participation of persons having interest in the decision-making process should form an integral part of any water resource development initiative.

Furthermore, any watercourse on/or in close proximity to the site and associated ecosystems should be protected in alignment with the principles above. Impacts on water resources should be avoided. Mitigation measures must be included in the EMP to reduce impacts on watercourses that cannot be avoided. If required, the relevant permits must be applied for.

It should be noted that the act has not been promulgated yet. However, the Department of Water Affairs does apply the water quality standards as outlined in the draft Regulations and as such the development is to comply with these standards.

The full list of all applicable national legislation identified and conducted during the EIA process are presented in **Table 3-1** below.

Table 3-1: Applicable national legislation

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Environmental Management Act (EMA) No. 7 of 2007	Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). Details principles which are to guide all EAs.	The EMA and its regulations should inform and guide this EIA process.
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	Details requirements for public consultation within a given environmental assessment process (GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	
The Constitution of Namibia Act No. 1 of 1990	According to Legal Assistance Centre (LAC), there is no clear right to health in the Namibian Constitution. But under the Article 95 of the Namibian Constitution that deals with Principles of State Policy, the Namibian Constitution states, "the state shall enact legislation to ensure consistent planning to raise and maintain an acceptable standard of living for the country's people" and to improve public health.	The Proponent should ensure compliance with the conditions set in the Act.
Water Act No. 54 of 1956	The Water Resources Management Act 11 of 2013 is not yet promulgated; therefore, the Water Act No 54 of 1956 is still in force:	The protection of ground and surface water resources should be a priority during the proposed activities.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	• Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). • Provides for control and protection of groundwater (S66 (1), (d (ii)). Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). The Guidelines for the Evaluation of drinking-water quality for human consumption with regards to chemical, physical, and bacteriological quality requires that; water supplied for human consumption must comply with the officially approved guidelines for drinking-water quality. For practical reasons, the approved guidelines have been divided into three basic groups of determinants, namely: • Determinants with aesthetic implications: TABLE 1. • Inorganic determinants: TABLE 2. • Bacteriological determinants: TABLE 3. The water quality for human consumption is classified into three groups. The concentration of and limits for the aesthetic, physical and inorganic determinants define the group into which water will be classified.	The treatment plant is to adhere to the standards for water quality for human consumption as per the act.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	• Group A: Water with an excellent quality • Group B: Water with acceptable quality • Group C: Water with low health risk • Group D: Water with a high health risk, or water unsuitable for human consumption	
Water Resources Management Act No.11 of 2013	The act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68). The draft Regulations of the Act outline the water quality guidelines and standards for potable water and effluent disposal	
Namibia Water Corporation Act 12 of 1997	To establish the Namibia Water Corporation Limited; to regulate its powers, duties, and functions; to provide for a more efficient use and control of water resources; and to provide for incidental matters.	The Proponent is to carry out their functions as per the Act.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	Without prejudice to the generality of section 5, the Corporation shall perform the following functions in pursuit of its objects under this Act, namely – (a) Explore, develop, and manage water resources for the purpose of water supply. (b) Acquire, plan, design, construct, extend, alter, maintain, repair, operate, control, and dispose of waterworks. (c) Subject to section 7 and notwithstanding any provisions of the Water Act to the contrary, supply water to customers within and outside the borders of the Republic of Namibia. (d) Investigate, research and study matters relating to water resources, waterworks, and the environment. (e) Take such action as the Corporation may consider necessary or as the Minister may direct, for the purposes of conserving or augmenting water resources in Namibia. (f) Render services, provide facilities, and lease rights, subject to the payment of relevant charges. (g) establish training facilities and train personnel; and (h) Perform any other function as may be necessary or expedient for the achievement of the Corporation's objects.	
Soil Conservation Act No. 76 of 1969	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the ESMP.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Nature Conservation Ordinance No.4 of 1975	To consolidate and amend the laws relating to the conservation of nature; the establishment of game parks and nature reserves; the control of problem animals; and to provide for matters incidental thereto.	The Proponent should ensure that their activities do not in any way compromise the wildlife in the area of operations and the ordinance requirements are adhered to.
Forestry Act No. 12 of 2001	The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation. These provisions are only guidelines.	Should there be a need to remove vegetation on site, a permit to remove protected species will need to be obtained from the Forestry office in Rundu.
Atmospheric Pollution Prevention Ordinance No. 11 of 1976	This ordinance provides for the prevention of air pollution.	Measures should be instituted to ensure that dust emanating from construction activities is kept at acceptable levels.
Public Health Act No. 36 of 1919	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	The Proponent and all its employees / contractors should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Labour Act No. 6 of 1992	Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act no. 6 of 1992.	The Proponent should ensure that the proposed activity does not compromise the safety and welfare of workers.
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.	The development must comply with provisions of the Local Authorities Act as well as the municipal bylaws and regulations applicable to the project.
National Heritage Act No. 27 of 2004	The Act is aimed at protecting, conserving and registering places and objects of heritage significance.	All protected heritage resources (e.g., human remains etc.) discovered, need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.
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 36.1 regulates rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads.	Adhere to all applicable provisions of the Roads Ordinance.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Nature Conservation Ordinance no. 4 of 1975	• Chapter 6 provides for legislation regarding the protection of indigenous plants	Indigenous and protected plants must be managed within the legal confines.
Hazardous Substance Ordinance 14 of 1974	To provide for the control of 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 thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.	Chlorine and other hazardous substances must be handled in accordance with the respective MSDS from suppliers.
Pollution Control and Waste Management Bill	To promote sustainable development; to provide for the establishment of a body corporate to be known as Pollution Control and Waste Management Agency; to prevent and regulate the discharge of pollutants to the air, water and land; to make provision for the establishment of an appropriate framework for integrated pollution prevention and control; to regulate noise, dust and odour pollution; to establish a system of waste planning and management; and to enable Namibia to comply with its obligations under international law in this regard.	The disposal of waste is to adhere to the guidelines as per the bill.
National Policy on Climate Change for Namibia 2010	The main purpose of the national climate change policy of Namibia is to provide the legal framework and overarching national strategy for the development, implementation, monitoring and evaluation of climate change mitigation and	The project is to consider climate change and its impact on water resources.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	adaptation activities. The policy promotes the enhancement of synergies amongst sectors and stakeholders for effective and efficient mitigation and adaptation responses to climate change in Namibia. In addition, the policy facilitates identification of sector and cross-cutting climate change strategies and actions for implementation to lower Namibia's overall risks, and the risks of the most vulnerable groups and sectors. The policy also provides legal basis for resource mobilisation to address climate change adaptation and mitigation.	
Namibian National Gender Policy 2010-2020	The Namibia National Gender Policy (2010-2020) seeks to create an enabling environment for sectors to mainstream gender in line with National Development Plans (NDPs). It identifies who will be responsible for the implementation of the policy and who will be accountable for gender equality results. The policy further highlights the enhancement of the role and benefits of women in the environment.	The project is to consider the role of women in the environment and to ensure that interested and affected women are represented and consulted.
The Ministry of Environment and Tourism (MET) Policy on HIV & AIDS	MEFT 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 must 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 migrant construction workers interact with local communities.

3.2 International Treaties and Conventions

3.2.1 UN Convention on Biological Diversity of 1992

The Convention on Biological Diversity (CBD) is an international legally binding treaty with three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. It regulates or manages biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use. The proposed development activities excavations and civil works of bulk water infrastructure should conserve biodiversity, the removal of vegetation cover and destruction of natural habitats should be avoided and where not possible it should be minimised.

3.2.2 International Union for Conservation of Nature

The International Union for Conservation of Nature (IUCN) provides public, private and non-governmental organisations with the knowledge and tools that enable human progress, economic development and nature conservation to take place together. The mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

3.2.3 United Nations Convention to Combat Desertification

The United Nations Convention to Combat Desertification (UNCCD) addresses land degradation in arid regions with the purpose to contribute to the conservation of biodiversity and the mitigation of climate change. The proposed project activities should be such that they do not contribute to desertification.

3.2.4 African Convention on Conservation of Nature and Natural Resources

This Convention focuses on living resources, calling for the creation of protected areas and for the specific conservation measures for listed species. It also provides the grounds for the conservation of other natural resources such as soil and water, for the consideration of environmental concerns in development plans, and for research and education. The proposed activities will have a direct impact on the natural resources by clearing of vegetation, loosening soils during trenching activities. Thus, the requirements of this convention must be considered in the implementation of the project.

3.2.5 United Nations Framework Convention on Climate Change in 1995

In 1995 Namibia ratified the United Nations Framework Convention on Climate Change (UNFCCC); an international environmental treaty. The ultimate objective of the Convention is to “stabilise greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system.” The proposed activities should be such that they do not contribute to climate change impacts.

3.2.6 The Southern African Development Community (SADC) Protocol on Shared Watercourse Systems

The SADC Protocol on Shared Watercourse Systems provides that permits must be acquired before discharging any and all types of wastes into shared waters, provided that the intended discharge will not have a detrimental effect on the watercourse system; member states must furthermore take all measures necessary to prevent the introduction of alien aquatic species into a shared watercourse system which may have detrimental effects on the ecosystem; and agreements should be reached on water control and utilisation in shared watercourse systems including the regulation of the flow and drainage.

3.2.7 The Permanent Okavango River Basin Water Commission

The Permanent Okavango River Basin Water Commission (OKACOM), is a river basin organisation established by the three riparian states of Angola, Botswana and Namibia to jointly manage water resources of the Cubango-Okavango River Basin (OKACOM, 2022a). OKACOM was established by the contracting partiers to advise the Member States on:

- The long term safe yield of water available from the basin;
- Reasonable demand scenarios from all consumers in the basin;
- Conservation, equitable allocation sustainable utilisation of water resources of the basin;
- Planning, separately and jointly, for development of water resources, including the construction, operation and maintenance water infrastructure in the basin;
- Prevention of pollution, prevention and control of aquatic weeds in the basin and;
- Measures for the alleviation of short-term difficulties, such as droughts and floods (OKACOM, 2022b).

The Cubango-Okavango River Basin (CORB) is a transboundary basin with a network of river systems traversing through Angola, Botswana and Namibia. The CORB is internationally important for its biodiversity and biological productivity. The Okavango Delta is the best-known feature of the CORB. It is one of the largest Ramsar Sites in the world. The Delta was declared a World Heritage site under the UNESCO convention in 2014. With its high variety of habitat types which supports high diversity of biological life forms, it remains one of the most important areas for biodiversity conservation in the world (OKACOM, 2022c).

NamWater is in possession of an abstraction permit for the abstraction of water from the Kavango River. The renewal of the abstraction permit is in process and is being facilitated by NamWater.

3.3 International Financial Institution Standards and Policies

3.3.1 The African Development Bank (AfDB) Integrated Safeguards System (ISS) 2013

To better articulate its safeguard policies while improving their clarity, coherence and consistency, the Bank has developed an Integrated Safeguards System (ISS).The Bank Group's Integrated Safeguards System (ISS) and its related Climate Safeguards System (CSS) are the strategic tools to ensure that Bank supported operations are designed in a sustainable manner. The Bank's ISS is composed of Operational Safeguards, ESAP/Business Standards and Guidelines which apply to all Bank financed projects. A basic requirement of the Bank ISS is that all project must comply with the legislation, regulations, national and sub-national requirements and international agreements of project host countries on all issues related to project preparation and implementation.

3.3.1.1 The African Development Bank (AFDB) Environmental and Social Assessment Procedures (ESAP) 2015

The ESAPs purpose is to improve decision making and project results by ensuring that Bank-financed operations conform to the requirements laid out in the Operational Safeguards (OSs) and are thus sustainable. It details the specific procedures that the Bank and its borrowers or clients should follow to ensure that Bank operations meet the requirements of the OSs at each stage of the Bank's project cycle. It is with this goal in mind that the ESAP require that environmental, climate change and social considerations are assessed early in the Project Cycle and are reflected in project selection, site selection, planning and design. To fulfill the environmental and social obligations as defined in financial agreement, and meet both the relevant national borrower and financier (AfDB), and international legal and policy requirements.

The Environmental and Social Assessment (ESA) process outlined in the ESAP provides a way to improve a project environmentally, socially and in relation to climate change and gender as cross cutting issues, thereby enhancing its benefits and – in order of priority – avoiding, minimizing, mitigating or compensating for adverse impacts. The ESA process also seeks to ensure that access to benefits is sufficiently broad, that information in a suitable form is disclosed in a timely manner and that the borrower engages in meaningful consultation (i.e., consultation that is free, prior and informed) with local stakeholders and potentially affected communities; in particular, with vulnerable groups, to enable them to participate actively in decisions about avoiding or managing environmental and social impacts.

3.3.1.2 The African Development Bank (AFDB) Operational Safeguards (OS)

The AfDB ISS requirements is composed of 5 Operational Safeguard (OS) requirements that clients are expected to meet when addressing social and environmental impacts and risks which include:

- OS 1: Environmental and social assessment - governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements. Requires the borrower/client to establish a credible, independent and empowered local grievance and redress mechanism to receive, facilitate and follow up on the resolution of the affected people's grievances and concerns regarding the environmental and social performance of the project.
- OS 2: Involuntary resettlement: land acquisition, population displacement and compensation - consolidates the policy commitments and requirements set out in the Bank's policy on involuntary resettlement, and incorporates a number of refinements designed to improve the operational effectiveness of those requirements.
- OS 3: Biodiversity, renewable resources and ecosystem services – aims to conserve biological diversity and promote the sustainable use of natural resources. It also translates the commitments in the Bank's policy on integrated water resources management into operational requirements.
- OS 4: Pollution prevention and control, hazardous materials and resource efficiency - covers the range of key impacts of pollution, waste, and hazardous materials for which there are agreed international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas accounting, that other multilateral development banks follow.
- OS 5: Labour conditions, health and safety - establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation.

3.3.1.3 The African Development Bank (AFDB) Safeguard Policies and Strategies

The Bank's several related policies and tools indicate its commitment to improving environmental and social sustainability in its investments. The bank policies which were developed prior to the ISS are outlined below:

- Policy on the environment - established the Bank's commitment to integrating environmental considerations into its operations through (i) systematic project categorisation according to the level of environmental risk, and (ii) the application of appropriate types of environmental assessments, with commitments to public consultation and information disclosure.
- Involuntary resettlement policy: The primary goal of the involuntary resettlement policy is to ensure that when a Bank intervention requires people to be displaced, they are treated equitably and share in the benefits of the project that involves their resettlement, improving their living standards.

- Gender policy - to promote gender mainstreaming as a means of fostering poverty reduction, economic development and gender equality on the continent. The policy elaborates a set of guiding principles, which emphasise, among other things, the need to apply gender analysis to all Bank activities. It also recognises that the concept of gender implicitly embodies a culture which entails cooperation and interdependence between women and men.
- Climate risk management and adaptation (CRMA) strategy - The overall goal of the Bank's strategy is to ensure progress towards eradication of poverty and contribute to sustainable improvement in people's livelihoods taking into account CRMA. The specific objectives are: (i) To reduce vulnerability within the Regional Member Countries (RMCs) to climate variability and promote climate resilience in past and future Bank financed development investments making them more effective; (ii) To build capacity and knowledge within the RMCs to address the challenges of climate change and ensure sustainability through policy and regulatory reforms.

4 ESIA PROCESS AND APPROACH

The flow diagram in **Figure 4-1** provides an outline of the ESIA[1] process that is being followed for the proposed project.

4.1 Screening Phase

The screening phase involved a high-level screening and assessment of the general study area to determine constraints and opportunities associated with the project. It further involved assessing whether an EIA is required to be undertaken for the proposed activity. Under the 2012 Environmental Impact Assessment (EIA) Regulations of the Environmental Management Act (EMA) No. 7 of 2007, the proposed development is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC). This activity is listed under the following relevant sections:

> *8.1 The abstraction of ground or surface water for industrial or commercial purposes.*
>
> *8.3 Any water abstraction from a river that forms an international boundary.*
>
> *8.5 Construction of dams, reservoirs, levees and weirs.*
>
> *10.1 The construction of (a) oil, water, gas and petrochemical and other bulk supply pipelines.*

4.2 Scoping Phase

The scoping phase involves the identification of significant issues and impacts focusing the impact assessment by refining alternatives; identifying national legal context and financial institution safeguard requirements to ensure that the ESIA meets the requirements of decision-makers and lenders; defining the approach to the ESIA in the Terms of Reference for the ESIA; and gathering stakeholder opinions about the project.

During the scoping phase the draft Scoping Report (SR) was made available to the public for review and comment after which it was updated and finalised, taking cognisance of the comments received from I&APs. The final Scoping Report will be submitted to MEFT: DEAF for review and decision-making, before commencing with the ESIA Phase.

4.3 ESIA Phase

The ESIA Phase assesses the significance of the potential impacts identified during scoping. The assessment process will identify mitigation measures to avoid or reduce negative impacts and enhance positive ones. The public participation process allows the findings of the

[1] ESIA and EIA may be used interchangeably. ESIA is the term used by the AfDB and EIA is the term used in Namibian legislation.

assessment to be presented to stakeholders and ensures that comments are incorporated into the final report.

The objectives of an ESIA are as follows:

- Specialist investigation of all issues identified during the scoping phase and where sufficient information regarding these issues to predict potential impacts, are lacking;
- To ensure that environmental and social considerations are explicitly addressed and incorporated into the decision-making process;
- To anticipate and avoid, minimise or offset significant biophysical and social impacts of the project;
- To optimise positive impacts of the project;
- To ensure protection of the productivity and capacity of natural systems and the ecological processes which maintain their functions; and
- To promote development that is environmentally and socially responsible, assists in meeting sustainable development goals and optimises resource use and management opportunities.

The ESMP[2], which will be appended to the ESIA report, serves as a framework to manage environmental and social impacts identified in the ESIA throughout the project lifecycle.
The terms of reference for the ESIA are discussed in Chapter 9.

[2] ESMP and EMP may be used interchangeably. ESMP is the term used by the AfDB and EMP is the term used in Namibian legislation

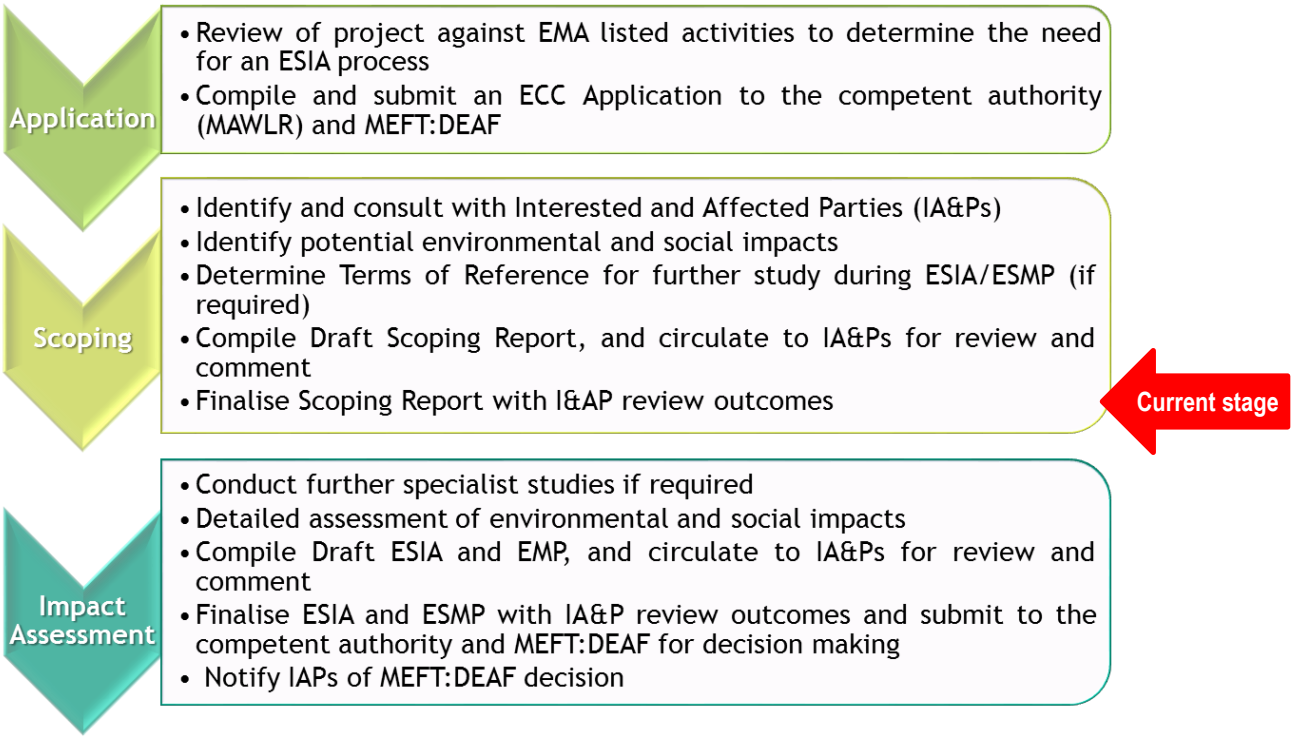


Figure 4-1: ESIA Process

4.4 Assumptions and Limitations

In compiling this SR, the following assumptions and limitations apply:

- It is assumed that the information provided by NOD and NamWater is accurate, adequate and unbiased, and that no information that could change the outcome of the ESIA process has been withheld.
- This report is based on the most up to date information available to date.
- At the time of compiling this report, the project is still in preliminary design phase.
- No specialist studies have been completed to date. The specialist studies will be undertaken during the ESIA Phase.
- The scope of impacts presented in this report could change, should new information become available and once fieldwork is undertaken in the ESIA phase.

5 PUBLIC PARTICIPATION AND DISCLOSURE

5.1 Objective:

Public consultation forms an important component of an ESIA process. Public consultation provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process. Public consultation has been done in accordance with both the EMA and its EIA Regulations. As prescribed from Regulation 21 to 24 of the EIA Regulations and AfDB's Operational Safeguards.

The public consultation process assists the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and to what extent further investigations are needed. Public consultation can also aid in the process of identifying possible mitigation measures.

5.2 Approach:

5.2.1 Interested and Affected Parties (I&APs)

GCS identified specific I&APs, who were considered interested in and/or affected by the proposed activities. The I&APs identified include; applicable organs of state (national, regional, and local) and other interested members of the public. These I&APs were contacted directly and registered as I&APs. In addition, notices regarding the project were placed in widely circulated national newspapers for two consecutive weeks inviting members of the public to register as I&APs. The detailed steps regarding the notification of I&APs are presented in **Section 5.2.2.** A summary of the I&APs identified are presented in **Table 5-1**. The complete list of I&APs is provided in **Appendix C.**

Table 5-1: Summary of Pre-Identified IAPs

	Description
List of IAPs	**Ministry of Environment, Forestry and Tourism**
	Ministry of Agriculture, Water and Land Reform
	Rundu Town Council
	Kavango East Regional Council
	NamWater
	National Heritage Council of Namibia (NHCN)
	National Botanical Research Institute (NBRI)
	Surrounding property/business owners
	Affected communities

5.2.2 Communication with I&APs

Regulation 21 of the EIA Regulations details steps to be taken during a given public consultation process and these have been used in guiding this process.

Communication with I&APs about the proposed development was facilitated in English (unless indicated otherwise) through the following means and in this order:

- Registration of the project with MEFT and MAWLR through submission of ECC Application and copy of the BID dated 14 April 2022 (MEFT Application number APP-003745);
- A Background Information Document (BID) containing descriptive information about the proposed activities was compiled (**Appendix D**) and sent out to all identified and registered I&APs per email dated 14 April 2022;
- Notices were placed in *The Namibian and New Era* newspapers dated 14 and 21 April 2022, briefly explaining the activity and its locality, inviting members of the public to register as I&APs (**Appendix E**);
- Site notices were fixed at the relevant sites (Site proposed for the new WTP, Nkarapamwe, Rundu, Kehemu, Donkerhoek, Industrial and Sauyemwa sites) (**Appendix G**).
- Radio announcements were made in English and the local language (Rukwangali and Rumanyo) on Wato Fm and Rapids Fm (**Appendix F**).
- A public meeting was held in Rundu on 27 April 2022 (**Appendix H**).
- Meetings with the Authorities were held in Rundu with the Rundu Town Council and the Kavango East Regional Council (Rundu Urban and Rural Constituencies) on 27 April and 28 April 2022 respectively (**Appendix H**).

The scoping report was made available to all I&APs for public review from **25 July 2022 until 8 August 2022.** An electronic copy of the report was available for review on the GCS website (https://www.gcs-sa.biz/public-documents/).Furthermore, a hard copy of the report was available to the public for review and comment at the Reception Desk of the NamWater office in Rundu (Eugene Kakuru Street, Rundu, Namibia). I&APs were notified as follows on the availability of the report:

- Email notification sent out to all identified and registered I&APs per email dated 25 July 2022 (**Appendix F**);
- Notification sent out to identified and registered I&APs per sms dated 25 July 2022 (**Appendix F**);

- Radio announcement was made in English and Rukwangali on Rapids Fm on 2 August 2022 (**Appendix F**).

I&APs had until **8 August 2022** to submit their comments on the project. The comments received during each comment period is presented in the Comments and Response Report (**Appendix I**). The comment period will remain open until the final scoping report is submitted to MEFT.

6 ALTERNATIVES

Alternatives are defined as: “different means of meeting the general purpose and requirements of the activity” (Environmental Management Act (2007) of Namibia [and its regulations (2012)]. This chapter will highlight the different ways in which the project can be undertaken and to identify the alternatives that will be the most practical but least damaging to the environment and local communities.

Various alternatives have been identified in terms of the proposed development and its related activities. The most significant alternatives considered are:

- No-go option
- Site alternatives
    - Water abstraction works location
    - Pipeline routes
- Design alternatives
    - Raw water abstraction works
- Effluent Discharge

The above-mentioned alternatives considered for the proposed activity are discussed in the following subchapters.

6.1 No-Go Option

The “No-Go” alternative is the option of not proceeding with the activity, which typically implies a continuation of the status quo. Should the proposed upgrade of the Rundu Purification Works not commence none of the potential impacts (positive and negative) identified would occur. Furthermore, given the fact that the capacity of the existing water supply schemes of Rundu and Nkarapamwe are not sufficient to meet the current water demand at Rundu, the additional water treatment capacity is required to respond to the current and future water demand of safe drinking water for the Rundu town and surrounding communities. The No-go action would not be an ideal alternative. Hence, adopting the no action alternative will mean that the existing shortfall in water supply will continue to prevail unabated and the future water security in Rundu and the surrounding areas will be compromised.

6.2 Site Alternatives

6.2.1 Water abstraction location

Alternative locations for the proposed raw water abstraction works were considered and investigated. A preferred site location for the new abstraction works has been identified downstream of the existing abstraction works. The following aspects were considered for the site selection of the proposed new abstraction works:

- Natural stable bend in the river with a site on the outside bend. This will limit the course sediment (bedload) abstraction due to the spiral flow created by the secondary current.
- Steep right bank near the riverbank so that the concrete structure/wall on the bank is not too long (to ensure floods cannot bypass the abstraction works).
- Sufficient depth for low flow conditions so that the invert of the intake could be as high as possible above the riverbed (no weir is provided to save cost).
- Availability of bedrock to limit scouring.
- Access road to site.
- Access/Safety for the workers during construction.
- Area without any settlement or livelihood activities.

The preferred site location for the new abstraction works is downstream of the existing abstraction works is shown in **Figure 6-1** below.

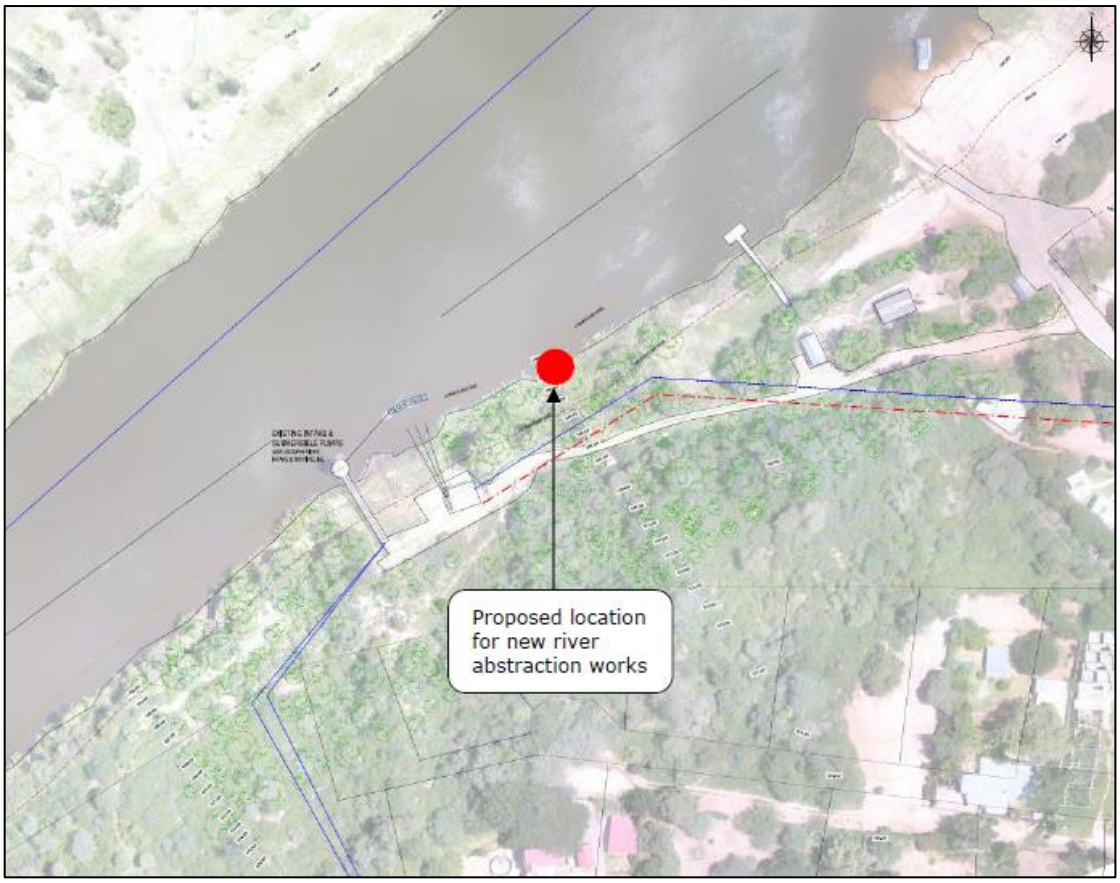


Figure 6-1: Proposed location of new river abstraction works

6.2.2 Pipeline Routes

The pipelines proposed to be constructed are to be constructed within municipal road reserves. Alternatives in terms of pipeline routes being considered are indicated on **Figure 6-2**.

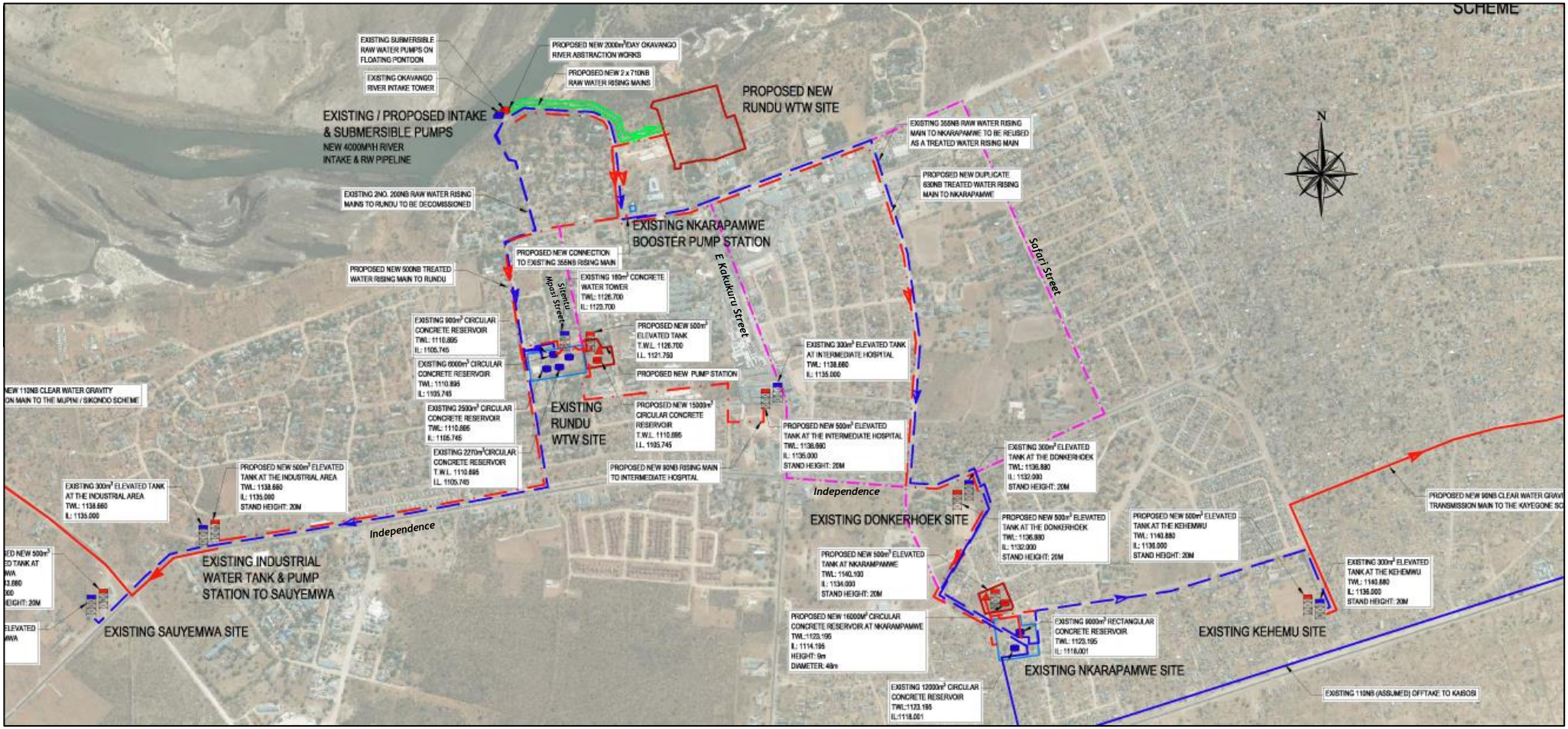


Figure 6-2: Pipeline Route Alternatives

6.3 Design Alternatives

6.3.1 Raw water abstraction

Five potential raw water abstraction options were identified which are to be assessed as potential options to be used in the project.

Option 1: Abstraction with the construction of a weir

A low weir is required to create sufficient water depth at the pump intakes during low river flow conditions and to guide the low flow towards the intakes. The abstraction works is normally placed on the outside bend in the river and orientated to use secondary currents during a flood to limit coarse sediment abstraction. The local area at the intake (gravel trap) can be flushed by using a gate to remove deposited sediment, and debris will be prevented by a trash rack from reaching the pumps. The weir will be constructed high enough to provide sufficient head to flush the gravel trap. The gravel trap should be self-scouring during medium to large floods, with the flushing gate closed. Sand transported beyond the trash racks towards the pumps can be flushed out by opening gates downstream of the pumps during small river flood conditions. This design for an abstraction works ensures a low maintenance and robust design, with a high assurance of supply. This type of abstraction works will consist of a gravel trap, trash racks, pump canals which could be flushed, and a weir.

Option 2: Floating Pontoon

Floating abstraction works are commonly used in small scale schemes. They are suited to stable channel/rivers with small water level fluctuations. A floating pontoon will be used to house the pumps. Upon selection of the pumps the floating pontoon would be sized to allow for the pumps to be soundly founded on the pontoon and the suction pipe would be positioned underneath the pontoon. The delivery lines would go from the pontoon to the banks of the river. They would need to be flexible to accommodate the movement of the pontoon as the water levels fluctuate. The delivery pipe would need to be placed up to a certain point where it will connect to the fixed rising main or discharge in the settler. The pontoon would be anchored on the riverbanks by cables.

Option 3: Pumps and pipes mounted on a rail

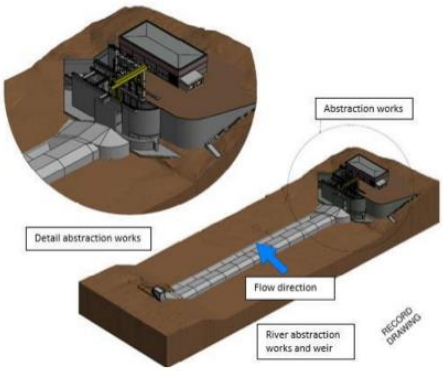
This type of abstraction consists of the construction of a concrete base and rail on which an inline pump or a fixed floating pontoon could be mounted. This would allow the pumps to move up and down with the fluctuation of the water levels in the river up until the limitations of the installed railing are reached. The fixed railing allows for a secure connection and stability against wave action. Flexible delivery pipes are required for this option and monitoring of the connection point to the main delivery pipeline is also required as, depending on the changes in water level, portions of the pipe may need to be added or removed.

Option 4: Submerged in-line pumps fixed to the embankment

The installation of the submerged in-line pumps allows for multiple pumps to be installed in series. These pumps are lowered into the river and their delivery lines can be part of a permanent and non-flexible installation. The installation requires a solid foundation (concrete) on which the mountings for the pipes and pumps can be installed.

Option 5: Intake Structure with a dry or wet well

The arrangement for this type of abstraction works consists of a wet well with hoppers and either a dry well with high lift pumps or a wet well with submerged pumps. The hoppers allow for the settling of larger sediment particles. Typically, these hoppers will be equipped with jet pumps to allow removal of the sediment. The pumps will pump directly into the rising main which links to the water treatment works.



Option 1: Abstraction works with the weir



Option 2: A floating pontoon



Option 3: Pumps on rails



Option 4: Submerged in-line pumps fixed to the embankment abstraction works



Option 5: Schematic of a dry well configuration

The preferred option will be determined with input from the specialist studies to be undertaken as part of the ESIA.

6.4 Effluent Discharge

Sludge will be generated from the backwash cycles on the filters as well as during desludging of the sedimentation tanks. The sedimentation tank sludge contains almost all the solids generated by the WTP, while the backwash water contains mostly water. Sludge is produced in the liquid and solid form. According to Verlicchi & Masotti (2000) the options for disposal often used include the following:

Solid Sludge:

- agricultural reuse
- ecological reuse
- landfilling
- brick and cement production

Liquid sludge

- hauling by truck to a central wastewater plant
- conveying with a dedicated pipe to a central wastewater plant
- discharge in a public sewage system
- recovery of coagulants
- discharge into surface waters

The management of water treatment sludge is of environmental concern and requires careful consideration. The recovery, recycling and reuse is an optimal solution for water treatment sludge management. The chemical composition of the water treatment sludge depends on the coagulant composition, raw water quality and the dose of coagulant used.

In terms of the Water Resources Management Act No 11 of 2013 regulations effluent discharged into an international water course may not exceed a 12 Nephelometric Turbidity Unit (NTU) threshold. A discharge permit would need to be applied for by NamWater to the Ministry of Agriculture, Water and Land Reform (MAWLR).

Alternatively, the supernatant can be channelled back into the inlet work, which enables the recycling of the supernatant.

7 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The proposed activities will be undertaken in an environment with specific conditions. Prior to any development in an area and as part of an environmental assessment process, it is vital to firstly understand the pre-project/development conditions. This is also important to form a baseline understanding of the area and make reasonable conclusions on certain issues that may arise years later during or after the project's operations. The environmental and social baseline for the project area is presented under the subchapters below.

7.1 Bio-physical Environment

7.1.1 Climate

The climate of Rundu is sub-tropical, tempered by the altitude, with a hot, rainy season from November to March and a long dry season from April to October (Cecchini, 2021).

Situated in north-eastern Namibia, the Kavango East Region enjoys generally more rainfall than the rest of the country to the south and west. Annual average rainfall varies between about 450 and 600 mm, with a clear increasing trend from south to north. Rains fall almost entirely in summer, with the months from May to September usually being dry, and the first early rains coming to the region in October and November. Highest rainfalls usually occur in January and February (Stubenrauch Planning Consultants, Geocarta Namibia, SAIEA, AHT Group AG, 2015).

The Kavango East is usually warm to hot. Average maximum temperatures are above 30°C for nine months of the year, and average minimums are below 10 °C during the coolest months June, July and August. Temperatures below freezing are occasionally recorded but are rare and are usually only experienced in low-lying valleys such as found along the Kavango River and Omurambas (Stubenrauch Planning Consultants, Geocarta Namibia, SAIEA, AHT Group AG, 2015).

The warm dry conditions mean that evaporation is high. Rundu, for example, can expect to receive 590 mm of rain (the annual average), with a potential evaporation of about 2000 mm/a. Wind speeds are generally very low, and in most months, it is completely calm for over half the time.

7.1.2 Air Quality

Air quality in Rundu is considered to be good. The major current atmospheric dust emissions in the area are primarily generated by the vehicles travelling on gravel roads.

7.1.3 Topography, Soils and Geology

The Kavango East Region is a gently undulating plain of unconsolidated sands, sloping gradually down northwards to the Kavango River and eastwards to the lowest areas along the river before it enters Botswana (Ministry of Lands and Resettlement, 2015). The sandy plain is incised by the Kavango River and other smaller ephemeral river channels, the most prominent one being the Omuramba-Omatako that runs roughly northwards to meet the Kavango River east of Rundu.

Rundu can be defined as predominantly flat with a topographic ridge line sweeping around the north of the town along the edge of the flood plain and turning back into the town as it follows the ephemeral water course (Stubenrauch Planning Consultants, 2013).

7.1.4 Hydrology and Hydrogeology

Surface water in Namibia is generally very limited and regarded as precious resources where they are available all year round.

The most important water source in the Kavango East Region is the perennial Kavango River, which is the major source of water for the rural communities concentrated along the river (Ministry of Lands and Resettlement, 2015). Boreholes and dug-wells are concentrated along the Kavango River, the Omatako Valley and the main roads from Grootfontein to Rundu (Ministry of Agriculture Water and Rural Development, 2011). In addition, abstraction from the Kavango River provides water to Rundu Town, other smaller towns and agricultural schemes within the region.

Historical flow data from the gauging station 2511M01 – Okavango River at Rundu (-17.9° latitude and 19.75° longitude) was obtained. This gauging station is located at the existing abstraction works and the datum for the level indicator was given as 1060 m. The historical flow data that was recorded at the gauging station from November 1945 to April 2020 indicate large fluctuations in the river flow rates. The observed flows range between 16 m^3/s and 962 m^3/s as depicted in **Figure 7-1** below.

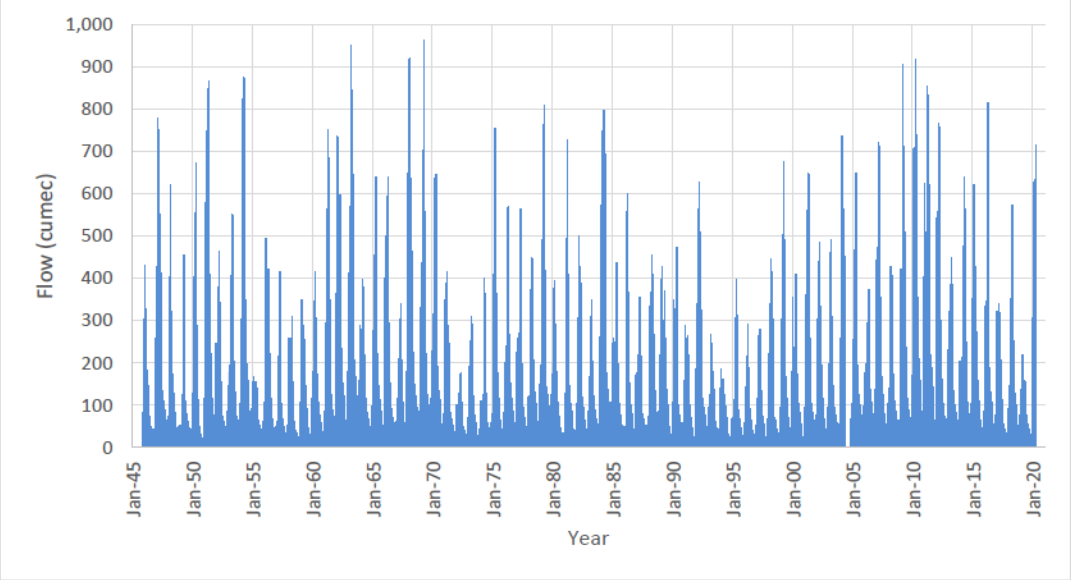


Figure 7-1: The observed peak flow rates at 2511M01 gauging station in the Kavango River

The flow regime of the river can be affected in two ways:

- the average quantity of the flow or the Mean Annual Runoff (MAR) can be changed through water abstractions and changes in land-cover and
- abstractions, impoundments and land cover changes can affect the timing or the seasonality of the flow regime such as the onset, peak, volume and duration of the dry season or flood events (OKACOM, 2011).

The available water for people may be adequate during most years, but during drier years the non-perennial parts of the system tend to dry out, with implications also for groundwater, and even the perennial parts may have extremely shallow flows, causing problems for drinking water, irrigation, navigation, water quality and the biota (OKACOM, 2011).

Where the Kavango runs along the border, it is a large, sluggish, low-gradient river. Summer floods, starting from about September in Angola, usually reach Namibia in January or February and inundate large areas within the valley. The floodwaters continue to rise until April, and then take several months to recede. High water is usually three to four times higher than the lowest levels in November, and the river carries 4 - 6 times more water at this time than in the winter months (Bethune, 1991). During low flow periods the water is confined to the main channel which is seldom more than 100 m wide and less than one metre deep in places (Ministry of Lands and Resettlement, 2015).

The Okavango-Epukiro groundwater region encompasses the Kavango Regions, the eastern part of the Otjozondjupa Region and the northern Omaheke Region as depicted in **Figure 7-2** below. Groundwater reserves in the Kavango and north west parts of the Otjozondjupa Regions are hosted in Kalahari aquifers which hold water in intergranular pore spaces (Ministry of Agriculture Water and Rural Development, 2011).

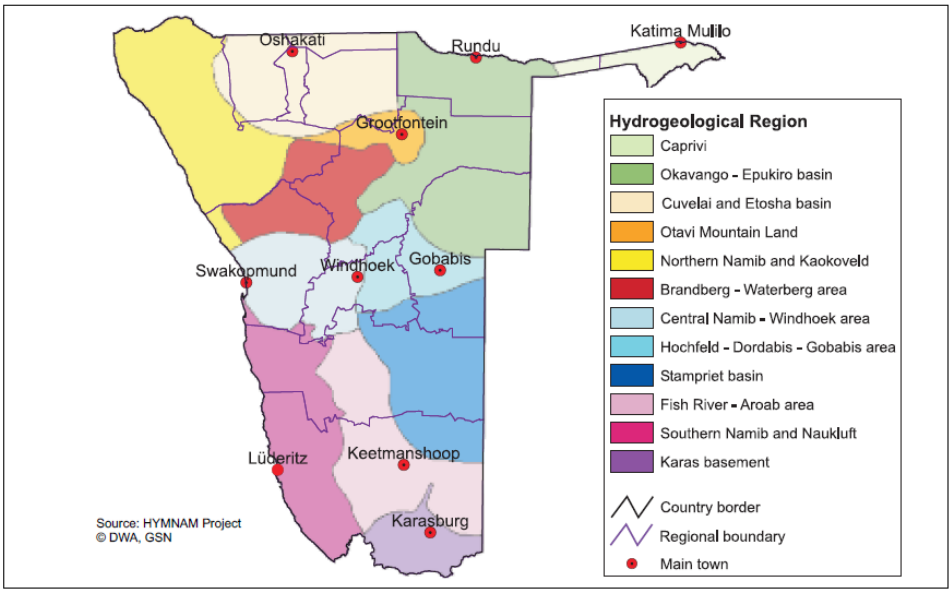


Figure 7-2: Groundwater basins and hydrogeological regions in Namibia (Ministry of Agriculture Water and Rural Development, 2011).

Rundu is situated in an area characterised by a productive porous aquifer. About 40 boreholes were drilled before Namibia's Independence within a 15 km radius of Rundu. The water levels range from 12 to 45 m depth with yields varying from 3 to 14 m^3/h. The original water supply for Rundu was by means of 2 boreholes that were drilled in the early 1950s near the government offices of Rundu (Stubenrauch Planning Consultants, 2013).

7.1.5 Fauna and Flora

The Rundu area falls within the Broadleaved Tree-and-Shrub Savanna Biome. The town of Rundu is situated on the wall of the Kavango River in the Okavango valley. The area is known to be of Namibia's most densely vegetated areas composed of floodplain grasslands and lush woodlands. Broadly speaking, relatively larger deep-rooted trees such as teak and mangetti dominate on deep sands, while shallower soils in valleys support shrubs and grasses of various species.

The larger trees such as kiaat (*Pterocarpus angolensis*), teak (*Baikaea plurijuga*), silver terminalia (*Terminalia sericea*) and red seringa (*Burkea Africana*) constitute a valuable resource of timber that is used for furniture, construction, carvings and firewood. A number of species are valued for food, such as false mopane (*Guibourtia coleosperma*), mangetti (*Schinziophyton rautanenii*) and monkey oranges (*Strychnos cocculoides*) – these are important resources for rural livelihoods. Tall grasses in the woodlands are harvested for thatching.

The banks of the Kavango River originally supported forests with distinctive trees such as knobthorn (*Acacia nigrescens*), weeping wattle (*Peltophorum africanum*) and jackalberry (*Diospyros mespiliformis*), and a dense shrubby undergrowth. However much of the riverine forest has disappeared with only a few localised patches of this vegetation type remaining, almost entirely within the protected area of Bwabwata National Park (Ministry of Lands and Resettlement, 2015).

Along the river some areas are seasonally inundated with floodplains, where large areas of reeds grow in the river margins when water levels rise. There are also permanently swamped areas (e.g. near the Cuito confluence) with meanders, oxbow lakes and waterlogged floodplains, fringed with papyrus and other reeds and swamp vegetation (Ministry of Lands and Resettlement, 2015).

The Rundu area boasts an overall high terrestrial diversity of plants and animals. Plant diversity is estimated to be between 400 and 499 species. A total of 658 bird species has been recorded in Namibia. Rundu has a bird diversity of between 171 to 200 species. One endemic plant is recorded to occur in the Kavango Valley which is the Ringwood tree, *Maerua schinzii*, which grows along riverbanks and water courses. Protected plants include the African protea (*Protea gaguedi*), the orchid (*Eulophia hereroensis*) and two aloes found specifically in the vicinity of Andara (*Aloe esculenta* and *A. zebrina*) (Bethune, 1991).

Rundu has a reptile diversity of 51-60 species and a frog diversity of between 24 -27 species. The diversity of frogs closely follows the patterns of rainfall, which reflects the dependence of frogs on standing water for breeding and for survival. Thirty different species have been recorded along the Kavango River alone. Protected reptile species in the Kavango wetland area include the Nile crocodile (*Crocodylus niloticus*), two tortoises (Kalahari tent tortoise and leopard tortoise) and the African rock python (*Python sebae*) (Bethune, 1991). Mammal diversity of between 76-90 species, with many tropical species abundant in then north and east of Namibia and are associated with wetlands and forests.

The Kavango River is recorded to have a freshwater fish diversity of 79 species. There are approximately 115 species of freshwater fish in Namibia. Not all species occur along the entire course of the river. 40-50 species have been found to occur on the confluence of the Kavango and Cuito rivers, compared to approximately 60 species below. Two fish species which occur in the Kavango River, the ocellated spinyeel (*Aethiomastacembelus vanderwaali*) and the broadhead catfish (*Clariallabes platyprosopos*) has previously been listed as red data species (Bethune, 1991) with the broadhead catfish more recently listed as a species of least concern.

7.2 Socio-economic environment

Rundu is the capital and largest town of the Kavango East and West Regions located in the northeast of Namibia along the Kavango River, which forms the border between Namibia and Angola. It is located 715 km northeast from Windhoek the capital city of the country. Not only is it the capital of the Kavango Region, but it is also the second largest town in Namibia, in terms of population size.

It lies in an important strategic position as the gateway linking a number of important Southern Africa Development Community (SADC) countries with Namibia's port of Walvis Bay. As such it is believed to be a frontier town, as it is a hub for trade and development in the north of the country.

All road traffic from Namibia's neighbouring countries of Angola, Zambia, Zimbabwe and Botswana must route through Rundu to reach the port of Walvis Bay (Rundu Town Council, 2006).

7.2.1 Population

Rundu's population is estimated at 63,431 residents excluding those living in nearby villages that are not part of the jurisdiction of the town, with an annual population growth of 5.4 percent (Martin *et al.*, 2018). With a 5.4 percent population growth, Rundu's population is increasing at a rate much higher than the national urban population mean growth rate (4.2 percent). The Kavango Region had a population density of 4.6 people per square kilometer in 2011. This is significantly higher than the national population density of 2.6 people per square kilometer (Namibia Statistics Agency, 2011). Regionally, females outnumber males at 88 males per 100 females.

Table 7-1: Kavango Region Population by age **Source:** (Namibia Statistics Agency, 2011)

Age	2001	2011
0-14 years	15 %	16 %
15- 59 years	29 %	27 %
60 + years	6 %	7 %

As per **Table 7-1** above, the larger proportion of the population are those within working age in the age bracket of 15-59 years of age (27%). Others between the ages 0 and 14 years of age, make up 16% of the population as of 2011(Namibia Statistics Agency, 2011). The regional population shows a small percentage of those above the age of 60 (7%), which indicates a relatively low life expectancy for the area.

7.2.2 Education

Much like other rural areas in Southern Africa, education levels for the Kavango Region are relatively low. According to the Namibian Statistics Agency, the literacy rate amongst the population older than 15 years is 79% as of 2011, this is an increase of 9% since 2001. Although there has been an improvement in this regard, there is still a large need for basic education amongst the population.

Table 7-2: School attendance **Source:** (Namibia Statistics Agency, 2011)

Attendance	2001	2011
Never attended school	26 %	21 %
Currently attending school	19 %	18 %
Left School	51 %	58 %

Table 7-2 above, shows the statistics for school attendance according to the Namibian Statistics Agency. A large proportion of the population left school without completing (58%) or had no schooling at all (21%) thus there is a general lack of skills necessary to develop at the rate needed to improve socio economic conditions of the region. At 2011, 18% of the population was enrolled at school (Namibia Statistics Agency, 2011) .

There are five tertiary Institutions in Rundu, namely: University of Namibia Rundu campus, Institute of Open Learning (IOL), Rundu Vocational Training Centre, Namibia College of Open Learning (NAMCOL) and Triumphant College. Additionally, Namibia University of Science and Technology (NUST) has a center in Rundu that provides support for students who are studying on distance. There are 13 primary schools, 10 secondary schools and 3 combined schools. Among the primary schools, 12 are government schools with no hostel, while 1 is a private school with a hostel. However, there are 4 government secondary schools with no hostels and 2 government secondary schools with hostels. Private secondary schools are 4, all with hostels including the highly reputable St Boniface College, a Roman Catholic Church school located 33km east of Rundu, which has been ranked the best-performing school in Namibia for the eighth consecutive year (Martin *et al.*, 2018).

7.2.3 Health

Rundu has 7 health facilities made up of 1 state hospital, 1 private hospital and 5 clinics serving the town. It is estimated that only 12 percent (17,538) of the population in Rundu and surrounding villages are using private medical services while 88 percent (128,6130) use public health facilities (Martin *et al.*, 2018).

The Kavango East Region has an 11 percent prevalence rate of individuals estimated to suffer from one or a combination of chronic diseases. Chronic diseases include blood pressure, diabetes, cancer, joint inflammations, cardiac/heart diseases, respiratory diseases (e.g. Asthma), chronic kidney diseases, anemia, epilepsy and psychological/mental health illness among others (Martin *et al.*, 2018).

Among adults aged 15-64 years, prevalence of HIV varies geographically across Namibia, ranging with the lowest rate of 7.6% in the Kunene Region and the highest rate of and 22.3% in the Zambezi Region. Regions with higher than national prevalence tended to have higher HIV prevalence among females than males. The regions with the lowest prevalence were Kunene and Khomas. The Kavango East Region recorded an HIV prevalence of 14.5% in 2017 (NAMPHIA, 2018).

Malaria remains a public health concern in Namibia and it is endemic in many regions, including Kavango east region. The Kavango East Region recorded 499 malaria cases for the period January to April 2022, with 146 of the cases being recorded in Rundu (Muronga, 2022).

7.2.4 Income and livelihood

The Kavango region is the poorest region in Namibia in term of the Human Development Index (HDI). The HDI concentrates in the three essential factors of human life; longevity, knowledge, and a decent standard of living. The HDI of the region is 0.4, but the town Rundu is geographically located at a strategic crossroad and has, since peace and stability returned to Angola, developed into a significant border town.

The labour force size for Rundu is estimated at 33,114, representing a Labour Force Participation Rate (LFPR) of 69 percent. Lower LFPR indicates high dependence rate. In the case of Rundu, low LFPR can be viewed as an opportunity since the dependent population or economically inactive are mainly composed of young school going population who are likely to benefit the local economy with better skills in future (Martin *et al.*, 2018).

In 2011, the employment rate in the Kavango Region for the labour force (61% of those 15+) was 50% employed and 50% unemployed. For those 15+ year old not in the labour force (29), 29% were students, 14% home-makers and 30% retired. A total of 60 percent of the labour force in Rundu are employed (Martin *et al.*, 2018). Rundu is estimated to have an unemployment rate of 40% which is above the 34% national unemployment rate of 2011.

Agricultural activities are common in the Kavango East region with mostly crop and livestock farming taking place. Rundu and its surrounding rural areas is conducive for crop production due to its suitable soil type for crops, high rainfall, conducive weather conditions and its rich water resources. The common crops produced in the region are wheat and maize while Mahangu production is only concentrated to communal farming. The most common livestock in Kavango East region includes cattle and goats with some farmers also owning sheep (Martin *et al.*, 2018). Besides livestock farming, there are five wildlife farming conservancies within Kavango East region namely the Joseph Mbambangandu, Muduva Nyangana, George Mukoya, Shamungwa and Kapinga Kamwale Conservancies which have both direct and indirect benefits to the local economy of the region's administrative capital city (Martin *et al.*, 2018).

Table 7-3: Primary source of Income Kavango Region **Source:** (Namibia Statistics Agency, 2011)

Main Source of Income	2001	2011
Farming	52 %	43 %
Salaries/wages	21 %	22 %
Remittances	4 %	6 %
Business	14 %	12 %
Pension	5 %	13 %

As indicated in **Table 7-3** above, in terms of household's main sources of income in the Kavango Region in 2011, 43% derived income from farming, 22% from wages and salaries, 6% cash remittances, 12% from business or non-farming activities, and 13% from pensions.

7.2.5 Administration and Governance

Urban areas fall under the direct jurisdiction of the applicable Local Authority and are governed by the Local Authorities Act. On the other hand - settlement areas fall under the jurisdiction of the Regional Council in terms of the Regional Councils Act. The Kavango East Region has five constituencies namely Mashare, Mukwe; Ndiyona, Ndonga Linena, Rundu Rural and Rundu Urban (Ministry of Lands and Resettlement, 2015).

Rundu is currently the only proclaimed town within the region while Ndiyona and Divundu are declared settlements, which means that these settlements will most likely receive Village status in the future. Kayengona; Mabushe; Mukwe; Muroro-Mashare and Omega has all been identified by the then Ministry of Regional, Local Government and Housing and Rural Development (MRLGHRD) as identified settlements/ growth points, which proven feasible, might be upgraded to settlement status in the future.

7.2.6 Land use and ownership

Land tenure in Namibia is based on three main categories of land ownership: private ownership (freehold land), central government (communal areas, resettlement farms and protected parks) and local authorities (urban land) (Ministry of Lands and Resettlement, 2015).

Within the Kavango East Region 38.3% of land is privately owned whereas 5.7% is communal land (**Figure 7-3**). Communal land refers to land being available for communal grazing and cropping areas that is still under jurisdiction of the Traditional Authority and the communal land board with no other land uses occupying the land (Ministry of Lands and Resettlement, 2015).

LAND COVER TYPE	TOTAL AREA KM²	PERCENTAGE COVER %
SSCF – Private	9,199.90	38.3%
Community forest	2,887.68	12%
Communal conservancies	3,086.66	12.8%
National Parks (MET)	7,146.48	29.7%
Tourism enterprises	2.00	0.008%
Local Authorities	170.10	0.7%
NDC farms (Parastatal)	N/A	N/A
Irrigation schemes	81.83	0.3%
Quarantine camp	28.31	0.1%
State forest	N/A	N/A
Communal land (Traditional Authorities)	1,387.61	5.7%
Total Area/Percentage	**23,988.57**	

Note: Data extracted from GIS data obtained from various line Ministries

Figure 7-3: Administration of land within the Kavango East Region

A large portion of the proposed development falls within the Rundu Townlands, which is mostly developed and consists of Residential, Business, Industrial and Public Open Space areas.

7.2.7 Archaeology

In Namibia, heritage resources are protected under the National Heritage Act (No 27 of 2004). In the past, little was known of the archaeological knowledge of the Kavango Region due to lack of research. However, the extent and richness of the archaeological record was uncovered during the last decade. The expansions of known archaeological sites identified along the banks of the Kavango River and its floodplains to Omatako and Khaudom areas was revealed. The archaeological heritage of the Kavango Region is characterised by remnants on history, sacred cultural sites as well as present-day community graves and cemeteries (Welwitschia Archaeological Heritage Solutions, 2019). The subject sites are not expected to be rich in archaeological finds.

7.2.8 Infrastructure and Services

7.2.8.1 Water Supply

Potable water supply to the town is managed by NamWater and the distribution is done by the Town Council, which sells to residents. Water supplied to the town is extracted from the Kavango River on the border between Namibia and Angola and is transported to the two purification plants all situated within 5km distance from the river. The two purification plants supply water as follows: Nkarapamwe purification plant supplies to Rundu Army base, villages, Kehemu, Kaisosi, Safari, New Millennium, Nkarapamwe and Ndama and Rundu Town purification plant supplies to hospitals, schools, industrial area and Sauyemwa, Kasote, Tutungeni and Rainbow locations.

The surrounding villages Mupini/Sikondo, Kayengona and Masivi are supplied with water via boreholes. These schemes are operated by NamWater.

7.2.8.2 Electricity

Electricity supply in the town of Rundu is managed by the Northern Regional Electricity Distributor Company (NORED). Electricity costs in the town are subject to the tariffs charged by NORED in distributing electricity to the town. The average usage of electricity in the country for individual customers is 4-megawatt hour per annum equivalent to 333-kilowatt hour per month. Individuals in the northern regions where Rundu is included uses 3.5-megawatt hour of electricity per annum (292-kilowatt hour per month), which is slightly below the national average of 4-megawatt hour (333-kilowatt hour per month). According to Martin *et al*. (2018), the estimated average electricity usage in Rundu is 3.6 megawatt hour equivalent to 300 kilowatt hour per month.

7.2.8.3 Information and Communication

Access to information is made effective with the population having access to communication Devices. In Rundu, radio and mobile phone remains the most common forms of communication assets owned by households. Approximately 59% and 80% of households in Rundu own radio and mobile phones respectively.

8 PRELIMINARY IMPACT IDENTIFICATION

The potential impacts that could arise as a result of the proposed project have been identified based on existing sources of information and knowledge of the affected environment. Impacts specifically relating to hydrology, social aspects and ecology will be interrogated and analysed in further detail at the ESIA stage. The preliminary list of potential impacts has been used to guide the type of specialist studies required in the ESIA. These preliminary impacts are discussed in **Table 8-3** to **Table 8-24**. Mitigation measures have been outlined, however detailed mitigation measures for each impact identified will be outlined in the ESMP.

8.1 Proposed Assessment Methodology

In assessing the impact of the proposed development, rating scales should be considered. Each issue identified should be evaluated in terms of the most important parameter applicable to environmental management. These include the extent, intensity, probability, and significance of the possible impact on the environment and whether such effects are positive (beneficial) or negative (detrimental). The rating scales to be used are as follows:

Table 8-1: Impact Assessment Rating Scales

CRITERIA	DESCRIPTION			
EXTENT	**National (4)** The whole country	**Regional (3)** Kavango East region and neighbouring regions	**Local (2)** Within a radius of 2 km of the development site.	**Site (1)** Within the development site
DURATION	**Permanent (4)** Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	**Long-term (3)** The impact will continue/last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter.	**Medium-term (2)** The impact will last for the period of the project phase, where after it will be entirely negated	**Short-term (1)** The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
INTENSITY	**Very High (4)** Natural, cultural, and social functions and processes are altered to extent that they permanently cease	**High (3)** Natural, cultural, and social functions and processes are altered to extent that they temporarily cease	**Moderate (2)** Affected environment is altered, but natural, cultural, and social functions and processes continue albeit in a modified way	**Low (1)** Impact affects the environment in such a way that natural, cultural, and social functions and processes are not affected
PROBABILITY	**Definite (4)** Impact will certainly occur	**Highly Probable (3)** Most likely that the impact will occur	**Possible (2)** The impact may occur	**Improbable (1)** Likelihood of the impact materialising is very low

CRITERIA	DESCRIPTION
SIGNIFICANCE	Is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Table 8-2: Description of the significance of impacts

Low impact	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction, or operating procedure
Medium impact	Mitigation is possible with additional design and construction inputs.
High impact	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse
It is important to note that the status of an impact is assigned based on the status quo. Therefore, not all negative impacts are equally significant.	
Significance Rating Scale Points 1-4 Insignificant/low Points 5-8 Significant /Moderate Points 9-12 Very significant/High. Points 13-16 Highly significant /Very high	

The significance of each impact will be rated before and after mitigations measures.

8.2 Anticipated Impacts: Planning and Design Phase

The first step in avoiding and preventing any possible negative impacts associated with any project, should start with the planning and designing phase. Issues to be considered at the planning and design phase of the proposed development are as follows.

8.2.1 Siting of plant infrastructures

The siting of plant infrastructure needs to be carefully considered as some areas such as the area proposed for the new abstraction works as well as the site for the new treatment plant are vegetated and would need to be cleared.

Vegetation should be cleared only where absolutely necessary and if cleared, numbers of protected, endemic and near endemic species removed should be documented. The trees to be protected need to be identified and marked by a specialist in consultation with the contractor. Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry.

8.2.2 Electricity/power availability/sufficiency

The electricity requirement under the scheme will increase at the four main locations. The total estimated power requirement for the scheme is 1027 kW. Applications for additional power supply will be made by the proponent to NORED.

8.2.3 Traffic flow

Traffic is expected to increase once construction commences on site. Due to the pipeline routes being sited within existing road reserves of the Rundu Town Council there will be an impact on traffic flow in the area during construction. Mitigation measures need to be followed to ensure that traffic impacts remain minimal. Wayleaves would need to be applied for by NamWater for the pipelines from the Rundu Town Council.

8.2.4 Land use

Infrastructure such as the proposed new reservoirs which cannot be accommodated on existing NamWater owned sites would require additional land to be acquired for these sites as discussed in Section 2.1.3. The proponent should consult with the landowners and/or traditional authorities or relevant land users to obtain a written land use/leasehold agreement prior to constructing infrastructure. All relevant land permits and leaseholds documents should be obtained from the landowners or authorities prior to commencing with the project.

8.2.5 Climate Change

Namibia is one of the countries which are believed to be hit hardest in terms of climate change induced drought, the country has witnessed devastating effects of climate change in terms of socio-economic impacts on communities. The project must thus ensure that it does not exacerbate the risks of climate change but rather mitigate them. The uncontrolled or unregulated abstraction of water is an example of a potential risk to climate change. The project must thus ensure that adaptation measures are put in place in order to increase the resilience of the infrastructure to be built or rehabilitated to withstand the impacts of climate change.

8.3 Anticipated Impacts: Construction Phase

The construction phase is mostly concerned with the impacts on the biophysical and socio-economic environment that is likely to occur during the construction phase of the development. These potential impacts are likely to be temporary in duration but may have longer lasting effects.

8.3.1 Impact Assessment of Biodiversity Disturbance and Loss

The preparation of the site for the proposed development involves clearing of certain areas on site. These areas to be cleared include the site proposed for the Rundu Purification Plant (6 ha in size) as well as the site at which the new water abstraction works will be located. This may impact the existing biodiversity on these proposed sites. Both sites accommodate large trees and possibly some fauna. During site preparation it should be ensured that only the areas applicable to the project site area are cleared. The trees to be protected need to be identified and marked by a specialist in consultation with the contractor. The layout of the proposed plant should incorporate existing protected trees which may not be removed without a valid permit from the local department of Forestry in Rundu. The impact is not expected to be of such a magnitude and/ or significance that it will have irreversible impacts on the biodiversity and endemism of the area and Namibia at large. The assessment of this impact is presented in **Table 8-3.**

Table 8-3: Assessment of the impacts of the proposed activities on biodiversity disturbance and loss

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**3**	**3**	**3**	**10**
Post-mitigation		**1**	**3**	**2**	**3**	**9**

8.3.1.1 Mitigations and recommendation to biodiversity disturbance and loss

- Vegetation should be cleared only where absolutely necessary and if cleared, numbers of protected, endemic and near endemic species removed should be documented and submitted to the local Department of Forestry.
- All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is essential.
- Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry.
- The local Department of Forestry in Rundu should be consulted with regards to the proper disposal of cleared trees.
- Suitable locations for the contractors lay-down areas and materials camp should be identified and the following should be considered in selecting these sites:

- Previously disturbed areas should be used as far possible.
- Second option should be degraded land.
- Avoid sensitive areas (e.g. rivers/drainage lines).

8.3.2 Impact Assessment of potential pollution to Surface and Groundwater

Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to surface and groundwater contamination, in case of spills and leakages. Leakages from vehicles and machines during construction may also contribute to surface and groundwater contamination. Furthermore, the following activities which may take place during construction will likely contribute to groundwater impacts:

- Site preparation, including placement of contractor laydown areas and storage (i.e., temporary stockpiles, bunded areas etc.) facilities.
- In-situ placement of new soils, altering existing soil-flow processes (i.e., infilling of wetlands or cut-and-fill areas).
- Soil compaction.
- Soil & surface water contamination and sedimentation from the following activities:
  - Leakages from vehicles and machines, and seepage from building materials/stockpiles.
  - Erosion and sedimentation if excavations are left open due to unforeseen circumstances (i.e., bad weather, heat, construction downtime).

The assessment of this impact is presented in **Table 8-4.**

Table 8-4: Assessment of the impacts of the proposed activities on surface and groundwater

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**2**	**2**	**2**	**3**	**9**
Post-mitigation		**1**	**2**	**1**	**2**	**6**

8.3.2.1 Mitigations and recommendation to surface and groundwater

- Careful storage and handling of hydrocarbons on site is essential.
- Workers responsible for the storage and handling of hydrocarbons should be suitably trained to do so and trained on spill prevention (e.g., the use of drip trays) and the handling of potential spills should they occur to be able to ensure implementation on site.

- Potential contaminants such as wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.
- Contaminants such as hydrocarbons should be stored, handled, and managed appropriately. These must be collected on site and disposed at an appropriate facility that is licenced to receive such waste.
- Only excavate areas applicable to the project area.
- Backfill the material in the same order it was excavated to reduce contamination of deeper soils with shallow oxidised soils.
- Cover excavated soils with a temporary liner to prevent contamination.
- Keep the site clean of all general and domestic wastes.
- Exposed soils to be protected using a suitable covering or revegetating.
- Existing roads should be used as far as practical to gain access to the site.
- Have emergency fuel & oil spill kits on site.
- Visual soil assessment for signs of contamination at vehicle holding, parking and activity areas.
- Place oil drip trays under parked construction vehicles.
- Above ground fuel tanks should be located on an impermeable surface that is bunded – with a volume of 120% of the total volume stored.

8.3.3 Impact Assessment of Soil Erosion Impacts

Soil erosion is likely to occur on site given the characteristics of the site. The assessment of this impact is presented in **Table 8-5.**

Table 8-5: Assessment of the impacts of the proposed activities on soil erosion

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**2**	**2**	**7**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.3.3.1 Mitigations and recommendation to soil erosion

- Erosion control measures as outlined in the ESMP should be implemented to ensure that the topsoil is not washed away.
- Checks must be carried out at regular intervals to identify areas where erosion is occurring.

- Appropriate remedial actions as outlined in the ESMP are to be undertaken wherever erosion is evident.

8.3.4 Impact Assessment of Archaeological and Heritage Impacts

The proposed activity is not taking place in an area that has significant archaeological or heritage resources. However, should these be encountered during the construction activities, mitigation measures need to be in place to ensure that these resources are not harmed. The assessment of this impact is presented in **Table 8-6.**

Table 8-6: Assessment of the impacts of the proposed activities on Archaeological and Heritage Impacts

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**2**	**1**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.3.4.1 Mitigations and recommendation to Archaeological and Heritage Impacts

- All works are to be immediately ceased in an affected area should an archaeological or heritage resource be discovered.
- The National Heritage Council of Namibia (NHCN) should advise with regards to the removal, packaging, and transfer of the potential resource.
- Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a "chance find" procedure should be applied as outlined in the ESMP.

8.3.5 Impact Assessment of Health and Safety

Construction activities may cause health and safety risks to people operating on the site. These may include safety risks as a result of construction works as well as the potential spread of HIV/AIDS from contractors during construction. Furthermore, it may result in potential public safety concerns associated with the excavation works for the installation of the water supply network. The assessment of this impact is presented in **Table 8-7.**

Table 8-7: Assessment of the impacts of the proposed activities on health and safety

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**2**	**2**	**7**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.3.5.1 Mitigations and recommendation to health and safety

- Construction workers should be provided with awareness training about the risks associated with the proposed construction work such as hydrocarbon handling and storage, the handling of heavy machinery etc.
- During the works conducted, workers should be properly equipped with personal protective equipment (PPE) such as coveralls, gloves, safety boots, safety glasses etc.
- The contractors should comply with the provisions with regards to health and safety as outlined in the Labour Act (No. 6 of 1992).
- Construction sites should be demarcated and fenced, and public access should not be allowed to the construction sites to prevent injury or accident due to entry onto a construction site.

8.3.6 Impact Assessment of Noise Generation Impacts

Construction activities and the presence of construction vehicles may lead to the generation of noise which could impact the local surrounding residents negatively, if not properly handled. This may pose a disturbance on the surrounding residents. The assessment of this impact is presented in **Table 8-8.**

Table 8-8: Assessment of the impacts of the proposed activities on noise generation

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**2**	**3**	**8**
Post-mitigation		**1**	**2**	**1**	**2**	**6**

8.3.6.1 Mitigations and recommendation to noise generation

- Construction activities should be limited to daytime hours (between 07h00 and 17h00) unless otherwise arranged with community members and businesses in the area.
- No amplified music should be allowed on site.
- Technology such as silencers should be installed on construction machinery, as needed.
- The use of horns as a general communication tool should not be allowed, they should only be used, when necessary, as a safety measure.

8.3.7 Impact Assessment of Dust Generation Impacts

Construction activities and the presence of construction vehicles may lead to the generation of dust which could impact the local residents negatively, if not properly handled. The assessment of this impact is presented in **Table 8-9.**

Table 8-9: Assessment of the impacts of the proposed activities on dust generation

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**2**	**3**	**8**
Post-mitigation		**1**	**2**	**1**	**2**	**6**

8.3.7.1 Mitigations and recommendation to dust generation

- Dust abatement techniques should be implemented e.g., spraying of water on site to reduce dust levels to an acceptable standard.
- The local community should be continuously consulted to ensure that the dust levels are acceptable.
- Residents should be informed prior to construction commencing so that they are aware of the planned construction.
- During high wind conditions the contractor must make the decision to cease works until the wind has settled.
- Stockpiles and sand being transported should be covered with plastic to reduce windblown dust.
- Workers should be provided with dust masks.
- Ensure that drivers adhere to speed limits and that speed limits are strictly enforced particularly for driving on gravel roads (suggested 30 km/h).

8.3.8 Impact Assessment of Waste Generation (Domestic/General and Hazardous) Impacts

Construction activities usually generate wastes which leads to environmental pollution, if not properly handled. This may result in blocked waterways should waste be blown into water pipelines; animals may choke on waste when ingested and additionally it may pose a negative visual impact on the surrounding environment. The assessment of this impact is presented in **Table 8-10.**

Table 8-10: Assessment of the impacts of the proposed activities on waste generation

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**2**	**3**	**8**
Post-mitigation		**1**	**2**	**1**	**2**	**6**

8.3.8.1 Mitigations and recommendation to waste generation

- The construction site should be kept tidy at all times.

- All domestic and general construction waste produced on a daily basis should be cleared and contained.
- No waste may be buried or burned on site or anywhere else.
- Waste containers (bins) should be emptied during and after the construction and the waste removed from site to the municipal waste disposal site.
- Separate waste containers (bins) for hazardous and domestic / general waste must be provided on site.
- Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter.
- No waste may remain on site after the completion of the project.
- The recycling of waste should be considered and implemented as far as possible.
- Hazardous waste:
    - All heavy construction vehicles and equipment on site should be provided with a drip tray.
    - All heavy construction vehicles should be maintained regularly to prevent oil leakages.
    - Maintenance and washing of construction vehicles should take place only at a designated workshop area.
    - Hazardous waste, including emptied chemical containers should be safely stored on sites where they cannot be reached and used by the unsuspecting and uniformed locals for personal use. No waste should be improperly disposed of on sites or its surroundings, i.e., unapproved waste sites
    - A comprehensive list of all potentially hazardous wastes and estimated volumes shall be compiled for all activities. A hazardous materials inventory shall be kept and be readily available for inspection by implementing agencies and relevant authorities.
    - Specifications for storing and handling of all hazardous waste and substances (e.g., fuel and chemicals) shall be adhered to. Specific attention shall be paid to designing the fuel storage sites and control during filling to manage pollution risks.
    - All hazardous waste that cannot be handled safely shall be temporarily stored before being removed to a hazardous waste disposal site by authorised service providers.

- Material Safety Data Sheets (MSDS) shall be used in all cases in assisting in assessing the possible risk and best approach to handling and disposal methods. These shall be available at locations/sites where chemicals are stored and used.
- Hazardous waste is to be disposed at a Hazardous Waste Facility which is licenced to receive such waste.

8.3.9 Impact Assessment of Temporary Employment Creation

The proposed activity may provide employment opportunities for the local people during construction. The assessment of this impact is presented in **Table 8-11**.

Table 8-11: Assessment of the impacts of the proposed activities on temporary employment creation

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Positive**	**2**	**2**	**1**	**2**	**7**
Post-mitigation		**2**	**2**	**1**	**2**	**7**

8.3.9.1 Mitigations and recommendation to temporary employment creation

- Should any job opportunities result, they should be made available to the local people in the area as far as reasonably possible.

8.3.10 Impact Assessment of Disturbance of local residents

Construction activities will result in disturbance to local residents within the areas in which construction will be taking place. The assessment of this impact is presented in **Table 8-12.**

Table 8-12: Assessment of the impacts of the proposed activities on disturbance of local residents

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**2**	**2**	**2**	**3**	**9**
Post-mitigation		**1**	**2**	**1**	**2**	**6**

8.3.10.1 Mitigations and recommendation to disturbance of local residents

- Surrounding residents are to be informed in advance of the intended construction commencement dates.
- Construction should only take place during working hours (07h00 to 17h00).
- Should construction need to take place outside of working hours residents are to be informed in writing (via hand delivered letters to the immediate neighbours) 1 week in advance.

8.4 Anticipated Impacts: Operational Phase

The potential impacts associated with the operational phase of the activities have been identified and assessed in this subchapter. The main impacts identified are; surface and groundwater, noise, waste, health and safety and hazardous substance handling and storage.

8.4.1 Impact Assessment of Soil, Surface and Groundwater

Surface and groundwater impacts may be encountered during the operational phase, especially if development takes place within the rainy season. The operational activities on site should be conducted in a manner to avoid the contamination of surface and groundwater. The assessment of this impact is presented in **Table 8-13**.

Table 8-13: Assessment of the impacts of the activities on soil, surface, and groundwater

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**2**	**2**	**2**	**3**	**9**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.4.1.1 Mitigations and recommendation to soil, surface, and groundwater

- Ensure that surface water accumulating on-site are channelled and captured through a proper storm water management system.
- Monitoring of stormwater systems to ensure that the system operates as per design specifications.
- Ensure the sewer system is monitored for leakages.
- Routine visual inspections of sewer infrastructure and parking areas for signs of soil contamination.
- Have emergency fuel and oil spill kits on site.
- All hazardous substances shall be appropriately stored and secured within well ventilated and covered areas.
- Appropriate bunding whereby the bund can accommodate 120% of the content of the stored materials will also be provided where required.
- Bunding, concrete slabs and/or other protective measures should be installed where hazardous materials are handled.
- Ensure that the staff are informed and have information pertaining to the management of spills or ingestion.

8.4.2 Impact Assessment of Noise

The operational activities may result in associated noise production. The assessment of this impact is presented in **Table 8-14**.

Table 8-14: Assessment of the impacts of the activities on noise

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.4.2.1 Mitigations and recommendation to noise

- Noise levels during operational activities should be kept within the allowable standards for urban areas.
- Noise levels should adhere to the South African National Standards (SANS) restrictions on noise.
- Work hours should be restricted to between 07h00 and 17h00 where the use of heavy equipment, power tools and the movement of heavy vehicles is required.
- Noisy equipment should be shut down when not in use (when not needed) to avoid unnecessary noise on site.
- Workers performing noisy tasks should be rotated regularly (work on shifts) to avoid exposing them to excessive noise for a long period of time in a day.
- Workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure.
- Workers should ensure that they wear the necessary PPE at all times on work sites

8.4.3 Impact Assessment of Waste Solid and liquid

Various types of wastes will be produced from the site. These wastes will include general/domestic waste as well as sludge which will be produced from the plant. The sludge should be treated and disposed of in an appropriate manner to reduce the risk of pollution on site. The assessment of this impact is presented in **Table 8-15**.

Table 8-15: Assessment of the impacts of the activities on waste

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.4.3.1 Mitigations and recommendation to waste

- The solid sludge produced should be disposed at a registered waste landfill site.
- All domestic and hazardous waste will be removed to an appropriate waste site that is suitable to receive such waste.
- No waste should be buried or burned.
- General Waste: Includes waste paper, plastic, cardboard, harmless organic (e.g. vegetables) and domestic waste.
- No littering will be allowed. The plant area will be kept free of waste at all times.
- Provide sufficient waste bins at worksites. Make sure that all waste is removed from the worksites.
- Hazardous Substances include: sewerage, fuels, lubrication oils, hydraulic and brake fluid, solvents, paints, anti-corrosives, insecticides and pesticides, chemicals, acids etc. It should be disposed of at designated hazardous disposal sites.
- Contaminated soil should be stored in drums and taken to the nearest appropriate waste dumpsite.
- Do not change oil on uncovered ground. Drip trays will be used to catch oil when vehicles are repaired in the field.
- Used oil and hydraulic fluids will not be discarded on the soil or buried. It will be removed from site and taken back to an appropriate waste site.
- In the event of a hazardous spill:
    - Immediately implement actions to stop or reduce the spill.
    - Contain the spill.
    - Arrange implementation of the necessary clean-up procedures.
    - Collect contaminated soil, water and other materials and dispose it at an appropriate waste dumpsite.
    - Used solvents and grease should be stored in drums or other suitable containers. It should be sealed and recycled or disposed at an appropriate disposal site.
- Hazardous waste should not be burnt.

8.4.4 Impact Assessment of Health and Safety

Operational activities may cause health and safety risks to people operating on the site. The assessment of this impact is presented in **Table 8-16.**

Table 8-16: Assessment of the impacts of the proposed activities on health and safety

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.4.4.1 Mitigations and recommendation to health and safety

- Operators at the site should be provided with awareness training about the risks associated with the associated operational activities.
- During the works conducted, workers should be properly equipped with personal protective equipment (PPE) such as coveralls, gloves, safety boots, safety glasses etc.
- All open water structures that are on ground level should be fitted with handrails to prevent the possibility of operators falling into these structures.
- Chlorination equipment must be contained in the appropriate way in a separate building away from other chemicals.
- Chlorine gas should be stored in accordance with the MSDS for example storage within a well-ventilated area.
- All relevant safety signage and equipment must be available on site.

8.4.5 Impact Assessment of Hazardous Substance Handling and Storage

Hazardous substances to be used on site such as Potassium Permanganate (granule), Polyelectrolyte (granule), Soda Ash (granule), Chlorine (gas), Ammonium Sulphate (granule) must be used and stored in accordance with the relevant health and safety standards. The assessment of this impact is presented in **Table 8-17.**

Table 8-17: Assessment of the impacts of the proposed activities on Hazardous Substance Handling and Storage

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**3**	**2**	**2**	**8**
Post-mitigation		**1**	**2**	**1**	**1**	**4**

8.4.5.1 Mitigations and recommendation to Hazardous Substance Handling and Storage

- Emergency preparedness plans, safety equipment and emergency clean up procedures must be in place in case of a spillage.

- All hazardous substances shall be appropriately stored and secured within well ventilated and covered areas. Appropriate bunding whereby the bund can accommodate 110% of the content of the stored materials will also be provided where required.
- Hazardous waste, including emptied chemical containers (e.g., liquid chlorine, sodium hypochlorite) and other chemicals used for disinfection in the operational phase should be safely stored on site where they cannot be reached and used by the unsuspecting and uninformed locals for personal use.
- No waste should be improperly disposed of on site or its surroundings, i.e., unapproved waste sites.
- A full list of all hazardous fuels and chemicals stored on site should be kept by the site supervisor, including accompanying volumes, locations and MSDSs.
- All hazardous substances should be stored and handled in accordance with the MSDSs.

8.4.6 Impact Assessment of Increased energy usage

The new infrastructure to be constructed will have an increased electricity demand. The assessment of this impact is presented in **Table 8-18.**

Table 8-18: Assessment of the impacts of the proposed activities on increased energy usage

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.4.6.1 Mitigations and recommendation to increased energy usage

- The proponent is to investigate the feasibility of use of alternative forms of energy such as solar power.

8.4.7 Impact Assessment increased water supply to the town and surrounding villages

The proposed development will result in an increase of water supply to the town and surrounding villages. This may result in a number of benefits including improved health, time availability for other chores instead of fetching water. Reduced incidences of human-crocodile conflict or interaction as the residents do not need to fetch water from the river. The assessment of this impact is presented in **Table 8-19.**

Table 8-19: Assessment of the impacts of the proposed activities on increased water supply to the town and surrounding villages

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	

Pre-mitigation	**Positive**	**2**	**3**	**1**	**2**	**8**
Post-mitigation		**2**	**3**	**1**	**2**	**8**

8.4.7.1 Mitigations and recommendation on increased water supply to the town and surrounding villages

- No mitigation measures proposed.

8.5 Anticipated Impacts: Decommissioning Phase

The decommissioning impacts are assessed for the proposed infrastructure that will be decommissioned as part of the project as well as in the case where the newly constructed facilities become decommissioned in future. The impacts identified are outlined below.

8.5.1 Impact Assessment of Noise Generation Impacts

Decommissioning activities and the presence of vehicles and machinery may lead to the generation of noise which could impact the local surrounding residents negatively, if not properly handled. This may pose a disturbance on the surrounding residents. The assessment of this impact is presented in **Table 8-20.**

Table 8-20: Assessment of the impacts of the proposed activities on noise generation

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.5.1.1 Mitigations and recommendation to noise generation

- Decommissioning activities should be limited to daytime hours (between 07h00 and 17h00) unless otherwise arranged with community members and businesses in the area.
- No amplified music should be allowed on site.
- Technology such as silencers should be installed on construction machinery.
- The use of horns as a general communication tool should not be allowed, they should only be used, when necessary, as a safety measure.

8.5.2 Impact Assessment of Dust Generation Impacts

Decommissioning activities and the presence of vehicles may lead to the generation of dust which could impact the local residents negatively, if not properly handled. The assessment of this impact is presented in **Table 8-21.**

Table 8-21: Assessment of the impacts of the proposed activities on dust generation

		Ratings	Significance

	Impact Type	Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.5.2.1 Mitigations and recommendation to dust generation

- Dust abatement techniques should be implemented e.g., spraying of water on site to reduce dust levels to an acceptable standard.
- The local community should be continuously consulted to ensure that the dust levels are acceptable.
- Residents should be informed prior to decommissioning commencing so that they are aware of the planned construction.
- During high wind conditions the contractor must make the decision to cease works until the wind has settled.
- Stockpiles and sand being transported should be covered with plastic to reduce windblown dust.
- Workers should be provided with dust masks.

8.5.3 Impact Assessment of Waste Generation Impacts

Decommissioning activities may generate wastes which leads to environmental pollution, if not properly handled. This may result in blocked waterways should waste be blown into water pipelines; animals may choke on waste when ingested and additionally it may pose a negative visual impact on the surrounding environment. The assessment of this impact is presented in **Table 8-22.**

Table 8-22: Assessment of the impacts of the proposed activities on waste generation

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.5.3.1 Mitigations and recommendation to waste generation

- The site should be kept tidy at all times.
- All domestic and general waste produced on a daily basis should be cleared and contained.
- No waste may be buried or burned on site or anywhere else.

- Waste containers (bins) should be emptied during and after the construction and the waste removed from site to the municipal waste disposal site.
- Separate waste containers (bins) for hazardous and domestic / general waste must be provided on site.
- Labourers should be sensitised to dispose of waste in a responsible manner and not to litter.
- No waste may remain on site after the completion of the project.
- The recycling of waste should be considered and implemented as far as possible.
- Different types of waste i.e. general, hazardous, e-waste is to be disposed of at the appropriate facilities that are registered to receive that kind of waste.

8.5.4 Impact Assessment of Soil, Surface and Groundwater

Surface and groundwater impacts may be encountered during the decommissioning phase, especially if development takes place within the rainy season. The operational activities on site should be conducted in a manner to avoid the contamination of surface and groundwater. The assessment of this impact is presented in **Table 8-23**.

Table 8-23: Assessment of the impacts of the activities on soil, surface, and groundwater

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**2**	**2**	**2**	**3**	**9**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.5.4.1 Mitigations and recommendation to soil, surface, and groundwater

- Contaminated runoff from the various decommissioning activities should be prevented from entering any surface or ground water bodies.
- Disposal of waste from the various activities should be properly managed.
- Contain the newly exposed soil using soil bags, soil savers or suitable geotextile.
- Vegetate areas where heavy machinery was used to excavate the soils to prevent erosion.
- Establish where excavated soils will be placed, and if the area is suitable to receive the excavated soils.
- Cover excavated soils with a suitable cover / temporary liner to prevent contamination.
- Only excavate areas applicable to the project area.

- Have emergency fuel and oil spill kits on site.

8.5.5 Impact Assessment of Health and Safety

Decommissioning activities may cause health and safety risks to people operating on the site. The assessment of this impact is presented in **Table 8-24.**

Table 8-24: Assessment of the impacts of the proposed activities on health and safety

	Impact Type	Ratings				Significance
		Extent	Duration	Intensity	Probability	
Pre-mitigation	**Negative**	**1**	**2**	**1**	**2**	**6**
Post-mitigation		**1**	**1**	**1**	**1**	**4**

8.5.5.1 Mitigations and recommendation to health and safety

- Workers should be provided with awareness training about the risks associated with the proposed decommissioning activities.
- During the works conducted, workers should be properly equipped with personal protective equipment (PPE) such as coveralls, gloves, safety boots, safety glasses etc.
- The contractors should comply with the provisions with regards to health and safety as outlined in the Labour Act (No. 6 of 1992).
- Sites should be demarcated, and public access should not be allowed to the construction sites to prevent injury or accident due to entry onto a construction site.

9 TERMS OF REFERENCE FOR THE ESIA

This Terms of Reference for the ESIA have been compiled in terms of the content requirements listed in Section 9 of EIA Regulations (2012), and includes:

(a) A description of all tasks to be undertaken as part of the assessment process, including any specialist to be included if needed;

(b) An indication of the stages at which the Environmental Commissioner is to be consulted;

(c) A description of the proposed method of assessing the environmental issues and alternatives; and

(d) The nature and extent of the public consultation processes to be conducted during the assessment process.

(f) A thorough capacity assessment of the public entities in charge of ESA enforcement and oversight, including how they are decentralized in the project implementation regions/jurisdictions.

(g) Comprehensive Culturally appropriate and accessible Grievance redress mechanisms including the cost estimates.

(h) Evidence of stakeholder's consultation

In addition, this section provides the proposed contents of the ESIA.

9.1 Tasks proposed to be undertaken during the ESIA phase

9.1.1 Specialist Studies

During the ESIA Phase, specialist assessments will be undertaken, wherein the significance of the potential impacts will be assessed, and recommendations will be made for mitigation measures. They will compile standalone specialist reports. The specialist disciplines that have been identified as relevant to the project are discussed below:

- Social – The positive impact associated with the project includes the improved availability of water of increased quantity and quality to the residents of the town and associated surrounding villages. The potential negative social impacts of the construction phase will impact on the livelihoods of the businesses operating along and people living along the proposed pipeline routes. The cumulative impact on the disruption of business activities and the resultant livelihoods is proposed to be assessed in more detail in the assessment phase.

- Biodiversity (terrestrial and aquatic ecology) – The Kavango River is rich in diverse biota which is essential to the rural economy of the population. The ecosystem is dependent on the hydrological cycle. It is proposed that the impact of increased abstraction related to the fauna and flora of the river be assessed in more detail in the assessment phase.
- Hydrological assessment – The project involves the increase in abstraction of water from the Kavango River. Namibia has an obligation under OKACOM to protect the quality and quantity of the river water supply in particular with regards to the Okavango Delta in Botswana. It is proposed that the impacts associated with the total abstraction volumes in relation to the flow of the river as well as the cumulative impact of the increased abstraction on the Okavango Delta be assessed in more detail in the assessment phase.

Should additional specialist studies be required due to comments and information received during the Draft Scoping Report comment period, the relevant specialists will be appointed to undertake these studies.

The general terms of reference that apply to the specialist studies are as follows:

- Describe the receiving environment and baseline conditions of the existing study area and identify sensitive areas that would need special consideration.
- Review the Scoping phase Comments and Response Report to ensure that all relevant issues and concerns raised by I&APs, relevant to fields of expertise, are addressed.
- Confirm all environmental and social aspects have been identified in the scoping report. Assess the potential impacts of the proposed project activities and facilities, including any associated cumulative impacts.
- Describe the legislative, permit, policy and planning requirements including requirements by AfDB applicable to the project.
- Identify areas where issues could combine or interact with issues likely to be covered by other specialists, resulting in aggravated or enhanced impacts.
- Indicate the reliability of information utilised in the assessment of impacts as well as any constraints to which the assessment is subject (e.g. any limitations and assumptions).
- Identify and assess alternatives that could avoid or minimise impacts.
- Specialists shall use the assessment methodology for impact prediction and assessment as outlined in Section 8.1.

- Specialists need to consider all (relevant) project execution phases when conducting their respective assessments – i.e. construction, operations and decommissioning phases.
- Specialist reports to include an Executive Summary.

The methodologies to be followed by specialists are as follows:

Terrestrial and Aquatic ecology	• The scope includes both vertebrate fauna and flora (aquatic and terrestrial). Vertebrate fauna would include amphibians, reptiles, mammals (small and large) and birds. Flora would include grass, trees and shrubs. • Perform a comprehensive literature review on the existing as well as "recent" relevant publications pertinent to the project. It will include vertebrate fauna and flora (aquatic and terrestrial) known or expected to occur within and along the Kavango River site. This would include rare and endangered (R&E), threatened, protected, endemic, etc. species as determined by the national and International legal status for such species. • Identify important species (vertebrate fauna and flora) of conservation value – i.e. endemic, rare, threatened and endangered species, and Species of Conservation Concern. • Identify vulnerable, threatened or endangered ecological communities and/or habitats. • Compile an Impact Assessment Report, including an assessment of the local natural capital and ecosystem services. • Compile Biodiversity Management Plan to be included in the ESMP
Social	• Delimitation of the study area of the project (geographical scope), based on the typology and nature of the project, and the characteristics of the receiving social environment where it will be developed

	• Secondary data collection (literature review) will be based upon a comprehensive review and analysis of existing information of the following sources: (i) project design information; (ii) research of varied thematic bibliography, including data collected from ESIAs for other projects in the same regions, and other relevant studies and municipal plans; (iii) analysis of topographic and thematic cartography available (such as project specific LiDAR data, land use, cartography produce in the scoping study); and (iv) other data, such as statistic data. The purpose of this survey should not be only to gather a preliminary baseline data about the study area in order to understand the sensitivity of the affected social environment, but also to prepare the basic information that will be used for the field work. The following tasks are proposed: • Interviews will be carried out with local, regional and district authorities, and community leaders. These will be in the form of semi-structured interviews around the following topics (without prejudice to other topics that may be identified and/or substituted in the course of work): population and demographic data, population´s socio-professional structure; economic relations, health and gender issues, symbolic relations, and other relations, between the populations and the territory; current forms of use of natural resources in access to services; and current and potential sources of conflict over the use of natural resources. • Interviews held with a diverse set of key stakeholders from the local population. These interviews will be organised in a collaborative manner with regional and local authorities as well as with local traditional authorities and will seek to ensure the views of all groups, including the most vulnerable (in terms of gender, age and socio-occupational occupation), main health issues and the indigenous peoples. The information to be collected will be organised into a questionnaire following a logical structure, but sufficiently open to accommodate new information that the respondents consider relevant. Updated information will be sought by introducing specific questions to support especially the social and community baseline, understanding the current energy context and communities' expectations about the project. • Analysis of data at both the macro level - with respect to (i) population and population dynamics; (ii) economic activities; (iii) access to water; (iv) cultural aspects (i) identification of the land use; (ii) identification of infrastructures that may be directly affected by the project, such as road network, power lines, etc.

	• Impact assessment and recommendations. • Input with regards to the Grievance Redress Mechanism.
Hydrology	• A thorough investigation of all available literature pertaining to the site hydrology will be gathered. This will include, but not be limited to, the following: • Technical reports and studies carried out on the site. • Meteorological data for the site such as rainfall, runoff and evaporation. • Academic studies pertaining to the hydrology of the site. • Acquirement of any existing topographical survey data of the site. • The layout of the new development will be studied and assessed. • Municipal and National legislation applicable to the project will be obtained and reviewed. • A publicly available digital elevation model (DEM) of the site will be obtained from the Advanced Land Satellite Observation (ALSO) database • A site visit will be carried out by the hydrologist that will be executing the hydrological analysis. • The following will be assessed on the site visit: o Topography of the area and prominent topographical features. o Surface characteristics of the catchment such as slope, land use, surface cover, soils, and vegetation. o All drainage lines, streams and rivers will be examined to understand baseflow, streamflow, channel profile, slope and linings. o Any surface water features within the vicinity of the site will be investigated such as pans and dams. o All existing stormwater management infrastructure will be measured and recorded. o The footprint of the proposed development will be walked over and assessed • All hydrological risks from construction and operational phases will be identified. • Mitigations to reduce the risks will be proposed.

9.1.2 Consultation with Environmental Commissioner

The table below outlines the key stages of consultation with the Environmental Commissioner.

Submission of Application to Environmental Commissioner	The Application for Environmental Clearance Certificate for the proposed development was submitted to the Environmental Commissioner on 14 April 2022.
Comment on Draft Scoping Report	The MEFT: DEAF and MAWLR will be notified of the release of the Draft Scoping Report for public comment.
Comment and decision on Final Scoping Report	In terms of Regulation 12 of GN 30, the Environmental Commissioner must either accept or reject the Scoping Report. The Environmental Commissioner must also decide if the proposed listed activity requires a detailed assessment. If so, the Environmental Commissioner must in writing notify the Proponent to prepare an assessment report, and also notify the MAWLR.
Comment on Draft ESIA	Should the Final Scoping Report and Terms of Reference for ESIA be accepted, the Draft ESIA will be compiled. MAWLR will be requested to approve the Draft ESIA after it was made available for public comment. This is to ensure that the Final ESIA contains sufficient information for MEFT: DEAF to make an informed decision.
Comment and decision on Final ESIA	In terms of Regulation 18 of GN 30, the Environmental Commissioner must within 7 days from the date of reviewing the application - (a) in writing notify the proponent and the competent authority of the decision on the application; and (b) on payment of the fee prescribed in Appendix 2 to the regulations, and subject to conditions, if any, issue the Environmental Clearance Certificate.

9.1.3 Reporting and Public Participation

The draft ESIA report and ESMP including specialist recommendations and findings, will be compiled once the Scoping Report has been accepted by Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF). The Assessment Report will incorporate comments and/or changes recommended by the authority. The contents of the Draft Assessment Report are proposed in Section 9.2. The Draft ESIA Report will be circulated for a 14-day public comment period. The ESIA Report and ESMP will be finalised based on input received during the public comment period, and responses will be circulated to all registered I&APs. The ESIA Report and ESMP, will be submitted to the MEFT: DEAF for decision-making. A copy will also be submitted to the Ministry of Agriculture, Water and Land Reform (MAWLR) for consideration. Once a decision has been made, registered I&APs will be notified whether an Environmental Clearance Certificate has been granted or refused.

9.2 ESIA Report Content

It is proposed that the Assessment Report will have the following contents:

- Preliminaries
    - Non-Technical Summary
    - Cover page with name of project, reference number and date
    - Client's name and contact details
    - List of authors and credentials
    - Executive summary
    - List of abbreviations, acronyms
    - Glossary of terms
    - Acknowledgements
    - Table of contents, including appendices, tables, figures.
- Introduction
    - Description of proposed project
    - Motivation, rationale for the project
    - General environmental background
    - Structure of the DESIA Report (road map)
- Approach and methodology

  - Terms of reference for the DESIA
  - DESIA process followed
  - Public participation process followed
  - Assumptions, limitations and constraints
- Public issues and concerns
  - Group and summarise stakeholder issues and concerns
  - Provide detailed issues and responses report in an appendix.
- Legal and Planning framework
  - Expand on Scoping Report
- Description of project and alternatives
  - Location, site, power line routes, pipeline routes, road routes and alternatives;
  - Major project components and alternatives;
  - Major inputs – raw materials e.g., power, water, construction materials, chemicals, labour, traffic, etc.;
  - Major outputs – solid and liquid wastes, gaseous emissions, dust, noise, products, etc.;
  - Project timetable per phase.
- Description of affected biophysical and socio-economic environments.
- Impact assessment (for each project phase)
  - Direct, indirect; positive, negative;
  - Nature of impact – temporary, permanent; reversible/irreversible; synergistic, antagonistic, cumulative;
  - Magnitude and scale – sphere of influence/impact;
  - Duration – once-off, construction, life of project, persistent;
  - Probability of occurrence;
  - Significance;
  - Confidence limits;
  - Residual impact – after mitigation applied;
  - Comparative evaluation of alternatives;

- Cumulative impacts;
- Stakeholder concerns

- Recommended mitigation measures
  - Provide suggestions for mitigation that are feasible, practical, realistic and agreed with NamWater. The recommended mitigation measures will form the basis of the ESMP.

- Conclusions
  - Compare alternatives and trade-offs;
  - Summarise the main impacts and residual effects after applying mitigation;
  - List the risks and uncertainties relating to the findings and the implications for decision-making;
  - Recommendation to issue Environmental Clearance Certificate.

- Supporting information
  - List of references

- Appendices – all specialist studies, public participation documentation.

10 CONCLUSION

The proposed project aims to meet the ever-growing demand for water in Rundu town. This Final Scoping Report has been compiled to meet the requirements of the EMA (2007). This report discusses the ESIA process and identifies the alternatives under consideration and provides an overview of the baseline environment of the study area.

The Plan of Study for the ESIA is presented in Chapter 9 and outlines how the ESIA is proposed to be undertaken. Specialist studies have been identified on the key potential impacts associated with the project for which sufficient information is not available to assess the impacts in detail. Should any additional specialist studies be required due to comments I&APs, these studies will be undertaken during the ESIA phase.

The Final Scoping Report is herewith submitted to MEFT: DEAF for consideration and decision-making, before commencing with the ESIA phase.

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APPENDIX A

CV OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

MAGNUS VAN ROOYEN
Technical Director

CORE SKILLS

- Environmental Impact Assessments
- Scoping Reports
- Preliminary Environmental Assessment
- Mining Right and Applications
- Environmental Management Programmes
- Strategic Environmental Assessments
- Wildlife Management Plans

DETAILS

Qualifications

- BSc – Botany & Zoology
- B.SC Honours - Botany
- Specialist Student
- Post Graduate Diploma in Teaching
- Masters Degree: Environmental Management

Memberships

- SACNASP
- International Association of Impact Assessors

Languages

- English - fluent
- Afrikaans- fluent
- German – fair
- Dutch – fair
- Zulu - adequate

PROFILE

In addition to holding a Masters Degree: Environmental Management, Magnus also holds a BSc degree in Botany and Zoology, an Honours Degree in Botany and a Post Graduate Certificate in Education.

Magnus has 13 years' experience in projects involving Environmental Impact Assessments in various developmental sectors (Mining and Agricultural Sector, National Roads, Pipelines, Dams, and Residential Developments), conducting of Specialist Biodiversity Assessments associated with Environmental Impact Assessments and Project Feasibility Studies. He has experience in the compilation of Resettlement Policy Framework Plans associated with infrastructure development projects.
Magnus has experience in working on various private and public sectors as well as rural and urban environments in various countries.
His expertise lies within the mining sector where he has gained extensive exposure to all the aspects of mining projects from the pre-feasibility, prospecting, environmental impact assessment

Magnus has experience in the following areas:

- Environmental Impact Assessments
- Scoping Reports
- Preliminary Environmental Assessment
- Mining Right and Permit Applications
- Environmental Management Programmes
- Strategic Environmental Assessments
- Wildlife Management Plans

WORK EXPERIENCE

Year	Employer	Position	Role and Responsibility
2007 – 2020	JG Afrika (Pty) Ltd	Executive Associate	Project Management of an environmental contingent of 4 people and conducting Environmental Impact Assessments
2006 – 2007	JG Afrika (Pty) Ltd	Environmental Scientist	Conducted a wide range of infrastructure related Environmental Impact Assessments
2002 – 2005	Department of Conservation Ecology, University of Stellenbosch	Biodiversity Researcher	Conducted field work, sampling, laboratory work and logistics associated with two projects within the Conservation Ecology Department
2002 – 2005	Department of Botany and Zoology, University of Stellenbosch	Junior Lecturer in Botany	Lectured Botany practical component of the first-year Natural Science Degree
2001 – 2002	Paul Roos Gymnasium	Biology Teacher	Teaching the South African Biology curriculum to high school students

Biodiversity Assessment Projects	**<u>Biodiversity Assessment Projects</u>** **Mamatwan Tailings Facility** Biodiversity and Wetland Assessment for the site to be used for the establishment of the new tailings facility on the South32 Mamatwan Manganese Mine near Hotazel. **Hillside Aluminum Desalination Plant** Biodiversity Screening Assessment for the infrastructure network associated with the South32 Hillside Aluminum Desalination Plant in Richards Bay. **Lichtenburg Siding Expansion** Biodiversity Assessment for the proposed expansion of the Lichtenburg Cement Siding, North West Province. **Nacala Dam Project** Riparian Vegetation Study for the Ecological Reserve Determination Specialist Study for the Environmental Impact Assessment for the Nacala Dam Project in Mozambique. **National Route N8** Vegetation Specialist Study for the Environmental Impact Assessment for the National Route N8. National Route N2 uMgeni Interchange ImprovementsEnvironmental Impact Assessment for proposed improvements to the uMgeni Road Interchange and the National Route N2. The project included an extensive public participation process within the city of Durban, KwaZulu-Natal during the process. **Qudeni Link Road** Vegetation Specialist Study for the Environmental Impact Assessment for the Qudeni Rural Link Road. **Municipal Landfill Site Identification** Negative mapping and ground truthing for the options analysis for the identification of a District Municipality Landfill Site.
Port Related Projects	**Pier 1 Phase 2 expansion** Environmental Impact Assessment for proposed expansions to Pier 1 within the Durban Harbour. Locomotive Turning Table in the Port of Richards Bay Environmental Impact Assessment for proposed Locomotive Turn Table in within the Port of Richards Bay. **Rail line construction in the Port of Richards Bay** Environmental Impact Assessment for proposed additional rail line into the Richards Bay Coal Terminal in the Port of Richards Bay.

	Environmental Monitoring – RME Projects Durban Harbour Environmental Monitoring Duties for all the RME construction projects within the Durban harbour. **Ore Loading Facility at Kalia in Guinea** Environmental Impact Assessment for the proposed Ore Loading Facility in Kalia in Guinea, West.
Roads Projects	**National Route N2 uMgeni Interchange Improvements** Environmental Impact Assessment for proposed improvements to the uMgeni Road Interchange and the National Route N2. The project included an extensive public participation process with a range of public and private sector stakeholders. **National Route N11 upgrade** Environmental Impact Assessment for proposed upgrade of the National Route N11. The project included a public participation process with a range of public and private sector stakeholders as well as specialist studies associated with the river crossings. **National Route N2 improvement and upgrade** Environmental Impact Assessment for proposed upgrade of the National Route N2. The project included a public participation process with a range of public and private sector stakeholders as well as specialist studies associated with the river crossings. **National Route N3 Chota Motala Interchange Environmental Audits** Environmental Monitoring for the construction of the Chota Motala Interchange on the National Route N3. N**ational Route R30 Environmental Audits** Environmental Monitoring for the construction of the National Route R30.
Agricultural Projects	**uMngano Community Dairy Development Project** Environmental and Social Impact Assessment for the Development of a 200ha dairy for the uMngano Community in KwaZulu-Natal, South Africa. **uMngano Community Vegetable Project** Environmental and Social Impact Assessment for the Development of a 180ha vegetable growing project for the uMngano Community in KwaZulu-Natal, South Africa. **Sundays River Citrus Project** Environmental and Social Impact Assessment for the Development of a 100ha citrus project in the Sundays River Valley in the Eastern Cape, South Africa.
Water Projects	**Nacala Dam project in Mozambique for the Millennium Challenge Corporation** Environmental and Social Impact Assessment for the Nacala Dam project in Nacala, Mozambique. The study included the management of a range of specialist studies which included; biodiversity (fauna and flora) assessments, health impact assessments, social impact assessments, a hydrocensus, geotechnical investigation and an ecological flow requirement assessment. The project was conducted under the auspices

	of the Millennium Challenge Corporation. **Mpofana Bulk Water Supply Scheme Environmental Impact Assessment for the Bulk Water Supply Scheme** which included an extensive public facilitation process with affected landowners and other specialist studies. **KwaHlokohloko Rural Water Supply Scheme Environmental Impact Assessment for the Rural Water Supply** Scheme which included an extensive public facilitation process with the rural landowners and tribal leaders. **Conservation Management Plans** **Ndumo Game Reserve Management Plan** Compilation of the Management Plan for the KwaZulu-Natal Wildlife Ndumo Game Reserve in northern KwaZulu-Natal. The compilation was conducted in accordance to the National Environmental Management: Protected Areas Act (No 57 of 2003).
Mining Projects	Uithoek Colliery for Miranda Mineral Holdings Environmental Impact Assessment for the establishment of the Uithoek Colliery including the management of a range of specialist studies which included a hydrological and geohydrological assessment, a biodiversity assessment, a social and heritage assessment and a repatriation plan for residents on the site. **Burnside Colliery for Miranda Mineral Holdings** Environmental Impact Assessment for the establishment of the Burnside Colliery including the management of a range of specialist studies which included a hydrological and geohydrological assessment, a biodiversity assessment, a social and heritage assessment and a repatriation plan for residents on the site. **Ultimate Goal Colliery for Corobrik (Pty) Ltd** Environmental Impact Assessment for the establishment of the Ultimate Goal Colliery including the management of a range of specialist studies which included a hydrological and geohydrological assessment, a biodiversity assessment, a social and heritage assessment and a repatriation plan for residents on the site. **Klipwaal Gold Mine for Miranda Mineral Holdings** Environmental Due Diligence assessment on the Klipwaal Gold Mine which included an assessment of completed and required rehabilitation, a contaminated land liability assessment and an evaluation of the structure and the possible impact of the slurry dams. **Afrimat Quarries Compliance Audits** Compliance audits and Due Diligence assessments of the Afrimat Quarry operations in South Africa. These audits are conducted on a two yearly basis. **Private and Public Sector Development Projects** Provincial Legislature Precinct Environmental and Social Impact Assessment for the proposed Provincial Legislature Precinct. This study consisted of a large public facilitation component and extensive engagement with private and public sector stakeholders.

	Camps Drift Canal Mixed Use Development Environmental Impact Assessment for proposed improvements to the uMgeni Road Interchange and the National Route N2. The project included an extensive public participation process within the city of Durban, KwaZulu-Natal during the process. **Tiger Lodge Development** Environmental Impact Assessment for the proposed Tiger Lodge Tourism Development. **Paradise Lodge Development** Environmental Impact Assessment for the proposed Paradise Lodge Tourism Development.

DECLARATION

I, Magnus Van Rooyen hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature: **Date: 27/02/2021**

Michael Cloete

GIS and Environmental Consultant

CORE SKILLS

- Spatial Analysis
- Office Administration
- Database management
- GIS Data manipulation and analysis

DETAILS

Qualifications:

Bachelor of Science Geo-Information Science Honours

Languages

- Home Language: Afrikaans: Read, write, and understand - Excellent
- Other Languages: English: Read, write, and understand - Excellent
- German: Read, and write - Satisfactory

Countries Worked In

- Namibia
- South Africa

PROFILE

Michael is an Environmental and Geographic-Information Science consultant at GCS Water and Environmental Engineering (Pty) Ltd and has been working for GCS since the end of January 2021. Studied Geo-Information Science with Geography and Environmental Studies. He has experience helping on many environmental impact assessments and scoping projects. He has previously worked with many software's for database management like Microsoft Access or SQL and also skills in ArcMap, Envi, QGIS and also Microsoft visual studio for programming.

Areas of Expertise:
Cartography and mapping, spatial analysis, database management, office administration, environmental impact assessment and environmental scoping.

Work Experience

Period	Employer	Position	Role/ Responsibility
Holiday job 2014-2015	Supreme Car Wash	Supervisor and driver	Manage/supervise staff, interact with customers, handle money and inventory, and drive vehicles.
Holiday job 2016 till present	Namakwa Take Away	Administrative assistant (family business)	Assist with administration duties, ordering of stock, managing staff.
2017 June to July	Cronje & Co legal practitioners	Messenger	Deliver and retrieve legal documents between clients, lawyers, and respective businesses. Interact with clients and various court officials and legal representation.
2020 December	Kloppers legal practitioners	Receptionist and messenger	Office management of inventory and legal documents and set up meetings with clients, answer phone calls.

Project Experience

Year	Client	Project Description	Role/Responsibility
2021	MTC	08everyone proposed tower construction public participation across the country	Hand out letters to residents for public meeting assist with public participation process for environmental impact assessment
2021	MTC	Compliance monitoring	Call Regional offices to obtain comments for reports, project administration for environmental impact assessment
2021	Osona Village	Compliance monitoring	Site visit and take photos for compliance report, assist with environmental audit and compliance monitoring
2021	Namdeb Diamond Coorporation, Lüderitz	Bird sanctuary construction	Assist with public participation process for environmental impact assessment
2021	Nampower	Environmental assessment for the subdivision and consolidation of erven in Tsumeb	Compile and send out letters to I&AP's, assist with public participation process
2021	Famestone Marble mine	Compliance proposal	Compile draft proposal reports for environmental compliance monitoring
2021 - 2022	Powercom	Proposed telecommunication towers	Assist with public participation process of the Environmental impact assessment and map out locality of proposed towers
2021	Epangelo Mining	Environmental impact assessment for exclusive prospecting license in Erongo region	Engagement with surrounding farm owners as part of public participation process for environmental impact assessment
2021-2022	Tsandi Village Council	Re-alignment of street in Tsandi Village in Omusati region	Assist with background information documents and adverts for the public participation process and scoping report compilation
2021 - 2022	Walvis Bay Municipality	Environmental impact assesment for Township establishment of five township extensions	Assist with the Environmental impact and scoping process
2021	Keetmanshoop Private School	Rezoning of erven and street in Keetmanshoop to accommodate more space for the school development	Assist with Environmental and scoping process for the rezoning of streets and erven surrounding the Keetmanshoop private school.
2021	Cairos Cottage, Lüderitz	Rezoning public open space to accommodate more space for guest house to develop	Assist with public participation process of the environmental impact assessment
2021-2022	Ondekaremba Farm	Creation of servitude to access farmlands close to Neudam in Windhoek district	Assist with public participation process and scoping report process
2021	Lüderitz Town Council	Rezoning erven from public open	Assist with public participation process for the environmental impact

		space to residential and business for flexible land tenure scheme	assessment
2021	Henties Bay Municipality	Environmental impact assessment for establishment of Tulongeni gardens golf estate	Assist with public participation process for environmental impact assessment
2021 - 2022	Henties Bay Municipality	Hydrological assessment and environmental impact assessment of Agricultural small holdings	Assist with the environmental impact assessment and hydrological study to establish agricultural plots
2021	Oshikuku Town Council	Environmental impact assessment for rezoning public open space	Assist with public participation process and scoping report for the rezoning of public open space to residential
2021	Omuthiya Town Council	Environmental impact assessment for establishing Kanita Extension	Assist with public participation process and scoping report for establishing new residential areas
2021 - 2022	Henties Bay Municipality	Environmental impact assessment for rezoning public open spaces to development electrical substations	Assist with public participation process and environmental scoping report for rezoning erven
2021- 2022	Lüderitz Town Council	Environmental Impact assessment for flexible land tenure scheme	Assist with public participation process and scoping report for environmental impact assessment
2022	Ondangwa Town Council	Environmental impact assessment for Township Establishment for Onatsi extensions	Assist with environmental scoping report and submission to Ministry of Environment, Forestry and Tourism
2022	Namwater	Environmental and social impact assessment for upgrade of water purification plant	Assist with public participation and scoping for the upgrade of the water supply scheme of Rundu town and surrounding villages
2022	Namibia Wildlife Resorts	Environmental Clearance Certificate renewals	Assist with Environmental management plans and scoping reports and locality maps of resorts
2022	Oranjemund Town Council	Environmental Impact assessment for formalization of dwelling units	Assist with environmental assessment and scoping report
2022	Outapi Town Council	Environmental impact assessment for rezoning erven from public open space to residential	Assist with environmental scoping for establishment of residential extensions
2022	Mariental Municipality	Environmental impact assessment for rezoning erven from residential to business	Assist with the environmental impact assessment, public participation, and scoping of establishing business districts
2022	Nkomati Mine (Mpumbalanga, South Africa)	Hydrological study for feasibility of pit lake closure	Field surveying and pit lake sampling for water quality analysis
2021 - 2022	Stubenrauch planning consultants	Town Planning and Environmental assessments	Regular assistance with structural plans of municipalities and town councils

DECLARATION

I, Michael Cloete hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:  Date: 06/06/2022

APPENDIX B

PROJECT REGISTRATION/ECC APPLICATION

45 Feld Street, Ausspannplatz, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

Our Reference GCS Ref - 21-0009

14 April 2022

RECEIVED
2022 -04- 14
EXECUTIVE DIRECTOR'S OFFICE
MAWLR

The Executive Director

Ministry of Agriculture, Water and Land Reform

Private Bag 13184

Windhoek

Dear Sir

Project Registration APP-003745: Environmental and Social Impact Assessment for the Proposed Rundu Purification Plant Extension

GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) is hereby informing the Ministry of Agriculture, Water and Land Reform that the application for Environmental Clearance and for the registration of the above project has been submitted to Ministry of Environment, Forestry and Tourism.

Accompanying this letter are the following:

- A copy of the Environmental Clearance application and
- Background Information Document (BID) of the project.

The draft scoping report will be made available to your office for review once it is completed.

Please feel free to contact our office should you require any additional information in this regard.

Yours faithfully

Stephanie Strauss

Environmental Assessment Practitioner

45 Feld Street, Ausspannplatz, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

Our Reference GCS Ref - 21-0009

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM
DIRECTORATE OF ENVIRONMENTAL AFFAIRS
14 APR 2022
RECEIVED
Signature

14 April 2022

Environmental Commissioner

Department of Environmental Affairs

Ministry of Environment, Forestry and Tourism

Private Bag 13306

Windhoek

Dear Sir

Project Registration APP-003745: Environmental and Social Impact Assessment for the Proposed Rundu Purification Plant Extension

GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) is hereby submitting the application for an Environmental Clearance and for the registration of the above project.

Accompanying this letter are the following:

- A copy of the Environmental Clearance application and
- Background Information Document (BID) of the project.

The final report will be submitted once the assessment process is completed.

Please feel free to contact our office should you require any additional information in this regard.

Yours faithfully

Stephanie Strauss

Environmental Assessment Practitioner

ANNEXURE 1
FORMS

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM
DIRECTORATE OF ENVIRONMENTAL AFFAIRS
14 APR 2022
RECEIVED
Signature

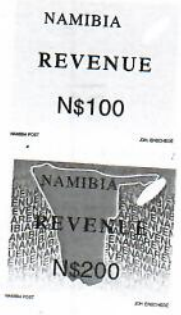
Form 1

REPUBLIC OF NAMIBIA

ENVIRONMENTAL MANAGEMENT ACT. 2007

(Section 32)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE



PART A: DETAILS OF APPLICANT

1. Name: (person or business)
   Namibia Water Corporation (NamWater)
2. Business registration/Identity No.
   N/A
3. Correspondence Address:
   Private Bag 13389, Windhoek
4. Name of Contact Person:
   Stephanie Strauss
5. Position of Contact Person:
   Environmental Assessment Practitioner
6. Telephone No.:
   +264 61 248 614
7. Fax No.:
   +264 61 238 586
8. E-mail Address: if any
   stephanies@gcs-na.biz

PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE

1. **The Environmental Clearance Certificate (ECC) is for:**

Rundu is the largest town in the Kavango East Region; it is situated on the southern side of the Okavango River on the border with Angola. Namibia Water Corporation Ltd (NamWater) operates two river water supply schemes, Rundu and Nkarapamwe, to supply the town. Both schemes abstract raw water from the Okavango River and after treatment and disinfection, potable water is supplied to various consumers, including the Rundu Town Council, the Military Base at the Airport, Government Institutions, Industries, Businesses and Private Consumers. Both NamWater schemes have difficulties in coping with the water demand at Rundu Town. The existing schemes are old, and it is running at maximum capacity. As a result, internal NamWater studies suggested the upgrading of the existing Rundu and Nkarapamwe water supply schemes and construction of a new water treatment plant at Rundu with an increased capacity of 1 800 m3/h to eventually meet the ever-growing demand up to 2037.

NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. ("NOD") in association with GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS") for the design, tender document preparation, administration and supervision for the construction of the new scheme and decommissioning of the old scheme. GCS will further conduct the Environmental and Social Impact Assessment (ESIA) process for the project. The ESIA is required to ensure sound environmental management and meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

Under the Environmental Management Act (2007) and its Regulations (2012), an Environmental Impact Assessment (EIA) is required for:

8.1 The abstraction of ground or surface water for industrial or commercial purposes.

8.3 Any water abstraction from a river that forms an international boundary.

8.5 Construction of dams, reservoirs, levees and weirs

10.1 The construction of (a) oil, water, gas and petrochemical and other bulk supply pipelines

2. **Details of the activity(s) covered by the environmental clearance certificate:**

Title of Activity:

Environmental and Social Impact Assessment (ESIA) for the proposed Rundu Purification Plant Extension.

Nature of Activity:

The Proponent proposes to upgrade the existing water supply schemes at Rundu and Nkarapamwe (inclusive of construction of a new water treatment plant at Rundu with a capacity of 1 800 m3/h, upgrading of water supply abstraction, reservoirs and conveyance systems) and the decommissioning of the old water treatment plant and associated redundant infrastructure at Rundu.

(Kindly see the attached Background Information Document)

Location of Activity:

Rundu, Kavango East Region.

Scale and Scope of Activity:

The scope of this project is limited to obtaining an Environmental Clearance Certificate for the following:

Environmental and Social Impact Assessment (ESIA) for the proposed Rundu Purification Plant Extension.

Opinion with respect to Environmental Authorisation:

An ESIA will be undertaken, and the relevant report will be prepared for the proposed activity in which the recommendation with respect to the environmental authorisation will be outlined.

PART C: DECLARATION BY APPLICANT

I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental clearance certificate may be suspended, amended or cancelled if any information given above is false, misleading, wrong or incomplete.

	Stephanie Strauss	Environmental Assessment Practitioner
Signature of Applicant	Full name in Block Letters	Position
NamWater		14 April 2022
On behalf of		Date

APPENDIX C

LIST OF INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties-Rundu Purification Plant		
Organisation / Land portion	**Title**	**First Name - Contact Person**
National Government		
Ministry of Environment, Foresty and Tourism (MEFT)	Environmental Commissioner	T Mofeti
MEFT - Deputy Environmental Comissioner	Deputy Environmental Comissioner	C Garus-oas
Ministry of Mines and Energy (MME)	Executive Director	S Negumbo
Ministry of Mines and Energy (MME)	Mining Comissioner	E Shivolo
Ministry of Mines and Energy (MME)	Chief Geologist	F Flaviana
Ministry of Information and Communication Technology	Executive Director	M Ua-Ndjarakana
Ministry of Agriculture, Water and Land Reform	Acting Executive Director	N Nghituwamata
Ministry of Agriculture, Water and Land Reform	Director	M Amakali
Ministry of Agriculture, Water and Land Reform	Deputy Director of Geohydrology	B Swartz
Ministry of Agriculture, Water and Land Reform	Deputy Director- Hydrology	P Mufeti
Ministry of Agriculture, Water and Land Reform	Deputy Director Water Environment	C Orthman
Ministry of Labour Industrial Relations and employement creation	Executive Director	B Shinguadja
Ministry of Health and Social Services	Executive Director	B Namgombe
Ministry of Mines and Energy	Mining Commissioner	E Shivolo
Ministry of Works and Transport	Executive Director	W Goeieman
Ministry of Urban and Rural Development	Planner	T Newaya
Utilities		
Nampower	Environmentalist	C Sisamu
Nampower	Engineering, Planning and Design	G Fourie
Roads Authority	Chief Executive Officer	C Lutombi
Roads Authority	Specialised road Legislation, Advise & Compliance	E Lumbu
NORED	Rundu Electrical Distribution	A Ingungula
NGOs, Environmental Groups		
Earth life Namibia		B Korhs
Namibian Environment and Wildlife Society	Media, website and newsletter	F Kreitz
National Botanical Research Institute	Manager: Threatened Plants Programme,	S Loots
National Heritage Council of Namibia	Archaeologist & Heritage Specialist	AM Nankela
National Heritage Council of Namibia	Director	S April

Interested and Affected Parties-Rundu Purification Plant		
Organisation / Land portion	**Title**	**First Name - Contact Person**
National Botanical Research Institute (NBRI)	Botanist	V Strauss
OKACOM	Co- chairperson	C Ortmann
OKACOM	Commissioner for Namibia	K Kambanda
Rundu Military Base	Section Head: Maintenance	JN Sikusho
Local Authorities		
Rundu Town Council	CEO	O Nathanael
Rundu Town Council	Manager Technical Services	J Sinime
Rundu Town Council	Property	PM Kathumbi
Rundu Urban Constituency	Councillor	Hon V Kauma
Rundu Rural Constituency	Councillor	Hon P Mbangu
Rundu Town Council	Water and Sanitation	Ignatious
Rundu Town Council	Mechanical Civil works	S Namuno
Regional and Traditional Authorities		
Shambyu Traditional Authority		
Kavango East Regional Council	CRO	L Thikusho
Institutions		
UNAM Rundu Campus	Campus Director	H Miranda
UNAM Rundu Campus	Campus Administration	R Kandjimi
Tucsin		
Nampost Rundu		Francois Bazil Dawids
Roman Catholic Church St Don Bosco Parish	Secretary	Anna Marry Sirongo
Rundu Intermediate Hospital - Ministry of Health and Social Services	Control Admin Officer	Veronika Sikoka
Proponent		
NamWater	Senior Environmentalist	NP du Plessis
NamWater	Environmentalist	J Kamburona
NamWater	Project Manager	R Likando
NamWater	Programme Management	L Niipare
NamWater	Programme Management	E Honga
NamWater	Rundu	J Muremi
Ministry of Agriculture, Water and Land Reform	Environmental Social and Cross Cutting Issues Technical Assistant	M L Hangula
Ministry of Agriculture, Water and Land Reform	Program Technical Advisor	V Slinger
Ministry of Agriculture, Water and Land Reform	Program Coordinator	C Maseka
Tourism		
Tambuti Lodge	Erf 1123 Tutengeni, Rundu	
Beaufort Guest House		Allen De Celestino
Glory Backpackers		
Amlugerus Boutique Hotel	Sales and operations manager	Emme Bock

Interested and Affected Parties-Rundu Purification Plant		
Organisation / Land portion	**Title**	**First Name - Contact Person**
Schools		
Noordgrens Secondary School		
Elia Neromba Secondary School	Principal	Simanu E H
Rudolf Ngondo Primary School		
Andreas Haingura Kandjimi Primary School		
Other		
Tete Laundry Services	Owner	Olavi Kalomtio
Ndama Welding	Owner	Ciswani Simone
Kehemu Welding	Owner	Elvio Loies M
Jy the star barber shop	Owner	Matheus M B
Ukumwe Sewing		
Backstage		
Other		
Rundu Police Station	Head of Department	Richard Dinyando
Rundu Police Station	Supervisor	Petrus Kenenye
Omashare Hotel	Supervisor	Mathilda Nathanael
Department of Water Affairs Rural water supply	Head of Department	Morrister Katulo
Neighbour	Ndama	Muguonqora Reinhilde
Neighbour	Ndama	Sirera Rabana
Neighbour	Ndama	Mbimbi Petrus
Neighbour	Kehemu	Mushe Brenda
Neighbour	Donkerhoek	Makwatikizo Arcana
Shillas beauty Salon	Donkerhoek	Emmy Kavaleka
Neigbour (Car wash)	Donkerhoek	Hausona K H
Neighbour	Donkerhoek	Nahas Uungwanga
Rundu Medical Complex	Tutengeni	
Guest House Bavaria	Tutengeni	
Namwater residents	Ndama Namwater	Boringa Swartbooi
Namwater residents	Ndama Namwater	Alpo Muronga
Namwater residents	Ndama Namwater	Erick Muronga
Registered		
Impact Water Solutions Namibia (Pty) Ltd	Country Manager	Alex Delle Donne

APPENDIX D

BACKGROUND INFORMATION DOCUMENT

45 Feld Street, Ausspannplatz, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

BACKGROUND INFORMATION DOCUMENT (BID):

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED RUNDU PURIFICATION PLANT UPGRADE, RUNDU, KAVANGO EAST REGION

14 April 2022

Proponent: Namibia Water Corporation Ltd (NamWater)

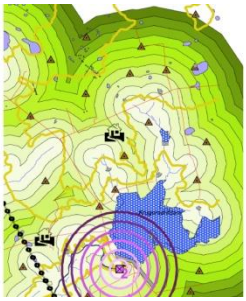
GCS Project Number: 21-0009

ENVIRONMENTAL ASSESSMENT PRACTITIONER: GCS (PTY) LTD

GCS Water Environmental Engineering (Pty) Ltd (GCS) is a fully integrated water, environmental, and earth science consulting services company based in the Republic of South Africa, with offices in Namibia, Botswana, and the Czech Republic. GCS provides a professional consulting service in the fields of environmental, water and earth sciences. GCS has a team of highly trained staff with considerable experience in the fields of environmental and water science.

GCS will act as the Independent Environmental Assessment Practitioner (EAP), as well as the Public Participation Practitioner for this environmental authorisation process.




LIST OF ABBREVIATIONS

ABBREVIATIONS	
AfDB	African Development Bank
BID	Background Information Document
CRR	Comments and Response Report
EAP	Environmental Assessment Practitioner
ESIA	Environmental and Social Impact Assessment
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No 7 of 2007)
EMP	Environmental Management Plan
GCS	GCS Water Environmental Engineering Namibia (Pty) Ltd
GRM	Grievance Redress Mechanism
Ha	Hectares
I&AP	Interested and Affected Parties
km	Kilometers
m	Meters
m^3	Cubic meters
m^3/h	Cubic meter per hour
mm	Millimeters
masl	Meters Above Sea Level
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT: DEAF	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry
NamWater	Namibia Water Corporation
NOD	Nicholas O'Dwyer Ltd
PPP	Public Participation Process
OKACOM	Okavango River Basin Water Commission
TWL	Top Water Level

1 INTRODUCTION

Rundu is the largest town in the Kavango East Region; it is situated on the southern side of the Okavango River on the border with Angola. Namibia Water Corporation Ltd (NamWater) operates two river water supply schemes, Rundu and Nkarapamwe, to supply the town. Both schemes abstract raw water from the Okavango River and after treatment and disinfection, potable water is supplied to various consumers, including the Rundu Town Council, the Military Base at the Airport, Government Institutions, Industries, Businesses and Private Consumers. Both NamWater schemes have difficulties in coping with the water demand at Rundu Town. The existing schemes are old, and it is running at maximum capacity. As a result, internal NamWater studies suggested the upgrading of the existing Rundu and Nkarapamwe water supply schemes and construction of a new water treatment plant at Rundu with an increased capacity of 1 800 m^3/h to eventually meet the ever-growing demand up to 2037.

NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. ("NOD") in association with GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS") for the design, tender document preparation, administration and supervision for the construction of the new scheme and decommissioning of the old scheme. GCS will further conduct the Environmental and Social Impact Assessment (ESIA) process for the project. The ESIA is required to ensure sound environmental management and meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

Under the Environmental Management Act (2007) and its Regulations (2012), an Environmental Impact Assessment (EIA) is required for:

8.1 ***The abstraction of ground or surface water for industrial or commercial purposes.***

8.3 ***Any water abstraction from a river that forms an international boundary.***

8.5 ***Construction of dams, reservoirs, levees and weirs.***

10.1 ***The construction of (a) oil, water, gas and petrochemical and other bulk supply pipelines.***

This Background Information Document (BID) has been compiled by GCS with the following aims:

- To introduce the proposed project and related activities to potential Interested and Affected Parties (I&APs);
- To provide information on the ESIA and related processes;
- To inform I&APs on how to be involved in the ESIA process;
- To invite all parties to register as I&APs on the ESIA database; and
- To provide all I&APs with an opportunity to comment on the proposed project and associated process, including biophysical and socio-economic aspects, as well as any other issues of concern.

2 PROJECT DESCRIPTION

The Proponent proposes to upgrade the existing water supply schemes at Rundu and Nkarapamwe (inclusive of construction of a new water treatment plant at Rundu with a capacity of 1 800 m^3/h, upgrading of water supply abstraction, reservoirs and conveyance systems) and the decommissioning of the old water treatment plant and associated redundant infrastructure at Rundu. The locality and overview of the existing schemes can be seen on **Figure 2-1** and **Figure 2-2**.

2.1 Need and desirability for the development

At present, the total potable water supply capacity of the Rundu and Nkarapamwe schemes is approximately 840 m^3/h. Both NamWater schemes have difficulties in coping with the water demand at Rundu Town; the reservoirs' levels are at best between 4% and 30%, and that is a concern for a town with a high population growth rate of 5.4% per annum (First Capital Treasury Solutions, 2018). The population of the area is rapidly increasing and as a result the water demands of the region now significantly exceed the capacity of the existing aging schemes resulting in very low reservoir storage levels and ongoing supply issues. The proposed development is thus needed in order to meet the ever growing water demand within the town.

2.2 Description of Activity

2.2.1 Overview of the existing water supply scheme

The Nkarapamwe Scheme currently comprises of submersible pumps on floating pontoons in the Okavango River that supplies raw water to sand pressure filters at the Nkarapamwe plant through an intermediate booster pump station. After treatment, the clear water is then stored in two ground level concrete reservoirs (i.e. a 9,000m^3 rectangular reservoir and a 12,000m^3 circular reservoir). A pump station at the Nkarapamwe plant transmits water to the Donkerhoek elevated tanks, Kehemu elevated tanks and pumps into the distribution network; while a gravity main feeds two ground level reservoirs at the Rundu Airport/Military Camp which is then pumped into the Military elevated tanks by a local booster pump station.

The Rundu Scheme currently comprises of a raw water abstraction tower that supplies raw water to sand pressure filters at the Rundu plant. The clear water is then stored in four ground level circular concrete reservoirs (i.e. 6000m^3, 2500m^3, 2250m^3 and 750m^3). A pump station at the Rundu site then transmits the clear water to an elevated concrete tower and elevated tanks at the Industrial Area. A local booster pump station at the industrial tower supplies water to the Sauyemwa elevated tanks.

2.2.2 Overview of the proposed development

The project will focus on providing the necessary water supply infrastructure to meet the current and future water demands up to the 2037 horizon for the Rundu town area and a few surrounding villages (Kayegona, Mupini/Sikondo and Masivi). The proposed new infrastructure will consist of the following:

- **Component 1: The Raw Water Abstraction and Conveyance System**- A new river intake structure on the Okavango River, immediately downstream of the existing intake tower, including new raw water pipelines to the new water purification plant.

- **Component 2: The New Rundu Treatment Plant** - A new water purification plant with sufficient capacity for the 2037 horizon and allowances made for future potential expansion beyond this.
- **Component 3: The Rundu Treatment Plant Product Water Conveyance System** - A new treated water pump station and pipelines to convey treated water from the new water purification plant to the existing Rundu and Nkarapamwe ground level reservoirs.
- **Component 4: Existing Water Supply Schemes** - New pump stations and additional ground level reservoirs at Rundu and Nkarapamwe for storage. New dedicated pipelines to the elevated storage tanks as well as additional new elevated storage tanks within the Rundu town area. In addition new pipelines supplying potable water to Kayengona, Mupini/Sikondo and Masivi.
- **Component 5: Decommissioning of Redundant Infrastructure** - Decommissioning of any redundant infrastructure.

Each component outlined above is described in more detail below.

2.2.2.1 Component 1: The Raw Water Abstraction and Conveyance System

The current available total raw water abstraction capacity is approximately 715 m^3/h between the existing Okavango River Abstraction Tower Pumps and Submersible River Pumps on Pontoons. The raw water conveyance includes 2 200mm pipelines to Rundu and a 355mm pipeline to Nkarapamwe passing through an intermediate booster pump station. Since the raw water abstraction and conveyance system requires a 2037 capacity of 2000 m^3/h with an ultimate capacity of 4000m^3/h, the existing system is not adequate. Furthermore, the system is unable to cope with the current demand of 1,176 m^3/h.

The new raw water conveyance system will consist of the abstraction pumping system, to abstract the water from the river, and the raw water pipeline to convey the raw water to the new treatment plant in Rundu. The new treatment plant raw water requirement is 2000 m^3/h, which includes a 10% treatment plant losses (for 20 hours plant operation), and the raw water conveyance system will be designed to cater for 4000 m^3/h, to accommodate any future expansions.

Alternative locations for the proposed raw water abstraction works were considered and investigated. A preferred site location for the new abstraction works has been identified downstream of the existing abstraction works. The exact location will be confirmed during the preliminary design phase. The following aspects were considered for the site selection of the proposed new abstraction works:

- Natural stable bend in the river with a site on the outside bend. This will limit the course sediment (bedload) abstraction due to the spiral flow created by the secondary current.
- Steep right bank near the riverbank so that the concrete structure/wall on the bank is not too long (to ensure floods cannot bypass the abstraction works).
- Sufficient depth for low flow conditions so that the invert of the intake could be as high as possible above the riverbed (no weir is provided to save cost).
- Availability of bedrock to limit scouring.
- Access road to site
- Access/Safety for the workers during construction

Five potential raw water abstraction options were identified. To assist with the selection of a preferred option, a decision matrix was developed. This decision matrix assessed each option separately and ultimately produces a theoretical score for each of the presented options based on the scoring and weighting of the different parameters, which play an important role in the decision of the abstraction works.

Option 1: Abstraction with the construction of a weir

A low weir is required to create sufficient water depth at the pump intakes during low river flow conditions and to guide the low flow towards the intakes. The abstraction works is normally placed on the outside bend in the river and orientated to use secondary currents during a flood to limit coarse sediment abstraction. The local area at the intake (gravel trap) can be flushed by using a gate to remove deposited sediment, and debris will be prevented by a trash rack from reaching the pumps. The weir will be constructed high enough to provide sufficient head to flush the gravel trap. The gravel trap should be self-scouring during medium to large floods, with the flushing gate closed. Sand transported beyond the trash racks towards the pumps can be flushed out by opening gates downstream of the pumps during small river flood conditions. This design for an abstraction works ensures a low maintenance and robust design, with a high assurance of supply. This type of abstraction works will consist of a gravel trap, trash racks, pump canals which could be flushed, and a weir.

Option 2: Floating Pontoon

Floating abstraction works are commonly used in small scale schemes. They are suited to stable channel/rivers with small water level fluctuations. A floating pontoon will be used to house the pumps. Upon selection of the pumps the floating pontoon would be sized to allow for the pumps to be soundly founded on the pontoon and the suction pipe would be positioned underneath the pontoon. The delivery lines would go from the pontoon to the banks of the river. They would need to be flexible to accommodate the movement of the pontoon as the water levels fluctuate. The delivery pipe would need to be placed up to a certain point where it will connect to the fixed rising main or discharge in the settler. The pontoon would be anchored on the riverbanks by cables.

Option 3: Pumps and pipes mounted on a rail

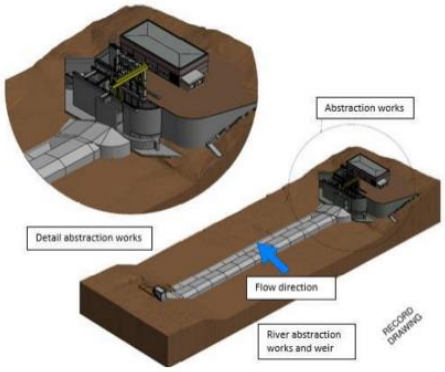
This type of abstraction consists of the construction of a concrete base and rail on which an inline pump or a fixed floating pontoon could be mounted. This would allow the pumps to move up and down with the fluctuation of the water levels in the river up until the limitations of the installed railing are reached. The fixed railing allows for a secure connection and stability against wave action. Flexible delivery pipes are required for this option and monitoring of the connection point to the main delivery pipeline is also required as, depending on the changes in water level, portions of the pipe may need to be added or removed.

Option 4: Submerged in-line pumps fixed to the embankment

The installation of the submerged in-line pumps allows for multiple pumps to be installed in series. These pumps are lowered into the river and their delivery lines can be part of a permanent and non-flexible installation. The installation requires a solid foundation (concrete) on which the mountings for the pipes and pumps can be installed.

Option 5: Intake Structure with a dry or wet well

The arrangement for this type of abstraction works consists of a wet well with hoppers and either a dry well with high lift pumps or a wet well with submerged pumps. The hoppers allow for the settling of larger sediment particles. Typically, these hoppers will be equipped with jet pumps to allow removal of the sediment. The pumps will pump directly into the rising main which links to the water treatment works.



Option 1: Abstraction works with the weir



Option 2: A floating pontoon



Option 3: Pumps on rails



Option 4: Submerged in-line pumps fixed to the embankment abstraction works



Option 5: Schematic of a dry well configuration

2.2.2.2 Component 2: The New Rundu Treatment Plant

The current available total water treatment capacity is approximately 399 m^3/h between the existing facilities at Rundu and Nkarapamwe, which consist of pressure sand filters and chlorination facilities. The potential to upgrade or expand these facilities to the 2037 capacity of 1800 m^3/h is constrained due to the availability of space at the current sites. A new Water Treatment Plant will thus be constructed.

The new Rundu Water Treatment Plant will be designed to ensure that the water quality as well as the effluent adheres to the specified regulations as per the Water Resource Management Act, 2013 (Act No.11 of 2013). The plant will be designed to ensure a maximum potable water output of $1800m^3/h$. A site has been identified (approximately 6 Hectare in size) to the north of the Rundu Police Station for the construction of the new plant. The land was acquired after negotiation with the Rundu Town Council.

2.2.2.3 Component 3: The Rundu Treatment Plant Product Water Conveyance System

The product water conveyance system comprises of a new pump station at the new treatment plant with two groups of pump sets (each group shall incorporate at least three pump sets, of which at least one shall be a stand-by unit) to pump into the existing and proposed storage reservoirs at Rundu and Nkarapamwe. A new rising main is proposed for Rundu and a duplicate main to operate in parallel with the existing main is proposed for Nkarapamwe.

2.2.2.4 Component 4: Existing Water Supply Schemes of Rundu and Nkarapamwe

Rundu Water Supply Scheme

A new pump station is proposed for Rundu with two groups of pump sets, one pumping simultaneously into the existing and proposed elevated tanks at the Rundu site and the hospital and other group to pump into the existing and proposed Industrial and Sauyemwa elevated tanks. The elevated tanks will be fed via proposed new dedicated transmission mains. It is also proposed to construct an additional 16Ml reservoir at Rundu plus $4x500m^3$ elevated tanks, at Rundu, the hospital, Sauyemwa and Industrial. The Sikondo/Mupini area could be supplied under gravity from the Industrial elevated tank.

Nkarapamwe Water Supply Scheme

A new pump station is proposed for Nkarapamwe with two groups of pump sets, one pumping into the proposed elevated tank at the Nkarapamwe site and other group to pump simultaneously to the existing and proposed elevated tanks at Donkerhoek and Kehemu. The elevated tanks will be fed via proposed new dedicated transmission mains. It is also proposed to construct an additional 16Ml reservoir at Nkarapamwe plus $3x500m^3$ elevated tanks, at Nkarapamwe, Donkerhoek and Kehemu. The Kayengona area could be supplied from Kehemu elevated tank via a new gravity pipeline.

Masivi Village Scheme

Masivi is an informal settlement along the main road B8. This area is within the Rundu Town Council supply and its demand has been taken into account in the water demand projections for the scheme. This area can be supplied by a 90mm diameter gravity pipeline from the Military Base elevated tanks.

Kayengona Scheme

The Kayengona scheme is presently a borehole supply scheme. The scheme is operated by NamWater and it has been reported that water quality and availability of water is problematic. The water is pumped to elevated storage tanks (10x10m^3 tanks) on a support stand about 15.8m high. It is estimated that the Top Water Level (TWL) of these tanks is about 1090 Meters Above Sea Level (masl). The water demand as reported by NamWater for this area is 30m^3/hr.

Water could be made available from the proposed new Rundu Water Treatment Plant for the Kayengona area. However, the clear water reservoir level at the water purification works is somewhat lower than the top water level of the existing reservoirs at Kayengona and will require pumps to transfer water to the Kayengona area.

Under the Nkarapamwe scheme the eastern area can be served by the existing and proposed new elevated tank at Kehemu with a TWL of approximately 1136masl, assuming that a 15m high tank stand will be used. These elevated tanks will be at a level which could allow a gravity flow from these elevated tanks at Kehemu to the elevated tanks at Kayengona. A new gravity pipeline, 110 mm in diameter and 14 km long will be required along a route which avoids high points.

Sikondo/Mupini Scheme

The Mupini/Sikondo scheme is presently a borehole supply scheme. The scheme is operated by NamWater. The water is pumped to elevated storage tanks on a support stand. The water demand as reported by NamWater for this area is 17m^3/hr.

Water could be made available from the proposed new Rundu Water Treatment Plant for the Mupini/Sikondo area. However, as with the Kayengona scheme, the clear water reservoir level at the water purification works is somewhat lower than the TWL of the existing elevated tank at Mupini/Sikondo. Pumps will be required to transfer water to the Mupini/Sikondo area.

Under the Rundu scheme the western area can be served by the existing and proposed new elevated tanks at the Industrial Area and Sauyemwa. The Industrial water tanks is at a TWL of approximately 1135m. This elevated tank will be at a level which could allow a gravity flow to the elevated tank at Mupini/Sikondo. A new gravity pipeline, 110 mm in diameter and approximately 14 km long will be required along a route which avoids high points. Whilst this proposal is also a pumped supply scheme to Mupini/Sikondo via the Rundu Purification Works Pump station to Rundu and beyond via the Rundu pumps to Industrial Elevated Tower, it has the advantage of merely upsizing proposed pumping plant which is in any event required for the Sauyemwa and Industrial areas, instead of building an additional pump station.

2.2.2.5 Component 5: Decommissioning of redundant infrastructure

Once the new abstraction and treatment plant with all relevant infrastructure are commissioned, the redundant equipment will be derecognised in accordance with applicable asset derecognition procedure in NamWater and in the end must be de-commissioned and removed.

While some of the equipment will not be re-usable there might be some pumps and motors that NamWater can re-use at other sites and these equipment will thus be transferred to NamWater in Windhoek in accordance with the applicable asset derecognition and transfer procedure.

2.2.3 Land Acquisitions and Wayleaves

A site approximately 6.16 ha has been acquired by NamWater for the proposed new Rundu Water Treatment Plant i.e. adjacent north of the Rundu Police Station.

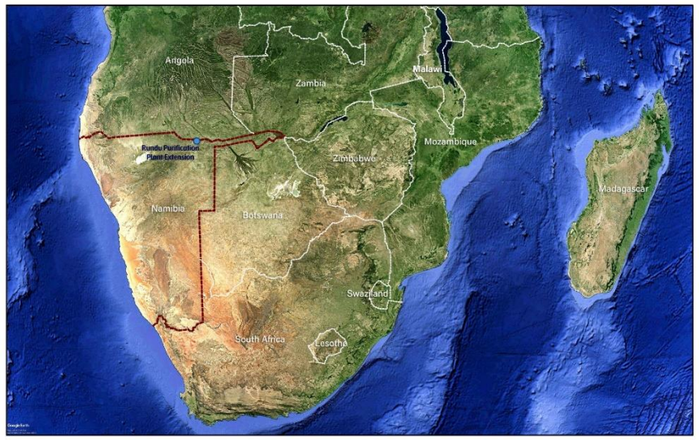
It is envisaged that all proposed pipelines and remote elevated tanks will be constructed on NamWater owned sites and within municipal road reserves. Wayleaves will be obtained for new pipelines in road reserves once the routes have been confirmed.

For the additional ground level storage required at Rundu and Nkarapamwe, the existing sites at both these locations are not adequate for the proposed new reservoir, elevated tank and pump stations. As such alternative sites will be identified and ownership thereof will be determined for the possibility of acquiring these sites.

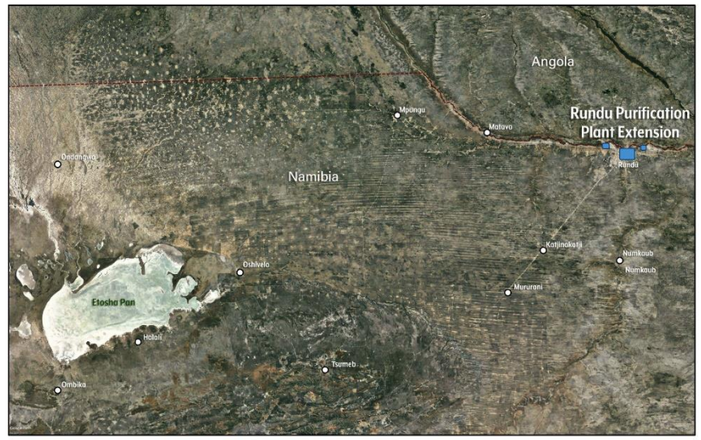
2.2.4 Water Abstraction Rights

The Okavango River is a shared water course for the three adjoining countries namely Namibia, Botswana, and Angola. The river starts in Angola, then acts as a border between Angola and Namibia, crosses Namibia and finally enters Botswana. As this river is shared between the countries, therefore all aforementioned countries have a right to abstract from it.

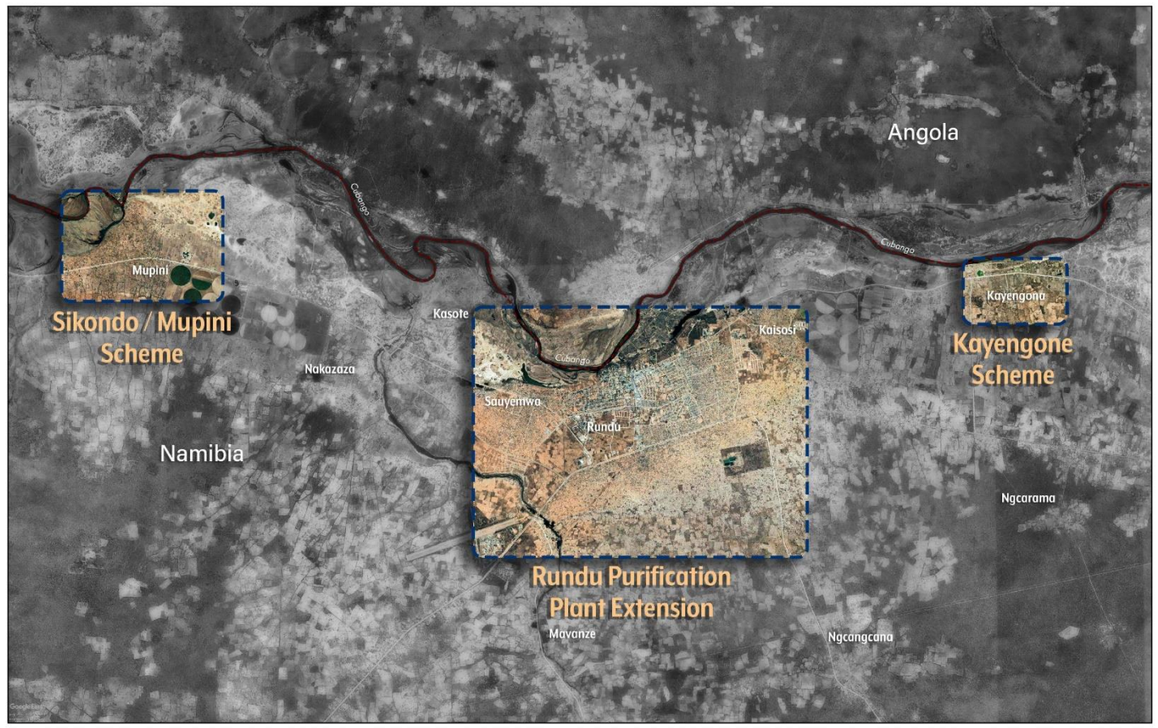
In September 1994 an agreement was signed by the three countries to establish a Permanent Okavango River Basin Water Commission (OKACOM) with its primary focus on the sustainable long-term yield of water from all the potential sources within the Okavango River Basin. All signatories to the agreement are obliged to inform the commission about proposed utilization changes. The proponent is to engage the Commission with regards to the key elements of the proposed project.



1 Area Location Map
N.T.S.



2 Area Location Map - Site Location
N.T.S.



3 Area Location Map - Scheme
N.T.S.

NOTES

1. ALL DIMENSIONS ARE IN METRES (M) UNLESS NOTED OTHERWISE.

REV	DATE	DESCRIPTION	D	C	A
P01	24.03.2022	FINAL ISSUE	M.C.	P.C.	N.B.

PROJECT No. 20891

STAGE: CONCEPTUAL

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CLIENT: NAMWATER Namibia Water Corporation Ltd

PROJECT: RUNDU PURIFICATION PLANT EXTENSION

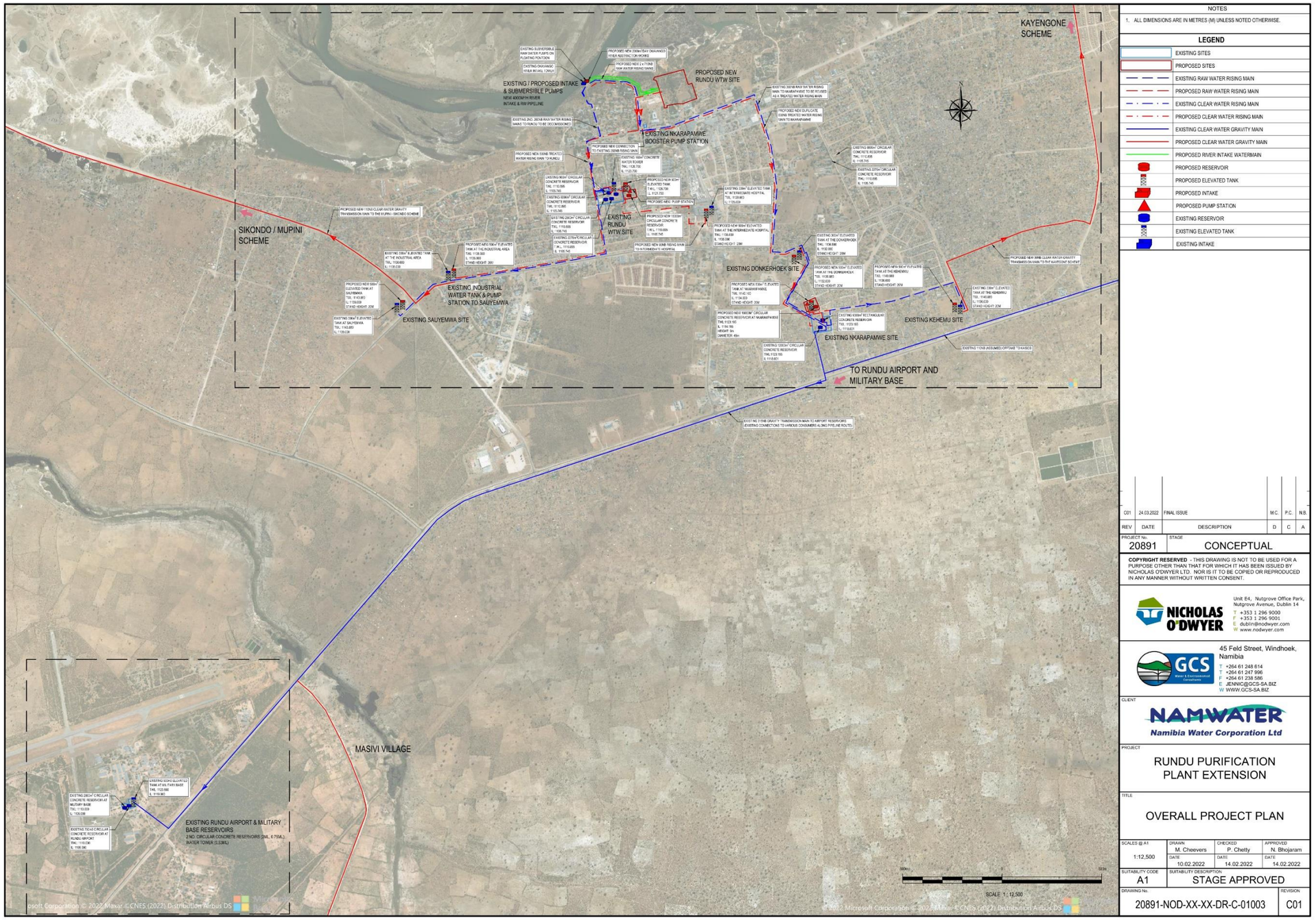
TITLE: AREA LOCATION MAPS

SCALES @ A1	DRAWN	CHECKED	APPROVED
N.T.S.	M. Cheevers	P. Chetty	N. Bhojaram
	DATE 10.02.2022	DATE 14.02.2022	DATE 14.02.2022

SUITABILITY CODE: A1 — SUITABILITY DESCRIPTION: STAGE APPROVED

DRAWING No.: 20891-NOD-XX-XX-DR-C-01001 — REVISION: C01

Figure 2-1: Locality of the existing Rundu Purification Plant



NOTES

1. ALL DIMENSIONS ARE IN METRES (M) UNLESS NOTED OTHERWISE.

LEGEND

- EXISTING SITES
- PROPOSED SITES
- EXISTING RAW WATER RISING MAIN
- PROPOSED RAW WATER RISING MAIN
- EXISTING CLEAR WATER RISING MAIN
- PROPOSED CLEAR WATER RISING MAIN
- EXISTING CLEAR WATER GRAVITY MAIN
- PROPOSED CLEAR WATER GRAVITY MAIN
- PROPOSED RIVER INTAKE WATERMAIN
- PROPOSED RESERVOIR
- PROPOSED ELEVATED TANK
- PROPOSED INTAKE
- PROPOSED PUMP STATION
- EXISTING RESERVOIR
- EXISTING ELEVATED TANK
- EXISTING INTAKE

REV	DATE	DESCRIPTION	D	C	A
C01	24.03.2022	FINAL ISSUE	M.C.	P.C.	N.B.

PROJECT No. 20891

STAGE: CONCEPTUAL

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CLIENT: NAMWATER Namibia Water Corporation Ltd

PROJECT: RUNDU PURIFICATION PLANT EXTENSION

TITLE: OVERALL PROJECT PLAN

SCALES @ A1	DRAWN	CHECKED	APPROVED
1:12,500	M. Cheevers	P. Chetty	N. Bhojaram
	DATE: 10.02.2022	DATE: 14.02.2022	DATE: 14.02.2022

SUITABILITY CODE: A1 — SUITABILITY DESCRIPTION: STAGE APPROVED

DRAWING No.: 20891-NOD-XX-XX-DR-C-01003 — REVISION: C01

Figure 2-2: Overview of existing Rundu water supply network inclusive of proposed upgrades

3 ENVIRONMENTAL ASSESSMENT PROCESS

3.1 Environmental Management Act No. 7 of 2007

The Environmental Management Act (EMA) provides a list of activities, development or execution, which require an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF) prior to construction. Due to the nature of the proposed project, an ECC will be required prior to project commencement. Accordingly, an Environmental Impact Assessment (EIA) process as per the requirements of EMA: Environmental Impact Assessment Regulations (18 January 2012) must be conducted to inform the MEFT: DEAF's decision regarding the ECC application.

3.2 Competent Authority

The competent authority is the Ministry of Agriculture, Water and Land Reform (MAWLR) with the Ministry of Environment, Forestry and Tourism's: Department of Environmental Affairs and Forestry (MEFT: DEAF) as the regulator of the EIA process and deciding on the issue of an ECC. As such, the application for an ECC and all reports and documentation associated with the EIA process will be submitted to the MAWLR for comment which will be forwarded to MEFT: DEAF for decision-making.

3.3 Environmental and Social Impact Assessment (ESIA/EIA[1])

The EMA defines the EIA as a process of identifying, predicting, and evaluating the significant effects of activities on the environment, the risks and consequences of activities, alternatives to these activities and options for mitigation of such activities. This is done with a view of minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management. **Figure 3-1** below depicts the different stages of the EIA process.

[1] ESIA and EIA may be used interchangeably. ESIA is the term used by the AfDB and EIA in Namibia

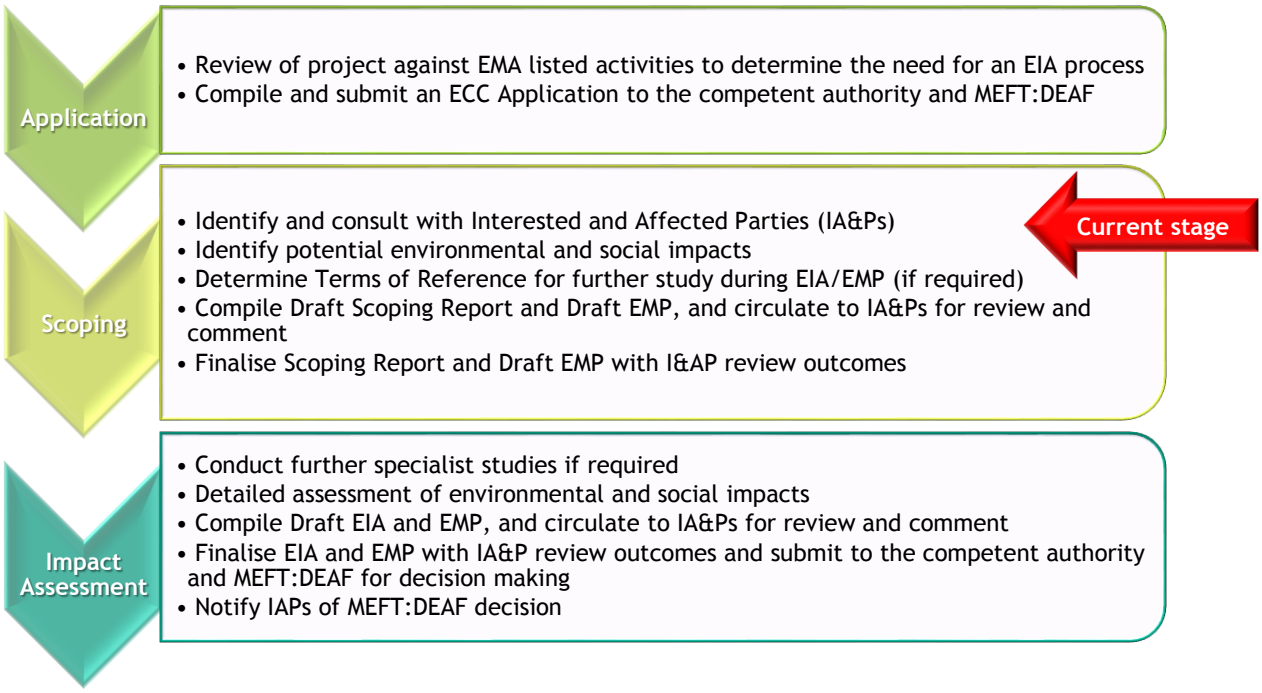

Figure 3-1: The EIA Process

3.3.1 Purpose of the EIA process

The Environmental Management Act, 2007 (Act No 7 of 2007) and supporting Environmental Impact Assessment Regulations of 18 January 2012, prescribes the processes to be followed when conducting the Environmental Clearance Certificate (ECC) Application and associated EIA process.

In broad terms, the purpose of the EIA process is to assess the current environmental (including the socio-economic and cultural setting) in which a proposed activity will take place and assess all potential impacts.

The process aims to ensure that all relevant factors are considered when evaluating the potential impacts of a project, as well as developing appropriate environmental management measures (in the form of an Environmental Management Plan – EMP) to mitigate these impacts.

The EMP describes the goals and objectives for impact management to minimise or eliminate potential negative impacts; the action plans to bring effect to those goals and objectives; the procedures to be implemented to ensure integration of environmental management into the daily operations; as well as a plan to raise awareness of employees and the surrounding community with regards to environmental management.

4 REGISTRATION OF I&APS AND THEIR COMMENTS/CONCERNS

PUBLIC PARTICIPATION PROCESS

Public involvement is an essential part of any Environmental Assessment process. Interested and Affected Parties (I&APs) include any person or organisation that will be directly or indirectly involved and/or affected by the project.

You have been identified as a potential I&AP who may want to receive information regarding the above-mentioned project and/or provide input into the Environmental Impact Assessment process. To be recognised as an I&AP and to be kept informed of the proposed project and EIA process going forward, one must register with GCS to be added to the Stakeholder Database for the project. You may communicate via fax, email, WhatsApp, or telephone to obtain further information or comment on the proposed project.

Registered I&APs will be kept informed of the Public Participation Process (PPP) throughout the EIA process, will be given the opportunity to review and comment on the EIA reports and documents, will receive feedback on how comments have been taken into account, and will be informed of the outcome of the assessment. All comments will be recorded and presented to the project team and competent authority by means of the Project Comments and Responses Report (CRR).

Attached to this BID is a comment form which you can complete and record any comments you may have with respect to the proposed activity. The contact details of the EAP to whom the comments can be addressed are outlined to the right.

The general public as well as any I&APs are hereby invited to attend the public meeting during which the potential environmental and social impacts of the project will be presented for comments and inputs from the public. The meeting is scheduled to take place as follows:

Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

PUBLIC PARTICIPATION – CONTACT DETAILS

Contact Person: Stephanie Strauss
Tel: +264 61 248 614
Fax: +264 61 238 586
Cell/WhatsApp: +264 81 3076 205
Email: stephanies@gcs-na.biz
Postal Address: PO Box 81808, Windhoek

5 GRIEVANCE REDRESS MECHANISM

The Grievance Redress Mechanism (GRM) aims to provide a way to provide an effective avenue for expressing concerns and achieving remedies for communities. The GRM aims to ensure that complaints are directed and expeditiously addressed by the relevant agencies which are to enhance responsiveness and accountability. A project-level GRM will be established to be implemented during the implementation of the project. More detailed information with regards to the GRM will be included in the Environmental and Social Management Plan (ESMP/EMP) to be developed as part of the ESIA process. Whilst the ESIA process is ongoing the below contacts can be contacted regarding the project:

To comment on the ESIA process/document, contact the below:
Contact Person: Stephanie Strauss GCS Water Environmental Engineering Namibia Tel: +264 61 248 614 Fax: +264 61 238 586 Cell/WhatsApp: +264 81 3076 205 Email: stephanies@gcs-na.biz Postal Address: PO Box 81808, Windhoek
For grievances at any stage of the project, contact the below:
Contact Person: Jolanda Kamburona NamWater Tel: +264 61 712 105 Fax: +264 61 712 097 Email: kamburonaj@namwater.com.na Postal Address: Private Bag 13389, Windhoek Grievances may also be submitted in writing at the NamWater Rundu office (Eugene Kakakuru Street, Rundu) in the comments box located at reception.

6 REGISTRATION OF I&APS AND THEIR COMMENTS / CONCERNS

		ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED RUNDU PURIFICATION PLANT UPGRADE, RUNDU, KAVANGO EAST REGION **I&AP Comments Form**			
Name:		**Surname:**			
Organisation / interest:					
Postal / Residential address					
		Area:		**Code:**	
Contact details		**Tel:**	( )		
		Fax:	( )		
		Mobile:	( )		
		Email:			
Please mark with an X to indicate whether you would like to participate in the process:					
Yes, I would like to participate in this process and receive periodical updates					
No, I am not interested in participating and do not wish to receive further information					
Preferred method of communication	Email		Fax		Post
Date commented	(DD / MM / YYYY)				
Please indicate any issues, comments and concerns with regards to the proposed project (feel free to use the additional space or attach additional pages, as required)					
Please indicate in which aspects you would require more information					
Please indicate the contact details of any IAPs whom you think should be contacted					
Name:		**Surname:**			
Tel:	( )	**Fax:**	( )		
Mobile:	( )				
Email:					

In order to be registered as an IAP for this project, fax, mail, or e-mail the completed registration form before or on **5 May 2022** to:

Contact Person: Stephanie Strauss
Tel: +264 61 248 614
Fax: +264 61 238 586
Cell/WhatsApp: +264 81 3076 205
Email: stephanies@gcs-na.biz
Postal Address: PO Box 81808, Windhoek

APPENDIX E

NEWSPAPER ADVERTS

NICHOLAS O'DWYER

NAMWATER
Namibia Water Corporation Ltd

GCS Water & Environmental Consultants

Notice of Scoping and Environmental and Social Impact Assessment (ESIA) Process
Invitation to register as an Interested and Affected Party for the proposed Rundu Purification Plant Extension

GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) hereby give notice to all potentially Interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the proposed Rundu Purification Plant Extension.

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NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. (NOD) in association with GCS for the design, tender document preparation, administration and supervision for construction of the new scheme and decommissioning of the redundant infrastructure of the old scheme. GCS will further conduct the ESIA process for the Project. The ESIA is required to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

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***Date:** Wednesday 27 April 2022*
***Time:** 17h30*
***Venue:** Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)*

***Interested & Affected Parties (I&AP) Registration and submission of comments:** To comment or receive further information on the project, please register with GCS (contact details below) as an I&AP before end of business on **5 May 2022**. A Background Information Document (BID) has been compiled for the project and is available upon request to the GCS contact below or on the GCS website (https://www.gcs-sa.biz/public-documents/). All registered I&APs will be informed throughout the assessment process and will be provided with further opportunities for review and submission of comments.*

Contact details: GCS Water Environmental Engineering Namibia
Attention: Mrs. Stephanie Strauss
PO Box 81808, Windhoek, Namibia
Email: stephanies@gcs-na.biz
Tel: +264 61 248 614
Cellphone/WhatsApp: +264 8130 76205

Contact details: NamWater
Attention: Mrs. Jolanda Kamburona
Private Bag 13389, Windhoek, Namibia
Email: kamburonaj@namwater.com.na
Tel: +264 61 712 105

NAMIBIA DEVELOPMENT TRUST

Namibia Development Trust

Fostering self-reliance amongst communities since 1987

Request for Proposal and Quotation for Financial Audit Services

(**Readvertisement** – companies who have previously applied need not to reapply)

The Namibia Development Trust (NDT) registered as a Trust in terms of the Trust Monies Act of 1934 hereby request proposal and quotations from reputable and registered audit companies with the PAAB (Public Accounts Auditors Board) to conduct the 2021 Financial Audit. The audit process is expected to start in May 2022 and to be completed by June 2022. Kindly provide us with a description and your firms approach and methodology to the audit as well as a profile of your institution and include a list of three relevant contactable references from preferably not for profit clients the firm has served within the past three years.

Your proposal to be send to:
The Executive Director, NDT; info@ndt.org.na&ronny@ndt.org.na.
Technical enquiries can be directed to ronny@ndt.org.na.

Closing date for proposals and quotations: 22nd April 2022,12:00

We at Aesthetic Centre Olympia are delighted to welcome Dr Natasha Slabbert to the team!

Welcome to the team



Dr Natasha Slabbert graduated from the University of the Free State in Bloemfontein with a MBChB degree.

Having a passion for General Medicine and a special interest in Dermatology, Dr Slabbert fell in love with the field of Aesthetic medicine.

After completing courses in Botulinum Toxin treatments and Hyaluronic acid fillers, Dr Slabbert is able to offer both safe treatments and natural looking results.

Her passion is deeply rooted in a holistic approach to health and beauty, which is based on ethically sound and evidence-based medical principles.

Cnr. Hidipo Hamutenya & David Carstens
Olympia, Windhoek
acentreolympia.com
061 372 640

aesthetic centre olympia
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You receive immediate:
- **Cash**
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- **081 143 8822/081 372 9916 (Walvis Bay)**
- **081 126 3614 (Tsumeb)**
- **081 156 2856 (Luderitz)**
- **081 336 4381 (North)**

Address: Carin Park, Brakwater
E-mail: info@wesco.com.na

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Windhoek • Okahandja • Dordabis • Rehoboth
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OTJIWARONGO MUNICIPALITY

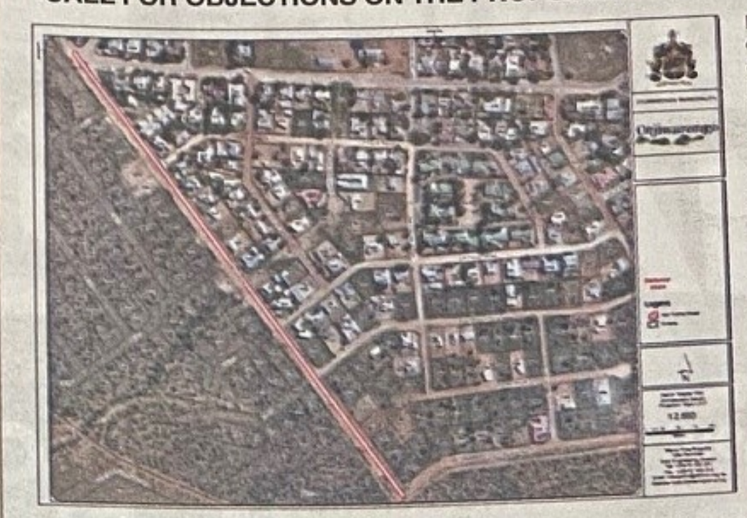
VISION STATEMENT

We commit to make Otjiwarongo a vibrant socio-economic powerhouse

PUBLIC NOTICE

NOTICE NUMBER: 11/2022

CALL FOR OBJECTIONS ON THE PROPOSED RENAMING OF VON TROTHA STREET



NOTICE is hereby given in terms of clause 14 (14) (2) (iii) of the Street & Township Naming and Renaming Policy, of 2021 (as amended) that the Municipal Council of Otjiwarongo is hereby informing the public that the Council, as per **Council Resolution C11.13/03/03/2021/2nd ODCM 2022**, approved the renaming of the Von Trotha Street to Theo Borstlap Street as per recommendation of the Street and Township Naming and Renaming Committee.

The proposed name meets all the necessary requirements in terms of the Council's Street and Township Naming and Renaming Policy's Clause: 7 (7.1) (7.2) which outlines that; "the proposed is credited with outstanding achievement in the areas of cultural, educational, social, sport, or economic development of the town or religion."

And; "the person should have greatly contributed towards promoting a positive image of Namibia and that of the community of Otjiwarongo".

Thus, the Council hereby invites any person objecting to the proposed name may lodge motivated objections to the Office of the Chief Executive Officer, Private Bag 2209, OTJIWARONGO; to reach him not later than **Friday, 29th of April 2022 at 16H00**.

Any further enquiries in this regard can be directed to Mrs. Else Hijarunguru or Ms. Adelheid Shilongo at 067 302231.

Municipal Offices
2 Kreft Street
Private Bag 2209
OTJIWARONGO
M. MATYAYI
Chief Executive Officer

2022.04.21

"Otjiwarongo – Cheetah capital of the world"

NICHOLAS O'DWYER

NAMWATER
Namibia Water Corporation Ltd

GCS

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TENDER AWARD NOTIFICATION

PROCUREMENT MANAGEMENT UNIT

AWARD OF CONTRACT TENDER NOTICE
UNDER SECTION 55 (8) OF THE PUBLIC PROCUREMENT ACT, 15 OF 2015

TO ALL BIDDERS

This is to notify bidders that Namibia Distribution Hub and Shill Courier Services CC have been awarded the procurement of **Distribution of New Era Newspapers for 12 Months (Procurement Reference Number: NCS/ONB/NEPC-01/2022)**

The seven (7) day period for application(s) for review started **04 April 2022** and ended on **10 April 2022.**

EXECUTIVE SUMMARY OF THE EVALUATION REPORT (SECTION 55 (8) AND REGULATION 39 (2)

Successful Bidder Name & Address	Award Per Lot	Total Amount of Lot Per Month (Including VAT)	Total Contract Price Per Month (Including VAT)
Namibia Distribution Hub Lafrenz Industrial Area 2-4 Eider Street Windhoek	Lot 1 – Windhoek to Gobabis	N$ 8 026.00	
	Lot 4 – Karibib to Omaruru	N$ 8 147.00	
	Lot 5 – Okahandja only	N$ 3 043.00	
	Lot 7 – Otjiwarongo & Okakarara	N$ 3 955.00	
	Lot 8 – Otjiwarongo to Opuwo	N$ 16 349.00	
	Lot 9 – Tsumeb to Ondangwa	N$ 13 545.00	
	Lot 11 – Windhoek to Tsumeb	N$ 4 064.00	
	Lot 12 – Windhoek to Walvis Bay	N$ 3 623.00	N$ 60 752.00
Shill Courier Services CC Unit No. 02 Sun Square Mall Ondangwa	Lot 2 – The South (Rehoboth, Mariental, Keetmans, Luderitz, Karasburg etc)	N$ 17 850.00	
	Lot 3 – Tsumeb to Katima Mulilo	N$ 18 690.00	N$ 36 540.00

Notice: All procurement activities carried out by NEPC are subject to the Public Procurement Act, 2015, its Regulations and Guidelines

Enquiries: Shangano Amon
081 2080 800
Procurement Management Unit

NEPC

KUNDANA
NEW ERA

Electricity Control Board
22 Years of Successful Regulation

VACANCY ANNOUNCEMENT

The Electricity Control Board (ECB) is the statutory electricity regulator established by the Electricity Act, 2000 (Act No. 2 of 2000) which Act was repealed by the Electricity Act 2007 (Act. No. 4 of 2007). The ECB's mandate is to exercise control over the Electricity Supply Industry (ESI) and to regulate the generation, transmission, distribution, supply, use, import and export of electricity in Namibia in accordance with the prevailing government policy so as to ensure order in the efficient supply of electricity. It is also responsible for the regulation of the electricity tariffs and quality of supply and service.

MANAGER: TECHNICAL REGULATION

PURPOSE OF THE JOB

Responsible for the development, review and implementation of technical regulation tools of the ESI and all technical operational responsibilities of the ECB. Regulating licensees on technical issues and fulfilling all regulatory requirements.

FOR JOB REQUIREMENTS
https://www.ecb.org.na/index.php/vacancies

FOR ENQUIRIES
Manager: Human Resources & Administration
Tel: +264 61 374 300

CLOSING DATE:
29 April 2022

No 35 Dr. Theo-Ben Gurirab Street, Klein Windhoek.
Business Hours: Weekdays from 07:30 - 16:30
P O Box 2923, Windhoek, Namibia +264 61 374 300 +264 61 374 305 www.ecb.org.na

ONGWEDIVA
FREEDOM & HARD WORK

ONGWEDIVA TOWN COUNCIL
PROCUREMENT MANAGEMENT UNIT

INVITATION FOR BIDS

Ongwediva Town Council is hereby inviting prospective bidders for the following bids:

1.PROCUREMENT REF. NO : **G/ONB/OngweTC-19/2021/22**
DESCRIPTION : Supply and Delivery of Personal Protective Clothing and Equipment to Ongwediva Town Council (Technical Services)
LEVY : N$ 100.00 ***(Non-refundable).***
ENQUIRIES : Mr. Isacky Namupala OR Mrs. Josephine Hainana **(Administrative)** Mrs. Lahya Aimwata **(Technical)** Tel.:065 – 233700

Bid reserved for bidders from Oshana Region only, as per the directive issued in terms of section 73 of the Public Procurement Act (15 of 2015) on preferential procurement.

2.PROCUREMENT REF. NO : **W/ONB/OngweTC-10/2021/22**
DESCRIPTION : Maintenance of Sewerage Pump Stations (Mechanical and Electrical) for a Period of two (2) Years, from July 2022 to June 2024.
LEVY : N$ 100.00 ***(Non-refundable).***
Bid Briefing : *On Request*
ENQUIRIES : Mr. Isacky Namupala OR Mrs. Josephine Hainana **(Administrative)** Mr. Hesekiel Namwandi **(Technical)** Tel.:065 – 233700

Bid reserved for bidders from Oshana Region only, as per the directive issued in terms of section 73 of the Public Procurement Act (15 of 2015) on preferential procurement.

3.PROCUREMENT REF. NO : **W/ONB/OngweTC-11/2021/22**
DESCRIPTION : Maintenance of Council Civic Buildings (Carpentry and Joinery) for a period of two (2) Years, from July 2022 to June 2024.
LEVY : N$ 100.00 ***(Non-refundable).***
Bid Briefing *On request*
ENQUIRIES : Mr. Isacky Namupala OR Mrs. Josephine Hainana **(Administrative)** Mr. Hesekiel Namwandi **(Technical)** Tel.:065 – 233700
DOCUMENTS : All documents are available as from Thursday, 14th April 2022 at the Cashiers.
CLOSING DATE : Tuesday, 17 May 2022 at 14H30.
DELIVERY ADDRESS : Bid Box ***(The envelop should be clearly marked)***
Ground Floor, Town House
Ongwediva Town Council:
Corner of Mandume Ndemufayo Road & Dr.Libertine Amathila Street.
Private Bag 5549, **ONGWEDIVA**
ATTENTION : The Secretary

Oil stabilises after big drop on IMF growth cut

HONG KONG – Asian markets were marginally higher on Wednesday while oil began recovering after a downgraded IMF global growth forecast for 2022 had sent crude prices plunging.

The International Monetary Fund slashed its outlook by 0.8 percentage points, largely over inflationary crises linked to the Ukraine conflict and the coronavirus pandemic – prompting a five percent dive in oil prices on Tuesday.

"The economic effects of the war are spreading far and wide -- like seismic waves that emanate from the epicenter of an earthquake," IMF chief economist Pierre-Olivier Gourinchas said in a report.

Oil prices began to recover Wednesday, however, and Asian stocks also mostly rose following a positive lead from Wall Street, where US stocks rallied on the back of promising housing-starts data and solid corporate earnings.

Both main contracts climbed, but crude has suffered major shocks this year, from the conflict in Ukraine to the raging coronavirus outbreak in China, where the economy has been battered by anti-Covid restrictions.

Tens of millions are still barred from leaving home in economic centre Shanghai and tech hub Shenzhen, where a Covid-19 outbreak has broken down supply lines and shuttered businesses.

"China continues to stay wedded to deleveraging parts of the economy while attempting to add stimulus in a targeted sector manner," said Jeffrey Haley, senior market analyst at Oanda.

"However, the Shanghai lockdown and fears its Covid-zero policy will crimp growth this year continue to weigh on markets that clearly want more of the usual cast-of-thousands stimulus measures from years past."

The Shanghai Composite Index was the biggest loser among major Asian markets, dropping 1.35% at the close.

Hong Kong – which plummeted on Tuesday over concerns about Beijing's ongoing tech-sector crackdown – also ended down, with Chinese banks keeping lending rates unchanged.

"China disappointed markets that were looking for more comprehensive stimulus measures as it left both its one and five-year Loan prime Rates (LPR) unchanged," Haley said.

Tokyo gained 0.86%, buoyed by a cheaper yen. Jakarta, Sydney and Taipei all inched upward while Seoul was flat.

Despite the rally on Wall Street, there are concerns about the impact of the earnings report from Netflix showing a drop in subscriptions in the first quarter of the year.

This was the first such drop for Netflix in a decade and hammered the streaming giant's shares, which dropped by a quarter of their value in after-market trading.

Analysts have said this could dent Tuesday's gains when US markets open.

After closing lower on Tuesday over the IMF announcement, Europe's major markets opened the day in positive territory, with London, Paris and Frankfurt all slightly up.

- *Nampa/AFP*



Energy alternatives... *Italy is looking to add Angola and the Congo Republic to a portfolio of suppliers to substitute Russia, which provides about 45% of Italian gas.* *Photo: Contributed*

Italy chases African gas to end dependence on Russia

ROME – Italian ministers head to central Africa Wednesday in an urgent quest for new energy deals as Italy scrambles to break away from Russian gas over the Ukraine conflict. Prime Minister Mario Draghi is looking to add Angola and the Congo Republic to a portfolio of suppliers to substitute Russia, which provides about 45% of Italian gas.

"We do not want to depend on Russian gas any longer, because economic dependence must not become political subjection," he said in an interview with the Corriere della Sera daily published on Sunday. "Diversification is possible and can be implemented in a relatively short amount of time -- quicker than we imagined just a month ago," he said.

Draghi, who has tested positive for Covid-19, is sending in his stead Foreign Minister Luigi Di Maio and Ecological Transition Minister Roberto Cingolani, who will travel to Luanda on Wednesday and Brazzaville on Thursday. They will be accompanied by Claudio Descalzi, chief executive of Italian energy giant ENI.

There is also a possible trip to Mozambique on the cards in May. The foray follows the signing of agreements with Algeria and Egypt in recent weeks.

Algeria is currently Italy's second-largest supplier, providing around 30% of its consumption.

ENI said the deal with Algeria's Sonatrach would boost deliveries of gas through the Transmed undersea pipeline by "up to nine billion cubic metres per year" by 2023-24.

Transmed only had spare pipeline capacity of 7.8 billion cubic metres per year in 2021 – though it has said it is ready to expand.

The Egypt accord could result in up to three billion cubic meters of liquefied natural gas (LNG) bound to Europe and Italy in particular this year, ENI said.

Italy is looking into buying or renting two floating storage and regasification units (FSRU) to allow it to import more LNG.

Diversification will not be cheap, warn experts, who foresee extra taxes passed on to businesses and families. Davide Tabarelli, head of energy think tank Nomisma Energia, said Rome was rightly exploiting the "excellent relationships" that ENI has built up over 69 years in Africa, where it is the sector leader in terms of production and reserves.

But the idea of replacing Russian gas "in the short-term" was "fanciful", he told *AFP*. "It will take at least two or three years."

The government said it expects to get the floating regasification units into place within 18 months.

It has also talked of kick-starting stalled projects for two onshore regasification plants, which would take some four years to build.

"This is a race against time to make sure we stock gas and oil for the next winter season," said Francesco Galietti, head of Rome-based consultancy Policy Sonar.

Rome should be pulling out all the stops, including boosting production of fossil fuels at home, he said, but the Ecological Transition ministry was instead revoking contracts.

Cingolani's "snobbery towards (domestic) oil and gas is delaying the phasing out of Russian gas," he warned.

Italy is one of Europe's biggest guzzlers of gas, which currently represents 42% of its energy consumption, and it imports 95% of the gas it uses.

The government hopes to reduce that by accelerating the investment in renewables and has vowed to cut red tape on wind and solar farms.

Draghi has called for a collective sacrifice, asking Italians this month: "Do we want to have peace or do we want to have the air conditioning on?"

His rallying cry was met with some grumbling in a country feeling the effects of global heating, which science shows is driven by human burning of fossil fuels.

Undeterred, the government is readying so-called "operation thermostat", which could see the public sector turn down heating in schools and offices by one degree, and the equivalent for air conditioning in the summer.

The rule would apply to private households and companies too, though it would be difficult to police.

It could save some four billion metric cubes of natural gas a year -- or around 14% of the total gas imported from Russia, according to *La Stampa* newspaper. - *Nampa/AFP*

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Tel: +264 61 712 105

Credit Suisse takes hit from Ukraine war, litigation

ZURICH – Swiss banking giant Credit Suisse warned Wednesday that it will face a loss in the first quarter due to the impact of longstanding legal matters and Russia's conflict with Ukraine.

The country's second biggest bank said its results "will be adversely affected" by the Ukraine conflict to the tune of 200 million Swiss francs (195 million euros, US$211 million) in lost revenue and provisions for credit losses.

Credit Suisse said it was also setting an extra 600 million Swiss francs aside for litigation that dates back more than a decade, bringing the total provisions for the cases to 700 million Swiss

The bank will also see losses of around 350 million Swiss francs from the decrease in value of its holding in Allfunds Group, a business-to-business platform. Credit Suisse already suffered a loss in 2021 following the implosions of financial services firms Greensill and Archegos.

The bank said its first quarter losses will be partially offset by the recovery of 170 million Swiss francs that it had set aside in provisions related to Archegos, along with real estate

APPENDIX F

NOTIFICATIONS OF INTERESTED AND AFFECTED PARTIES

Stephanie Strauss

From: Stephanie Strauss
Sent: Thursday, April 14, 2022 3:15 PM
Subject: Environmental and Social Impact Assessment for the proposed Rundu Purification Plant Extension
Attachments: 21-0009 BID ESIA Rundu Purification Plant.pdf

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NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. (NOD) in association with GCS for the design, tender document preparation, administration and supervision for construction of the new scheme and decommissioning of the redundant infrastructure of the old scheme. GCS will further conduct the ESIA process for the Project. The ESIA is required to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

The general public as well as any I&APs are hereby invited to attend the public meeting during which the potential environmental and social impacts of the project will be presented for comments and inputs from the public. The meeting is scheduled to take place as follows:

Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

Interested & Affected Parties (I&AP) Registration and submission of comments: To comment or receive further information on the project, please register with GCS (contact details below) as an I&AP before end of business on **5 May 2022**. A Background Information Document (BID) has been compiled for the project and is attached to this email. All registered I&APs will be informed throughout the assessment process and will be provided with further opportunities for review and submission of comments.

Contact details: GCS Water Environmental Engineering Namibia
Attention: Mrs. Stephanie Strauss
PO Box 81808, Windhoek, Namibia
Email: stephanies@gcs-na.biz
Tel: +264 61 248 614
Cellphone/WhatsApp: +264 8130 76205

Contact details: NamWater
Attention: Mrs. Jolanda Kamburona
Private Bag 13389, Windhoek, Namibia

Email: kamburonaj@namwater.com.na
Tel: +264 61 712 105

Kind regards,

Stephanie Strauss

From: Stephanie Strauss
Sent: Thursday, April 14, 2022 3:38 PM
To: 'ed@mawlr.gov.na'
Subject: FW: Environmental and Social Impact Assessment for the proposed Rundu Purification Plant Extension
Attachments: 21-0009 BID ESIA Rundu Purification Plant.pdf

Dear Potential Interested and Affected Party

GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) hereby give notice to all potentially Interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the proposed Rundu Purification Plant Extension.

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Attention: Mrs. Stephanie Strauss
PO Box 81808, Windhoek, Namibia
Email: stephanies@gcs-na.biz
Tel: +264 61 248 614
Cellphone/WhatsApp: +264 8130 76205

Contact details: NamWater
Attention: Mrs. Jolanda Kamburona

Private Bag 13389, Windhoek, Namibia
Email: kamburonaj@namwater.com.na
Tel: +264 61 712 105

Kind regards,

Stephanie Strauss

From: Stephanie Strauss
Sent: Thursday, April 14, 2022 4:10 PM
To: 'kambandak@namwater.com.na'
Subject: FW: Environmental and Social Impact Assessment for the proposed Rundu Purification Plant Extension
Attachments: 21-0009 BID ESIA Rundu Purification Plant.pdf

Dear Potential Interested and Affected Party

GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) hereby give notice to all potentially Interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the proposed Rundu Purification Plant Extension.

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NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. (NOD) in association with GCS for the design, tender document preparation, administration and supervision for construction of the new scheme and decommissioning of the redundant infrastructure of the old scheme. GCS will further conduct the ESIA process for the Project. The ESIA is required to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

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Interested & Affected Parties (I&AP) Registration and submission of comments: To comment or receive further information on the project, please register with GCS (contact details below) as an I&AP before end of business on **5 May 2022**. A Background Information Document (BID) has been compiled for the project and is attached to this email. All registered I&APs will be informed throughout the assessment process and will be provided with further opportunities for review and submission of comments.

Contact details: GCS Water Environmental Engineering Namibia
Attention: Mrs. Stephanie Strauss
PO Box 81808, Windhoek, Namibia
Email: stephanies@gcs-na.biz
Tel: +264 61 248 614
Cellphone/WhatsApp: +264 8130 76205

Contact details: NamWater
Attention: Mrs. Jolanda Kamburona

Private Bag 13389, Windhoek, Namibia
Email: kamburonaj@namwater.com.na
Tel: +264 61 712 105

Kind regards,

GCS
Water & Environmental Consultants

45 Feld Street, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 246 614 Fax: (+264) 61 238 586 Web: www.gcs-na.biz

Our Reference 21 009

12 April 2022

Hon. Councillor
Rundu Urban Constituency
Private Bag 2124
Rundu

Dear Sir/Madam

ENVIRONMENTAL ASSESSMENT PROCESS FOR PROPOSED RUNDU PURIFICATION PLANT EXTENSION

Namibia Water Corporation Ltd (NamWater) currently operates two river water supply schemes, Rundu and N'karapamwe, to supply the town of Rundu from the Okavango River. The existing schemes are aged and currently running at maximum capacity. As a result, NamWater intends to upgrade the water supply schemes and construct a new plant with a capacity of 1 800 m^3/h to meet the ever-growing water demand up to 2037.

NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. (NOD) in association with GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) for the design, tender document preparation, administration and supervision for construction of the new scheme and decommissioning of the redundant infrastructure of the old scheme.

Under the Environmental Management Act (2007) and its Regulations (2012), the proposed activity requires an Environmental Clearance Certificate from the Ministry of Environment, Forestry and Tourism (MEFT): Department of Environmental Affairs and Forestry (DEAF). GCS has been appointed to conduct the process and submit the application to the Environmental Commissioner on behalf of the proponent.

As part of the public participation we hereby would like to request your respective office to assist with the radio announcements to be made to the public to inform them of the public participation meeting. The radio announcements are kindly to be made **in the local languages.**

The meeting is scheduled to take place as follows:

Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

Confirmation of announcement

Kindly complete the below confirmation of announcement and return to our office to be kept on record as proof that the radio announcement was made.

Radio station	RapidsFM
Frequency	107.7

Language	Rukwangali & English & Rumanyo		
Date of announcement	25-04-2022	26-04-2022	27-04-2022
Time of announcement	14h00	14h00	14h00
Signature and confirmation that announcements were placed	Name of announcer: Erwin Mbambo	Signature:	Date: 27-04-2022

We appreciate your assistance in this regard.

Yours faithfully,

Stephanie Strauss

Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

Confirmation of announcement

Kindly complete the below confirmation of announcement and return to our office to be kept on record as proof that the radio announcement was made.

Radio station	Kato fm Rundu
Frequency	97.5

GCS (Pty) Ltd. Reg No. 2010/211 ... 2010
Officers: ... Directors: ...
www.gcs-na.biz

Language	Rukwangali		
Date of announcement	26/04/22		
Time of announcement	15h00-16h00	19h00-22h00	
Signature and confirmation that announcements were placed	Name of announcer: Feila Alexandre	Signature:	Date: 09/05/22

We appreciate your assistance in this regard.

Yours faithfully,

Stephanie Strauss

45 Feld Street, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

Our Reference *21-0009*

2 August 2022

Ms. Rosvitha
Rapids FM Rundu
PO Box 3443
Rundu

Dear Madam

ENVIRONMENTAL ASSESSMENT PROCESS FOR PROPOSED RUNDU PURIFICATION PLANT EXTENSION

GCS is conducting the Environmental and Social Impact Assessment for the proposed Rundu Purification Plant Upgrade. An electronic copy of the draft scoping report is available for review by the public at the GCS website: https://www.gcs-sa.biz/public-documents/

Furthermore, a hard copy of the report is available to the public for review and comment at the Reception Desk of the NamWater office in Rundu (Eugene Kakuru Street, Rundu, Namibia).

Should you wish to comment on the proposed project, kindly do so in writing on or before the 8th of August 2022 at the below contact information.

Contact details: GCS Water Environmental Engineering Namibia

Attention: Mrs. Stephanie Strauss

PO Box 81808, Windhoek, Namibia (Please let us know telephonically if you have sent a comment by post)

Email: stephanies@gcs-na.biz

Tel: +264 61 248 614

Cellphone/WhatsApp: +264 8130 76205

Confirmation of announcement

Kindly complete the below confirmation of announcement and return to our office to be kept on record as proof that the radio announcement was made.

Radio station	*RapidsFM*
Frequency	*107.7*

Language	*English and Rukwangali*		
Date of announcement	*02 -08 -2022*		
Time of announcement	*13H35*		
Signature and confirmation that announcements were placed	Name of announcer: *Rosvitha Ghunonga*	Signature: ***Rosvitha. G***	Date: *02-08-2022*

We appreciate your assistance in this regard.

Yours faithfully,



Stephanie Strauss

45 Feld Street, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

Our Reference GCS Ref - 21-0009

2087649.

RECEIVED
2022 -07- 25
EXECUTIVE DIRECTOR'S OFFICE
MAWLR

25 July 2022

The Executive Director
Ministry of Agriculture, Water and Land Reform
Private Bag 13184
Windhoek

Dear Sir

Availability of the Draft Scoping Report for the Environmental and Social Impact Assessment for the Proposed Rundu Purification Plant Upgrade, Rundu, Kavango East Region

Rundu is the largest town in the Kavango East Region and is thus also referred to as the capital of the region. It is situated on the southern side of the Kavango River on the border with Angola. Namibia Water Corporation Ltd (NamWater) operates two river water supply schemes, Rundu and Nkarapamwe, to supply the town. Both schemes abstract raw water from the Kavango River and after treatment and disinfection, potable water is supplied to various consumers, including the Rundu Town Council, the Military Base at the Airport, Government Institutions, Industries, Businesses and Private Consumers. The current total average water supply from both schemes is 824 m3/h. The water demand calculations indicate that a total supply of 1058 m^3/h is required to meet the current demands. Therefore, there is a supply shortfall of approximately 234 m^3/h at present. The existing schemes are old and are running at maximum capacity. The total production output from both schemes has difficulties in coping with the Rundu Town water demand. As a result, internal NamWater studies suggested the upgrading of the existing Rundu and Nkarapamwe water supply schemes and construction of a new water treatment plant (WTP) at Rundu with an increased capacity of 1 800 m3/h to eventually meet the ever-growing demand up to 2037.

NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. ("NOD") in association with GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS") for the design, tender document preparation, administration and supervision for the construction of the new scheme and decommissioning of the old scheme. GCS will further conduct the Environmental and Social Impact Assessment (ESIA) process for the project. The ESIA is required to ensure sound environmental management by NamWater and to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the legal requirements of the Namibian Environmental Authorities.

Public consultation forms part of the ESIA process. As part of the public consultation, your office has been registered as a stakeholder in the process. As such please find attached an electronic copy of the draft Scoping Report on the attached CD for your review and comment.

The report will be available to the public for comment from the **25th of July 2022 until 8th of August 2022**. We kindly request that you submit your comments to us in writing before or on **8th of August 2022** at the below contact information.

Contact: Stephanie Strauss

PO Box 81808 Windhoek

Tel: 061 248 614

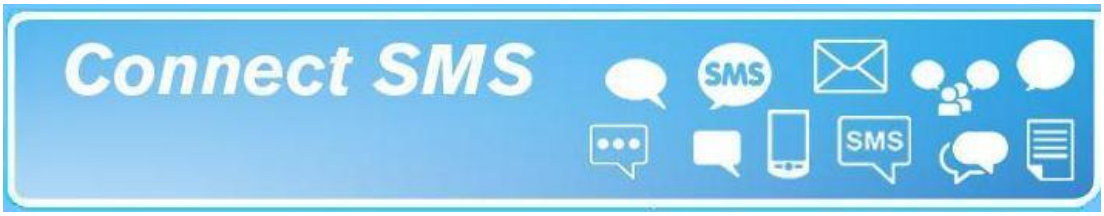
Email: stephanies@gcs-na.biz

Please do not hesitate to contact us should you have any questions regarding the proposed activity and its ESIA process.

Yours faithfully



Stephanie Strauss



Main

Logged in as:
GCSNamibia

Credits: 150

Sign Out

Send SMS
To Individual
To Group
To Distribution List

Phone Book
Individuals
Groups
Distribution Lists

Account
View/Update

History
SMS History

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Welcome

SMS will be Send

Print/Save this file for prove or trace.

Reference No:	a1c0e1f
To:	Rundu.lst
Message:	Dear IAP the draft Scoping Rep ...
From UserID:	GCSNamibia
SMS per Number:	2
Numbers in List:	23
Total Number of SMSs:	46
Reserved Credits:	46
Deposited:	25-Jul-2022 09:29
Scheduled for:	25-Jul-2022 09:29
File name:	GCSNamibia_0725092910
Service name:	webBulkList

Email this page Print this page

M&E Software Developments CC - All Rights Reserved

Stephanie Strauss

From: Muremi John <MuremiJ@namwater.com.na>
Sent: Tuesday, August 9, 2022 2:43 PM
To: Stephanie Strauss
Cc: Diergaardt George; Himulayi Stefanus
Subject: RE: 21-0009 Rundu Purification Plant Upgrade Draft Scoping Report

Afternoon Miss Stephanie,

No comments were received.

Regards
John

From: Stephanie Strauss <stephanies@gcs-na.biz>
Sent: Tuesday, 09 August 2022 14:30
To: Muremi John <MuremiJ@namwater.com.na>
Cc: Diergaardt George <DiergaardtG@namwater.com.na>; Himulayi Stefanus <HimulayiS@namwater.com.na>
Subject: RE: 21-0009 Rundu Purification Plant Upgrade Draft Scoping Report

Good day Mr Muremi

I hope you are well.

I wanted to confirm whether any comments were received by your office from the public on the report that was available at the reception? If any were received kindly forward them to our office. If not kindly indicate so per email.

Thank you.

Kind regards

Stephanie Strauss
Country Manager - Namibia

Tel +264 (0) 61 248 614
Fax +264 (0) 61 238 586
Cell +264 81 3076 205
Web www.gcs-na.biz
Address 45 Feld Street,
Windhoek, Namibia

Established in 1987

From: Muremi John <MuremiJ@namwater.com.na>
Sent: Friday, July 22, 2022 11:24 AM
To: Stephanie Strauss <stephanies@gcs-na.biz>
Cc: Diergaardt George <DiergaardtG@namwater.com.na>; Himulayi Stefanus <HimulayiS@namwater.com.na>
Subject: RE: 21-0009 Rundu Purification Plant Upgrade Draft Scoping Report

Morning Sir,

Noted and it will be done accordingly.

Regards
John

From: Stephanie Strauss <stephanies@gcs-na.biz>
Sent: Friday, 22 July 2022 09:13
To: Muremi John <MuremiJ@namwater.com.na>
Subject: 21-0009 Rundu Purification Plant Upgrade Draft Scoping Report

Good day Mr Muremi

I hope you are well.

We have couriered the Rundu Purification Plant Upgrade Draft Scoping Report to your office yesterday. Kindly confirm once it is delivered to your office today.

Kindly place one copy of the report at the NamWater reception desk. We will notify the public that the report is there if they would like to review it. They can then come to the reception and read the report but should not take the report along. If they have any questions/comments, they can submit them to your office or our office.

Thank you for your assistance. Kindly conform receipt of this email.

Kind regards

Stephanie Strauss
Country Manager - Namibia

Tel +264 (0) 61 248 614
Fax +264 (0) 61 238 586
Cell +264 81 3076 205
Web www.gcs-na.biz
Address 45 Feld Street,
Windhoek, Namibia

Established in 1987

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Water For All, Forever!

"Excellence in the water industry"

Namibia Water Corporation

John Muremi

Water Supply Area Manager

Kavango Region

176 Iscor Street, Northern Industrial Area, Windhoek, Namibia
Private Bag 13389, Windhoek, Namibia
Tel: +264 (66) 71-4301, Fax:
Cell: +264 (81) 122 2860
E-mail: MuremiJ@namwater.com.na

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Water Supply Area Manager

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E-mail: MuremiJ@namwater.com.na

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Namibia Water Corporation

John Muremi

Water Supply Area Manager

Kavango Region

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Private Bag 13389, Windhoek, Namibia
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John Muremi

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Private Bag 13389, Windhoek, Namibia
Tel: +264 (66) 71-4301, Fax:
Cell: +264 (81) 122 2860
E-mail: MuremiJ@namwater.com.na

Stephanie Strauss

From: Stephanie Strauss
Sent: Monday, July 25, 2022 9:19 AM
Subject: Draft Scoping Report Availability for Public Review: Environmental and Social Impact Assessment for the proposed Rundu Purification Plant Extension

Dear Interested and Affected Party

Following our previous communication dated 14 April 2022, GCS Water and Environmental Engineering Namibia (Pty) Ltd (GCS) hereby give notice to all Registered I&APs that the Draft Environmental Scoping Report (DESR) is now available for the above proposed development for public comment from the **25th of July 2022 until the 8th of August 2022**.

An electronic copy of the report is available for review at the link below (Document name: 21-0009 Draft Scoping Report_Rundu):
https://www.gcs-sa.biz/public-documents/

Furthermore, a hard copy of the report is available to the public for review and comment at the Reception Desk of the NamWater office in Rundu (Eugene Kakuru Street, Rundu, Namibia).

Should you wish to comment on the proposed project, kindly do so in writing on or before the **8th of August 2022** at the below contact information**.**

Contact details: GCS Water Environmental Engineering Namibia
Attention: Mrs. Stephanie Strauss
PO Box 81808, Windhoek, Namibia (Please let us know telephonically if you have sent a comment by post)
Email: stephanies@gcs-na.biz
Tel: +264 61 248 614
Cellphone/WhatsApp: +264 8130 76205

Contact details: NamWater
Attention: Mrs. Jolanda Kamburona
Private Bag 13389, Windhoek, Namibia
Email: kamburonaj@namwater.com.na
Tel: +264 61 712 105

Should you require any additional information in this regard please feel free to contact our office.

Kind regards
Stephanie Strauss

From: Stephanie Strauss
Sent: Thursday, April 14, 2022 3:15 PM
Subject: Environmental and Social Impact Assessment for the proposed Rundu Purification Plant Extension

Dear Potential Interested and Affected Party

GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) hereby give notice to all potentially Interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the proposed Rundu Purification Plant Extension.

Namibia Water Corporation Ltd (NamWater) currently operates two river water supply schemes, Rundu and N'karapamwe, to supply the town of Rundu from the Okavango River. The existing schemes are aged and currently running at maximum capacity. As a result, NamWater intends to upgrade the water supply schemes and construct a new plant with a capacity of 1 800 m^3/h to meet the ever-growing water demand up to 2037.
NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. (NOD) in association with GCS for the design, tender document preparation, administration and supervision for construction of the new scheme and decommissioning of the redundant infrastructure of the old scheme. GCS will further conduct the ESIA process for the Project. The ESIA is required to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

The general public as well as any I&APs are hereby invited to attend the public meeting during which the potential environmental and social impacts of the project will be presented for comments and inputs from the public. The meeting is scheduled to take place as follows:

Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

Interested & Affected Parties (I&AP) Registration and submission of comments: To comment or receive further information on the project, please register with GCS (contact details below) as an I&AP before end of business on **5 May 2022**. A Background Information Document (BID) has been compiled for the project and is attached to this email. All registered I&APs will be informed throughout the assessment process and will be provided with further opportunities for review and submission of comments.

Contact details: GCS Water Environmental Engineering Namibia
Attention: Mrs. Stephanie Strauss
PO Box 81808, Windhoek, Namibia
Email: stephanies@gcs-na.biz
Tel: +264 61 248 614
Cellphone/WhatsApp: +264 8130 76205

Contact details: NamWater
Attention: Mrs. Jolanda Kamburona
Private Bag 13389, Windhoek, Namibia
Email: kamburonaj@namwater.com.na
Tel: +264 61 712 105

Kind regards,

APPENDIX G

SITE NOTICES



NICHOLAS O'DWYER

NAMWATER
Namibia Water Corporation Ltd

GCS

Notice of Scoping and Environmental and Social Impact Assessment Process
Invitation to register as an Interested and Affected Party for the proposed Rundu Purification Plant Extension

GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) hereby give notice to all potentially Interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the proposed Rundu Purification Plant Extension.

Namibia Water Corporation Ltd (NamWater) currently operates two river water supply schemes, Rundu and N'Karapamwe, to supply the town of Rundu from the Okavango River. The existing schemes are aged and currently running at maximum capacity. As a result, NamWater intends to upgrade the water supply schemes and construct a new plant with a capacity of 1 800 m³/h to meet the ever-growing water demand up to 2037.

NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd (NOD) in association with GCS for the design, tender document preparation, administration and supervision for construction of the new scheme and decommissioning of the redundant infrastructure of the old scheme. GCS will further conduct the ESIA process for the Project. The ESIA is required to meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB). The project must also meet the requirements of the Namibian Environmental Authorities.

The general public as well as any I&APs are hereby invited to attend the public meeting during which the potential environmental and social impacts of the project will be presented for comments and inputs from the public. The meeting is scheduled to take place as follows:

Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

Interested & Affected Parties (I&AP) Registration and submission of comments: To comment or receive further information on the project, please register with GCS (contact details below) as an I&AP before end of business on **6 May 2022**. A Background Information Document (BID) has been compiled for the project and is available upon request to the GCS contact below or on the GCS website (https://www.gcs-sa.biz/public-documents/). All registered I&APs will be informed throughout the assessment process and will be provided with further opportunities for review and submission of comments.

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PO Box 81808, Windhoek, Namibia
Email: stephanies@gcs-na.biz
Tel: +264 61 248 614
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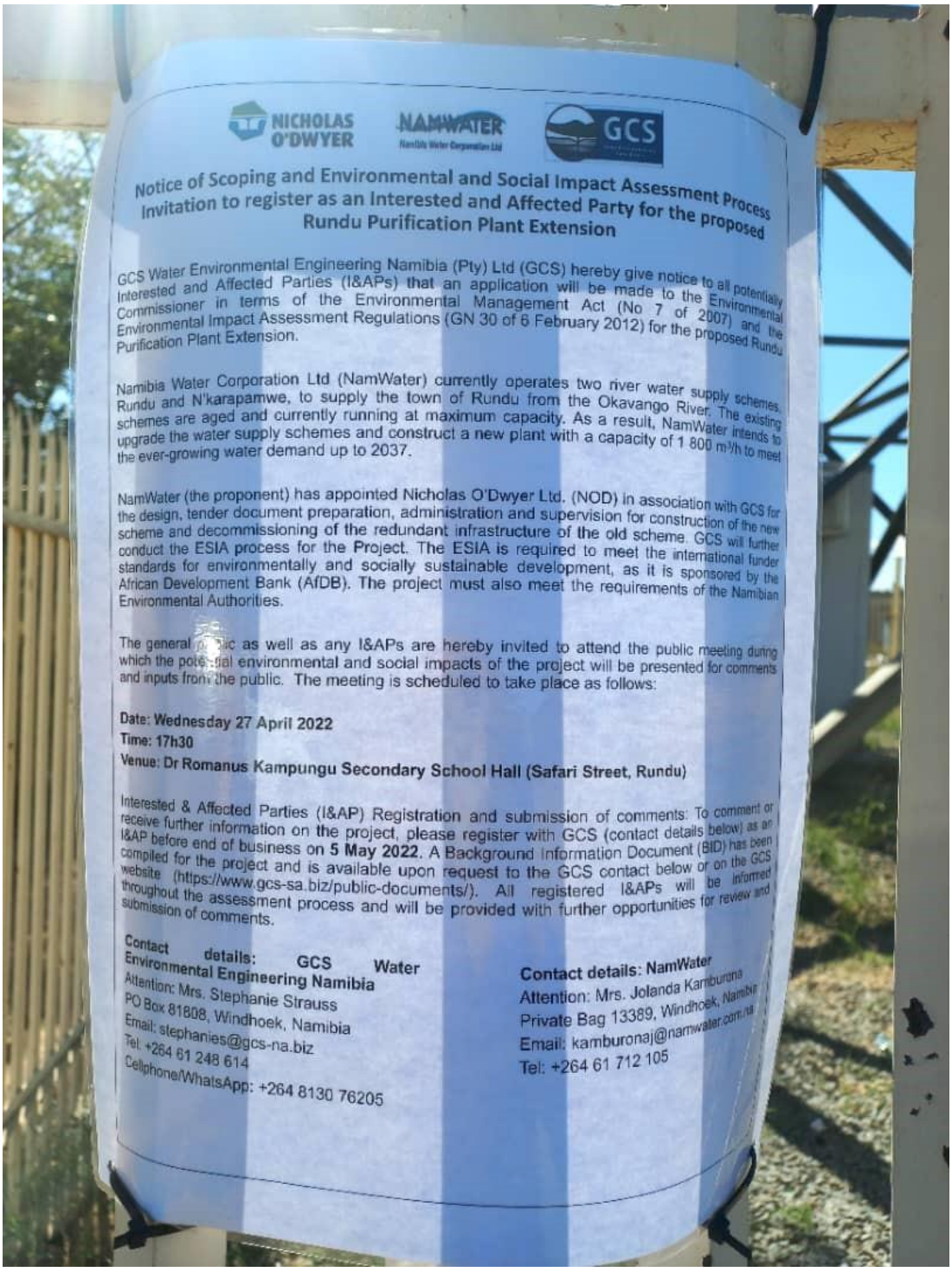

NICHOLAS O'DWYER NAMWATER GCS

Notice of Scoping and Environmental and Social Impact Assessment Process Invitation to register as an Interested and Affected Party for the proposed Rundu Purification Plant Extension

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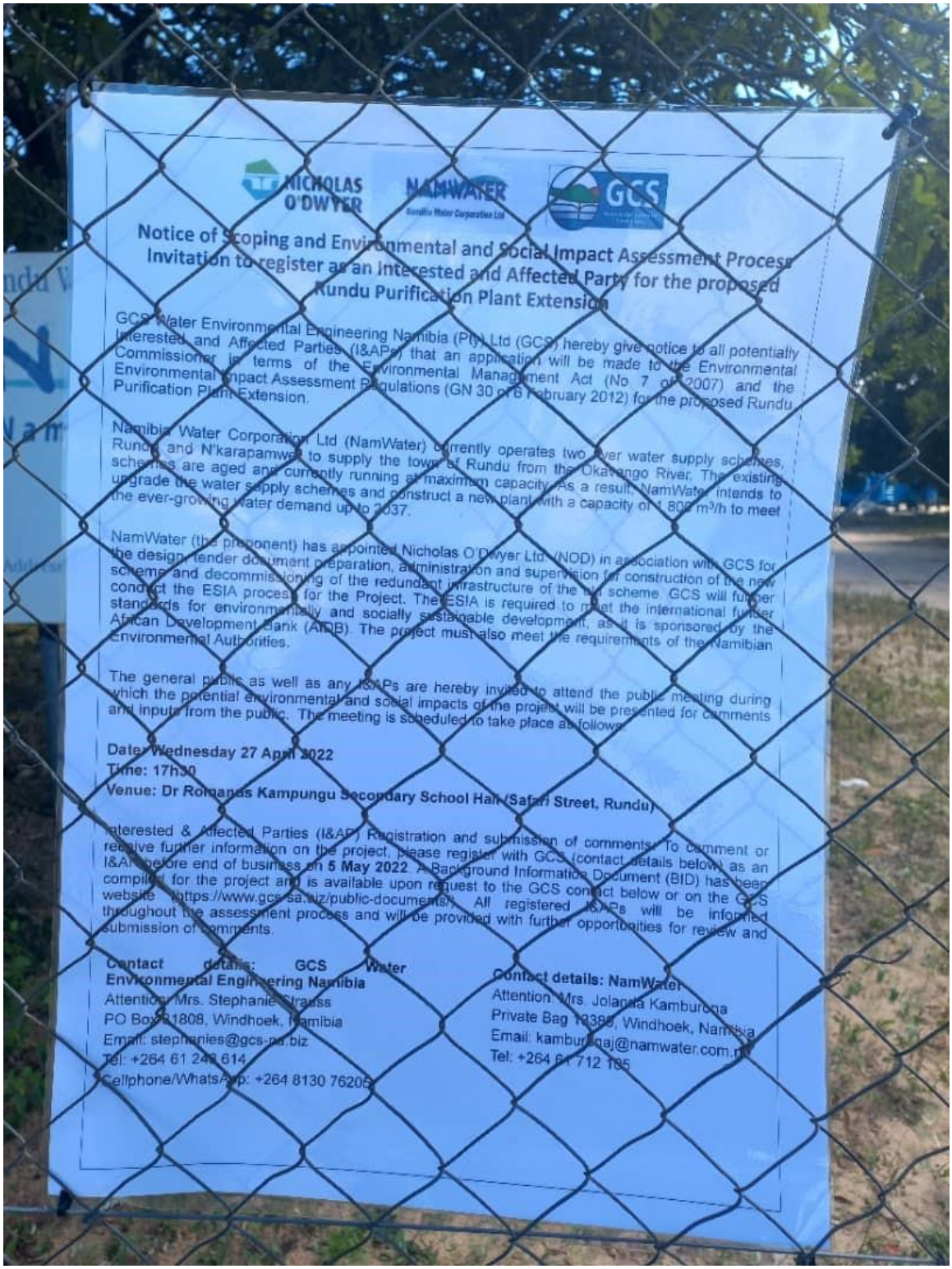

NICHOLAS O'DWYER

NAMWATER
Namibia Water Corporation Ltd

GCS
Water and Environmental Engineering

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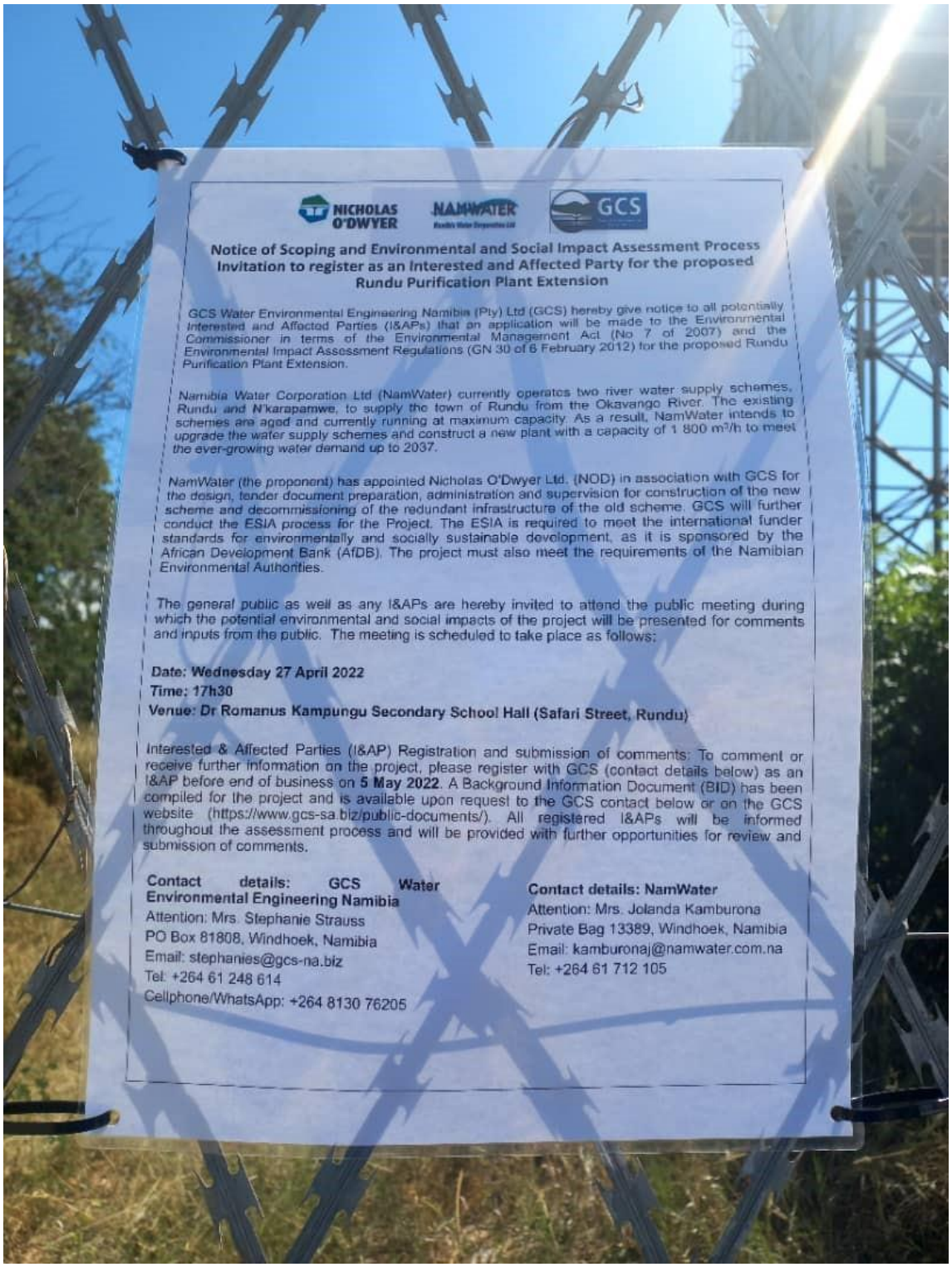

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NAMWATER
Namibia Water Corporation Ltd

GCS

Notice of Scoping and Environmental and Social Impact Assessment Process
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APPENDIX H

MEETING PRESENTATION, ATTENDANCE REGISTER AND MINUTES

45 Feld Street, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

Our Reference 21-0009

Meeting Minutes

Subject:	Public Participation Meeting for the Environmental and Social Impact Assessment for the Proposed Rundu Purification Plant Upgrade, Rundu, Namibia
Venue:	Kavango East Regional Council chambers
Date:	28 April 2022
Time:	14h30
Attendance:	See attached attendance register

1 INTRODUCTION

The meeting was opened by the Chief Regional Officer Mr Ludwig Thikusho who welcomed the team from GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS) and proceeded to introduce the delegates from the Kavango East Regional Council in attendance at the meeting. Stephanie Strauss the Environmental Assessment Practitioner from GCS introduced the team from GCS and the representative from NamWater. Stephanie proceeded with the oral presentation after which the floor was opened to questions. This opened an interactive session between the consultant and the attendees.

2 OVERVIEW OF PROPOSED PROJECT

The presentation provided a background to the proposed Rundu Purification Plant Upgrade project. Stephanie additionally explained the process to be followed during the Environmental and Social Impact Assessment (ESIA), highlighting that part of the process is to engage the interested and affected parties (I&APs), hence the meeting. Stephanie further identified some of the pre-identified potential environmental and social impacts that will be assessed in the ESIA process. The presentation also indicated the various public participation activities which have been undertaken to date. The presentation was concluded with the provision of the details of how I&APs can become involved and provided details of the communication platforms available and indicating that the project is open for public participation until submission is done to the Ministry of Environment, Forestry and Tourism (MEFT).

3 QUESTIONS AND COMMENTS REGARDING THE PROPOSED PROJECT

The issues/concerns raised by the attendants during the meeting are presented in the table below:

Table 2-1: Questions and comments raised during the meeting.

Question/Comment By	Question/Comment	Respondent	Response
Hon. Paulus Mbangu	This project is a good one and there are no objections from our side. Just a note from the announcement I heard on the radio, I heard them just mention the Nkarapamwe scheme and not the rest of the Rundu scheme which includes all the villages involved, so in future just make sure the information is conveyed fully so that there are no surprises for the public later on.	Stephanie Strauss (GCS)	The initial announcement made included both schemes but it was translated so it is possible they left something out, but we take note of this and will make sure in the future.
Hon. Victoria M Kauma	When it comes to public meetings and wanting to get the word out there, you can always work through our constituency offices because we have constituency development coordinators that are in the villages and spread the word around as well as the traditional authorities to send the message out. These are the people that identify the needs of the people and come up with mitigation measures of project impacts. This helps with proper stakeholder engagement with local authorities.	Stephanie Strauss (GCS)	We did contact the constituency offices and have been in contact with Mr. Buta Joackim from the urban constituency office. In future we will make sure to involve these offices and arrange the public meetings through these offices to address the people from the villages.
Hon. Victoria M Kauma	Will these developments create local job opportunities?	Stephanie Strauss (GCS)	Yes, the development will go out on local tender once the construction phase begins of the project.
Sakaria Bartlomeus (Namwater)	From the presentation I see the pipeline going to Kayengona runs from Kehemu site and I was wondering why it not diverts across the road first before going to Kayengona to make provision for new development in	Stephanie Strauss (GCS)	This is noted and will be communicated to the proponent for consideration.

Question/Comment By	Question/Comment	Respondent	Response
	that area because the houses in that area are increasing at drastic rate between Kehemu and Kayengona.		
Hon. Paulus Mbangu	No, the pipeline must go straight to Kayengona and once the engineers have increased the capacity as according to the tender requirements then the ministry can step in and take over and supply to further areas that are in need for more water with new tenders.	Stephanie Strauss (GCS)	Thank you Honorable for that comment, the scope of this project is tender specific as you stated.
Ludwig Thikosho	How long is the project going to take and is it the same project that the minister announced for the water supply schemes across the region and country.	Stephanie Strauss (GCS)	With all the phases combined the project should take about 3 years for everything to be completed. It is the project announced by the Minister however the scope is limited to what we presented today. There may be further plans by the Ministry for water supply to the rest of the region.

4 WAY FORWARD

The documented questions and comments from the meeting will be incorporated and fully addressed in the Environmental Scoping Report. This report will be circulated to all registered I&APs for review before it can be submitted to the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry for evaluation.

5 CONCLUSION

After the attendees had all raised their points and comments, Stephanie Strauss gave a vote of thanks. The meeting was adjourned at 16:00.

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Our Reference 21-0009

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Venue:	Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)
Date:	27 April 2022
Time:	17h30
Attendance:	See attached attendance register

1 INTRODUCTION

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Table 2-1: Questions and comments raised during the meeting.

Question/Comment By	Question/Comment	Respondent	Response
Disho Muruti	How big is the new site, where is it located, and will it affect the birds that we observe in the flood plain?	Stephanie Strauss (GCS)	The new site is about six hectares and is located behind the police station, it is not located in the flood plain so the birds should not be impacted by this new site.
Disho Muruti	My first concern is with the growing population of Rundu especially in the informal settlements the projection of 2037 seems like a short period or like it is too close. It would be better if the water supply could be increased to a projection of the next twenty years or so.	Stephanie Strauss (GCS)	The Namwater team have used these projections and predictions to estimate the required demand for the area and additional provision can then further be made in future.
Disho Muruti	My second concern is with regards to the Ndama area where I am a resident. The mosquitoes at the backwash pond seem much larger than in any other area if compared to those at the river flood plains. I am not certain about the statistics, but I believe that the malaria cases in the Ndama area are significantly higher than anywhere else in Rundu.	Stephanie Strauss (GCS)	We take not of your concern.
Disho Muruti	My other concern is with NORED and the electricity already being an issue in Rundu and NORED already has many problems. Will the new equipment and infrastructure not put more strain on this struggling situation?	Stephanie Strauss (GCS)	The new development will include addressing the supply of electricity to the new infrastructure.

Question/Comment By	Question/Comment	Respondent	Response
Sakaria Bartlomeus (NamWater)	From the presentation I see the pipeline going to Kayengona runs from Kehemu site and I was wondering why it not diverts across the road first before going to Kayengona to make provision for new development in that area because the houses in that area are increasing at drastic rate between Kehemu and Kayengona.	Stephanie Strauss (GCS)	This is noted and will be communicated to the proponent for consideration.
Disho Muruti	I am not sure if this part of the water abstraction but the water in the river has been shallowing causing the levels to be much lower than usual.	Stephanie Strauss (GCS)	There may be various factors contributing to the shallowing of the river. In terms of the abstraction there is a commission (OKACOM) that oversees the amount of water that is allowed to be abstracted from the river for the various countries using the river water.

4 WAY FORWARD

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5 CONCLUSION

After the attendees had all raised their points and comments, Stephanie Strauss gave a vote of thanks. The meeting was adjourned at 19:30.

GCS Water & Environmental Consultants

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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED RUNDU PURIFICATION PLANT UPGRADE, RUNDU, KAVANGO EAST REGION

NAMWATER Namibia Water Corporation Ltd

NICHOLAS O'DWYER

Public Meeting:
Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

Agenda

- Welcome
- Background
- Purpose of the meeting
- Environmental and Social Impact Assessment (ESIA) Process
- Public Participation Process
- The Proposed Project
- Pre-identified Potential Impacts
- The way forward
- How you can get involved
- Questions/Answers

Background

- NamWater operates two river water supply schemes - Rundu and Nkarapamwe
- Both schemes abstract raw water from the Okavango River
- After treatment and disinfection, potable water is supplied to various consumers:
  - Rundu Town Council, the Military Base at the Airport, Government Institutions, Industries, Businesses and Private Consumers.
- Both NamWater schemes have difficulties in coping with the water demand at Rundu Town.
- As a result, internal NamWater studies suggested the upgrading of the existing Rundu and Nkarapamwe water supply schemes and construction of a new water treatment plant at Rundu with an increased capacity of 1 800 m^3/h to eventually meet the ever-growing demand up to 2037

Background

- NamWater (the proponent) has appointed Nicholas O'Dwyer Ltd. ("NOD") in association with GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS") for the design, tender document preparation, administration and supervision for the construction of the new scheme and decommissioning of the old scheme
- GCS will further conduct the Environmental and Social Impact Assessment (ESIA) process for the project
- ESIA is required to ensure sound environmental management and meet the international funder standards for environmentally and socially sustainable development, as it is sponsored by the African Development Bank (AfDB)
- The project must also meet the requirements of the Namibian Environmental Authorities

Purpose of the meeting

- To explain the Environmental and Social Impact Assessment Process.
- To provide information on the proposed development.
- To identify potential issues and concerns from the public in terms of:
  - Environmental;
  - Social;
  - Cultural; and
  - Economic.

Legal Requirements

Activity 8.1 Water resource developments	*•The abstraction of ground or surface water for industrial or commercial purposes*
Activity 8.3 Water resource developments	*•Any water abstraction from a river that forms an international boundary*
Activity 8.5 Water resource developments	*•Construction of dams, reservoirs, levees and weirs;*
Activity 10.1 Infrastructure	*•The construction of (a) oil, water, gas and petrochemical and other bulk supply pipelines*

- Environmental Management Act (No 7 of 2007)
- Environmental Impact Assessment Regulations (Government Notice No 30 of 2012)

Environmental and Social Impact Assessment (ESIA) Process

Application
- Review of project against EMA listed activities to determine the need for an EIA process
- Compile and submit an ECC Application to the competent authority (MAWLR) and MEFT:DEAF

Scoping — Current stage
- Identify and consult with Interested and Affected Parties (IA&Ps)
- Identify potential environmental and social impacts
- Determine Terms of Reference for further study during EIA/EMP (if required)
- Compile Draft Scoping Report and Draft EMP, and circulate to IA&Ps for review and comment
- Finalise Scoping Report and Draft EMP with I&AP review outcomes

Impact Assessment
- Conduct further specialist studies if required
- Detailed assessment of environmental and social impacts
- Compile Draft EIA and EMP, and circulate to IA&Ps for review and comment
- Finalise EIA and EMP with IA&P review outcomes and submit to the competent authority and MEFT:DEAF for decision making
- Notify IAPs of MEFT:DEAF decision

GCS NICHOLAS O'DWYER NAMWATER Namibia Water Corporation Ltd 7

Rationale for ESIA

To identify potential negative and positive impacts (social, economic, cultural & biophysical) and to determine their likely significance

Assess alternative ways of undertaking the project such that negative impact are avoided or managed and positive impacts enhanced

To allow for public involvement

To inform the proponents decision-making

To inform the Environmental Authority's decision-making (Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry, MEFT:DEAF)

GCS NICHOLAS O'DWYER NAMWATER Namibia Water Corporation Ltd 8

Public Participation Process

Newspaper Advertisements:
- Namibian and New Era: 14 April and 21 April 2022

Written notice and Background Information Document (BID) to pre-identified Interested and Affected Parties via email, sms and/or registered mail.

Radio Announcements: Wato fm and Rapids fm.

Notices displayed on the sites.

Public meeting in Rundu.

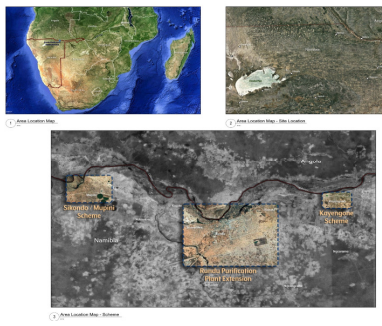
GCS NICHOLAS O'DWYER NAMWATER Namibia Water Corporation Ltd 9

The Proposed Development: Need and Desirability

- At present potable water supply capacity of the Rundu and Nkarapamwe schemes is approximately 840 m^3/h
- Both schemes have difficulty coping with the Rundu Town water demand
- Population of area rapidly increasing, as a result water demands exceed the capacity of existing ageing schemes
- The proposed development is thus needed in order to meet the ever growing water demand within the town

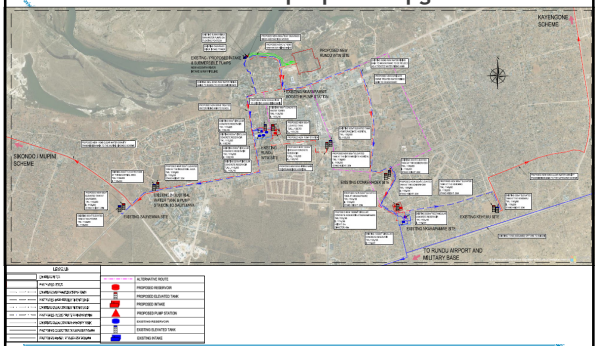
GCS NICHOLAS O'DWYER NAMWATER Namibia Water Corporation Ltd 10

Project Location



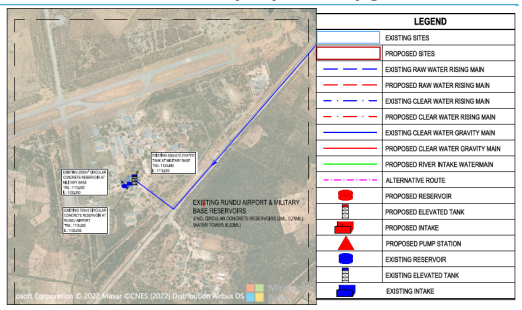
GCS NICHOLAS O'DWYER NAMWATER Namibia Water Corporation Ltd 11

Overview of existing Rundu water supply network inclusive of proposed upgrades



GCS NICHOLAS O'DWYER NAMWATER Namibia Water Corporation Ltd 12

Overview of existing Rundu water supply network inclusive of proposed upgrades



Project Description

This project will focus on providing the necessary water supply infrastructure to meet the current and future water demands up to the 2037 horizon for the Rundu Town Area and certain villages (Kayengona, Mupini/Sikondo and Masivi) in proximity.
The proposed new infrastructure will consist of:

- **Component 1: The Raw Water Abstraction and Conveyance System -** A new river intake structure on the Okavango River, immediately downstream of the existing intake tower, including new raw water pipelines to a new water purification plant.
- **Component 2: The New Rundu Treatment Plant -** A new water purification plant with sufficient capacity for the 2037 horizon and allowances made for future potential expansion beyond this.
- **Component 3: The Rundu Treatment Plant Product Water Conveyance System -** A new treated water pump station and pipelines to convey treated water from the new water purification plant to the existing Rundu and Nkarapamwe ground level reservoirs.

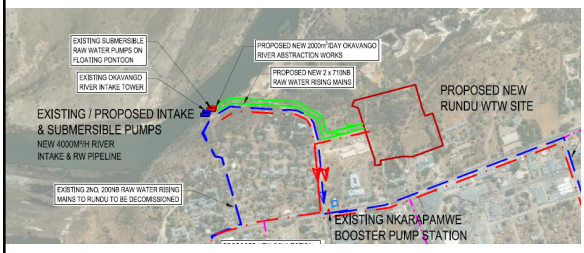
Project Description

- **Component 4: Existing Water Supply Schemes –**
  - New pump stations and additional ground level reservoirs at Rundu and Nkarapamwe for storage.
  - New dedicated pipelines to the elevated storage tanks as well as additional new elevated storage tanks within the Rundu Town Area.
  - New pipelines supplying potable water to Kayengona, Mupini/Sikondo and Masivi.
- **Component 5: Decommissioning of Redundant Infrastructure -** Decommissioning of any redundant infrastructure.

Component 1: The Raw Water Abstraction and Conveyance System

- The new raw water conveyance system will consist of the abstraction pumping system, to abstract the water from the river, and the raw water pipeline to convey the raw water to the new treatment plant in Rundu
- The new treatment plant raw water requirement is 2000 m^3/h, which includes a 10% treatment plant losses (for 20 hours plant operation), and the raw water conveyance system will be designed to cater for 4000 m^3/h, to accommodate any future expansions.

Component 1: The Raw Water Abstraction and Conveyance System



Component 2: The New Rundu Treatment Plant

- The plant will be designed to ensure a maximum potable water output of 1800m^3/h.
- A site has been identified (approximately 6 Hectare in size) to the north of the Rundu Police Station for the construction of the new plant.
- The land was acquired after negotiation with the Rundu Town Council
- The new Rundu Water Treatment Plant will be designed to ensure that the water quality as well as the effluent adheres to the specified regulations as per the Water Resource Management Act, 2013 (Act No.11 of 2013)

Component 2: The New Rundu Treatment Plant

- The raw water quality was analysed and indicated that there are some parameters which have an impact on process and treatment performance.
- These parameters include turbidity, colour, iron and hardness.
- It is thus necessary that the water treatment processes be designed to accomplish the following:
  - Turbidity control
  - Filtration
  - Disinfection and THM (trihalomethanes) control
  - Iron removal
  - Corrosion and scaling control
  - Residuals management

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Component 3: The Rundu Treatment Plant Product Water Conveyance System

- The product water conveyance system comprises of:
  - A new pump station at the new treatment plant with;
  - two groups of pump sets (each group shall incorporate at least three pump sets, of which at least one shall be a stand-by unit) to pump into the existing and proposed storage reservoirs at Rundu and Nkarapamwe.
- A new rising main is proposed for Rundu and a duplicate main to operate in parallel with the existing main is proposed for Nkarapamwe

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Component 4: Existing Water Supply Schemes of Rundu and Nkarapamwe

Rundu Water Supply Scheme

- A new pump station is proposed for Rundu with two groups of pump sets,
  - one pumping simultaneously into the existing and proposed elevated tanks at the Rundu site and the hospital and
  - other group to pump into the existing and proposed Industrial and Sauyemwa elevated tanks.
- The elevated tanks will be fed via proposed new dedicated transmission mains.
- It is also proposed to construct an
  - Additional 16Ml reservoir at Rundu plus,
  - 4x500m³ elevated tanks at Rundu, the hospital, Sauyemwa and Industrial.



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Component 4: Existing Water Supply Schemes of Rundu and Nkarapamwe

Nkarapamwe Water Supply Scheme

- A new pump station is proposed for Nkarapamwe with two groups of pump sets,
  - one pumping into the proposed elevated tank at the Nkarapamwe site and
  - other group to pump simultaneously to the existing and proposed elevated tanks at Donkerhoek and Kehemu.
- The elevated tanks will be fed via proposed new dedicated transmission mains.
- It is also proposed to construct:
  - Additional 16Ml reservoir at Nkarapamwe
  - 3x500m³ elevated tanks, at Nkarapamwe, Donkerhoek and Kehemu



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Component 4: Existing Water Supply Schemes of Rundu and Nkarapamwe

Masivi Water Supply Scheme

- Masivi is an informal settlement along the main road B8.
- This area can be supplied by a 90mm diameter gravity pipeline from the Military Base elevated tanks.

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Component 4: Existing Water Supply Schemes of Rundu and Nkarapamwe

Kayengona Water Supply Scheme

- Presently a borehole supply scheme and operated by NamWater
- Reported that water quality and availability of water is problematic
- Water could be made available from the proposed new Rundu Water Treatment Plant
- Under the Nkarapamwe scheme the eastern area can be served by the existing and proposed new elevated tank at Kehemu with a TWL of approximately 1136masl, assuming that a 15m high tank stand will be used.
- These elevated tanks will be at a level which could allow a gravity flow from these elevated tanks at Kehemu to the elevated tanks at Kayengona.
- A new gravity pipeline, 110 mm in diameter and 14 km long will be required along a route which avoids high points

24

Component 4: Existing Water Supply Schemes of Rundu and Nkarapamwe

Sikondo/Mupini Water Supply Scheme

- Presently a borehole supply scheme and operated by NamWater
- Water could be made available from the proposed new Rundu Water Treatment Plant
- Under the Rundu scheme the western area can be served by the existing and proposed new elevated tanks at the Industrial Area and Sauyemwa.
- This elevated tank will be at a level which could allow a gravity flow to the elevated tank at Mupini/Sikondo.
- A new gravity pipeline, 110 mm in diameter and approximately 14 km long will be required along a route which avoids high points.

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Component 5: Decommissioning of Redundant Infrastructure

It is envisaged that the following infrastructure will be decommissioned:

- Raw water abstraction system on completion of the new river intake.
- Raw water rising main from the current intake tower to Rundu.
- Filters at Rundu and Nkarapamwe on completion of the new WTW.
- Pump stations at Rundu and Nkarapamwe on completion of the new pump stations.
- Other infrastructure to be identified as designs progress.

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Land Acquisitions and Wayleaves

- New water treatment plant - 6.16 ha site acquired by NamWater for the proposed new water treatment plant
- Pipelines - to be constructed within municipal road reserves. Alternatives in terms of pipelines indicated on map.
- Elevated tanks - to be constructed on NamWater owned sites
- Reservoirs - Alternative sites will be identified and ownership thereof will be determined for the possibility of acquiring these sites

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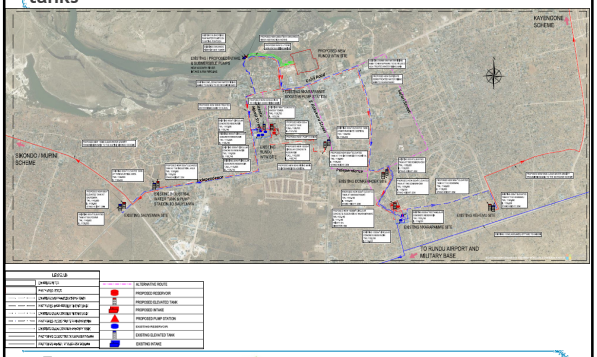
Overview of the alternatives for pipelines and elevated tanks



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Water Abstraction Rights

- The Okavango River is a shared water course for the three adjoining countries namely Namibia, Botswana, and Angola
- In September 1994 an agreement was signed by the three countries to establish a Permanent Okavango River Basin Water Commission (OKACOM) with its primary focus on the sustainable long-term yield of water from all the potential sources within the Okavango River Basin.
- All signatories to the agreement are obliged to inform the commission about proposed utilization changes.
- The proponent is to engage the Commission with regards to the key elements of the proposed project.

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Potential Impacts: Construction

- Disturbance to local fauna and flora
- Noise and dust
- Health and safety risks
- Soil erosion resulting from soil compaction
- Soil contamination
- Disturbance of local geology
- Groundwater impacts
- Surface water impacts
- Waste generation
- Traffic and road safety
- Interruption of business activities
- Stormwater contamination
- Public safety concerns due to excavation works
- Use of potentially harmful substances

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Potential Impacts: Operation

- Water drawdown
- Decrease of water available for existing fauna and flora in the river
- Impacts on sensitive ecosystem
- Increase of water supply to the town and surrounding villages - result in a number of benefits including improved health, time availability for other chores instead of fetching water
- Filter-backwash water disposal
- Supply of increased drinking water quality to population
- Chemicals used in treatment processes incl. Potassium Permanganate (granule), Polyelectrolyte (granule), Soda Ash (granule), Chlorine (gas), Ammonium Sulphate (granule)
- Noise
- Additional energy usage

Potential Impacts: Decommissioning

- Noise and dust
- Health and safety risks
- Soil erosion
- Soil and Groundwater impacts
- Waste generation

More potential impacts of the proposed activity will be identified upon consultations with the public and further research on the area.

The Way Forward

Scoping Phase:

- **1st comment phase:** from **14 April 2022 - 5 May 2022**
- **2nd comment phase:** Draft Scoping Report will be made available to all registered IAPs for review and comment for 12-day period.
- Preparation and Submission of Final Scoping Report to the competent authority and the Ministry of Environment, Forestry and Tourism.

How you can get involved

Contact Person:
GCS
Stephanie Strauss
PO Box 81808
Windhoek
Tel: +264 61 248 614
Fax: +264 61 238 586
Email: stephanies@gcs-na.biz

Contact Person:
NamWater
Jolanda Kamburona
Private Bag 13389, Windhoek
Tel: +264 61 712 105
Fax: +264 61 712 097
Email:
kamburonaj@namwater.com.na

Grievances may also be submitted in writing at the NamWater Rundu office (Eugene Kakakuru Street, Rundu) in the comments box located at reception.

THANK YOU

MPANDU ZONENE

OKUHEPA NDANGI

OTWAPANDULA

Questions/Comments



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Our Reference 21-0009

Meeting Minutes

Subject:	Public Participation Meeting for the Environmental and Social Impact Assessment for the Proposed Rundu Purification Plant Upgrade, Rundu, Namibia
Venue:	Rundu Town Council Office of the CEO
Date:	27 April 2022
Time:	16h30
Attendance:	See attached attendance register

1 INTRODUCTION

The meeting was opened by Stephanie Strauss the Environmental Assessment Practitioner from GCS Water Environmental Engineering Namibia (Pty) Ltd (GCS). Stephanie proceeded with the oral presentation after which the floor was opened to questions. This opened an interactive session between the consultant and the attendees.

2 OVERVIEW OF PROPOSED PROJECT

The meeting involved Stephanie providing a background to the proposed Rundu Purification Plant Upgrade project. Stephanie additionally explained the process to be followed during the Environmental and Social Impact Assessment (ESIA) process, highlighting that part of the process is to engage the interested and affected community, hence the meeting. The presentation was concluded with the provision of the details of how I&APs can become involved and provided details of the communication platforms available and indicating that the project is open for public participation until submission is done to the Ministry of Environment, Forestry and Tourism (MEFT).

3 QUESTIONS AND COMMENTS REGARDING THE PROPOSED PROJECT

The issues/concerns raised by the attendants during the meeting are presented in the table below:

Table 2-1: Questions and comments raised during the meeting.

Question/Comment By	Question/Comment	Respondent	Response
Olavi V. E. Nathanael (CEO Rundu Town Council)	There are a few areas that have water pressure issues like Kehemu and Sauyemwa and would be great if this was addressed.	Stephanie Strauss (GCS)	Comment noted.
Olavi V. E. Nathanael (CEO Rundu Town Council)	Why would they not renovate the outdated towers as opposed to constructing new ones. The towers at the Industrial and Kehemu sites are quite outdated.	Stephanie Strauss (GCS)	The project involves doing an assessment of the existing infrastructure to determine whether they are still in good condition. Those that are in good condition will remain and the older infrastructure will be replaced.
Olavi V. E. Nathanael (CEO Rundu Town Council)	The proposed pipeline from Kehemu to Kayengona is a concern because the people living in the surrounding area fall in the ultra-low to low-income community and these houses often have no water due to non-payment and it has been observed before that people would illegally tap into the pipelines as they are desperate for water.	Stephanie Strauss (GCS)	Comment noted.
Olavi V. E. Nathanael (CEO Rundu Town Council)	The stormwater gully next to the new proposed site (Erf 3) behind the police station is a major problem and will this water drainage system be diverted?	Stephanie Strauss (GCS)	The engineers are aware of this and it is being considered in the design of the site.

Question/Comment By	Question/Comment	Respondent	Response
Olavi V. E. Nathanael (CEO Rundu Town Council)	The area of the new proposed site (Erf 3) has a new development coming, the caravan park and will the noise not be a concern in this area?	Stephanie Strauss (GCS)	We have listed the possible impacts and noise is one of them which will be assessed and mitigation measures provided for.
Olavi V. E. Nathanael (CEO Rundu Town Council)	The Ndama site has a backflow back wash system creating a pond across the site where the reeds started growing and this site pollutes the surrounding houses and sometimes overflows and causes damage to the surrounding homes, will this also be addressed?	Stephanie Strauss (GCS)	We will go and see the pond and see if there are any measure that can be taken to improve the situation.
Olavi V. E. Nathanael (CEO Rundu Town Council)	The Sauyemwa site has a lot of new development coming and I hope this has been taken into consideration with the project.	Stephanie Strauss (GCS)	Comment noted.

4 WAY FORWARD

The documented questions and comments from the meeting will be incorporated and fully addressed in the Environmental Scoping report. This report will be circulated to all registered I&APs for review before it can be submitted to the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry for evaluation.

5 CONCLUSION

After the attendees had all raised their points and comments, Stephanie Strauss gave a vote of thanks. The meeting was adjourned at 17:00.

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MEETING ATTENDANCE REGISTER

Project: Environmental and Social Impact Assessment (ESIA) for the Proposed Rundu Purification Plant Upgrade

Date: 28 April 2022

Time: 14H30

Venue: Kavango East Regional Council

No.	Name and Surname	Institution	Email address/PO Box	Telephone Contact	Signature
1.	Victoria M Kauma	KERC	Vickymbawokauma@gmail.com	0811563979	
2.	PAULUS N MBANGU	KERC	pmbangu7@gmail.com	0811497148	
3.	Ludwig Thilenyo	KERC	lthilenyo@kavangoeast.gov.na	0811280581	
4.	Sakaria D.	Namwater	P/Bag 2090	0812039130	
5.	Michael Cloete	GCS	michael@gcs-na.biz		
6.	Stephanie Strauss	GCS	stephanies@gcs-na.biz	0813076295	
7.					
8.					
9.					
10.					

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PUBLIC MEETING ATTENDANCE REGISTER

Project: Environmental and Social Impact Assessment (ESIA) for the Proposed Rundu Purification Plant Upgrade

Date: Wednesday 27 April 2022
Time: 17h30
Venue: Dr Romanus Kampungu Secondary School Hall (Safari Street, Rundu)

No.	Name and Surname	Institution	Email address/PO Box	Telephone Contact	Signature
1.	Dishe Murati	Ndama location	dishorhe@gmail.com	081 715 9284	
2.	Michael Cloete	GCS	michaelc@gcs-na.biz	081 228 5451	
3.	Stephanie Strauss	GCS	stephanies@gcs-na.biz	061-248614	
4.	Sakaria D.	Namwater	0812039130		
5.					
6.					
7.					
8.					
9.					
10.					

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MEETING ATTENDANCE REGISTER

Project: Environmental and Social Impact Assessment (ESIA) for the Proposed Rundu Purification Plant Upgrade

Date: _____

Time: _____

Venue: _____

No.	Name and Surname	Institution	Email address/PO Box	Telephone Contact	Signature
1.	Olavi V.E. Nathanael	Rundu TC	ceo@rundutown.org	066-266 400	
2.					
3.					
4.					
5.					
6.					
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8.					
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10.					

GCS Water & Environmental Consultants

45 Feld Street, Windhoek, Namibia
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MEETING ~~ATTENDANCE~~ REGISTER

Project: Environmental and Social Impact Assessment (ESIA) for the Proposed Rundu Purification Plant Upgrade

Date: 27 April 2022

Time: _____

Venue: _____

No.	Name and Surname	Institution	Email address/PO Box	Telephone Contact	Signature
1.	RICHARD DINYANDO	RUNDU POLICE STA.		081 3433539	
2.	PETRUS KAENYE	RUNDU POLICE ST	pjamadala9@gmail.com	0813694849	
3.	Mathilda Nathanael	Omashare Hotel	omashare@iway.na	066 266600	
4.	MORRISTER KATULO	Rural Water Supply	morristerkatulo@gmail.com	0811564456	
5.	Ciswani Simone	NDAMA WELDING	Ciswanisim@33gmail.com	0814004600	
6.	ELVIO LOPES . M	KEHEMU	ELVIO C.COM.	0813984748	ELVIO
7.	Stavi Kalomtho	Ndama	amwelestavi@gmail	0812254154	Stavi
8.	Veronika Sikoka	Rundu State Hosp	Veronikoka@gmail.com	0813751740	
9.	Mugwanpora Reinhilde	Ndama		0812190346	R. Mugwanpora
10.	Sinera Rakang	Ndama		0817117800	Rakang

No.	Name and Surname	Institution	Email address/PO Box	Telephone Contact	Signature
11.	Mbimbi petrus	Ndama		0813395670	
12.	Mushe Brenda	Kehemu		0812508642	
13.	Makwati Kizo Arcana	Donkerhoek		0814766527	
14.	EMMY Kavaleka	Donkerhoek	SHILLAS BEAUTY SALON	0812067113	
15.	Mathews M. B	Donkerhoek	Mangonga Mathews000@gmail.com	0817870809	
16.	Hausona/sh	Donkerhoek	hausona80@gmail.com	0812846549	
17.	NAthas Uungwanga	Donkerhoek		0812546554	
18.	Rundu Medical Complex	Tutungeni	medcongofacsimile@na	0817434291	
19.	Guest House Bavaria	Tutungeni	housebavaria@gmail.com	066255377	
20.	GIRONGO Annamary	St, John Bosco	dbparishsecretary@gmail.com	0813121151	
21.					
22.	SIMANU · E · H	Elia · M · Nkoranta · S · S · S.	simanu1254s@gmail.com	0812578985	
23.					
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APPENDIX I

COMMENTS AND RESPONSE REPORT

45 Feld Street, Windhoek, Namibia
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Comments and Response Report for the Environmental Impact Assessment (EIA) for the Rundu Purification Plant Upgrade, Kavango East Region

Question/Comment By	Question/Comment	Respondent	Response
Comments received via email			
Vanessa Stein via email dated 5 May 2022	The aerial photo of the new proposed site is very small and makes for poor visibility even when you zoom in. From what I could make out from the proposed site is that one corner is heavily populated with trees. This would involve mass clearing of the site and poses a concern. Are there protected species among these trees? Are they slow growing species? Directorate of Forestry: Rundu Office should be consulted on land clearance as this requires special permits and proper disposal of cleared trees if granted permission and permits	GCS	*This has been addressed in Section 8.3.1 of the Scoping Report.*
Kavango East Regional Council Meeting			
Hon. Paulus Mbangu	This project is a good one and there are no objections from our side. Just a note from the announcement I heard on the radio, I heard them just mention the Nkarapamwe scheme and not the rest of the Rundu scheme which includes all the villages involved, so in future just make sure the	Stephanie Strauss (GCS)	The initial announcement made included both schemes but it was translated so it is possible they left something out, but we take note of this and will make sure in the future.

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Question/Comment By	Question/Comment	Respondent	Response
	information is conveyed fully so that there are no surprises for the public later on.		
Hon. Victoria M Kauma	When it comes to public meetings and wanting to get the word out there, you can always work through our constituency offices because we have constituency development coordinators that are in the villages and spread the word around as well as the traditional authorities to send the message out. These are the people that identify the needs of the people and come up with mitigation measures of project impacts. This helps with proper stakeholder engagement with local authorities.	Stephanie Strauss (GCS)	We did contact the constituency offices and have been in contact with Mr. Buta Joackim from the urban constituency office. In future we will make sure to involve these offices and arrange the public meetings through these offices to address the people from the villages.
Hon. Victoria M Kauma	Will these developments create local job opportunities?	Stephanie Strauss (GCS)	Yes, the development will go out on local tender once the construction phase begins of the project.
Sakaria Bartlomeus (Namwater)	From the presentation I see the pipeline going to Kayengona runs from Kehemu site and I was wondering why it not diverts across the road first before going to Kayengona to make provision for new development in that area because the houses in that area are increasing at drastic rate between Kehemu and Kayengona.	Stephanie Strauss (GCS)	This is noted and will be communicated to the proponent for consideration.

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Question/Comment By	Question/Comment	Respondent	Response
Hon. Paulus Mbangu	No, the pipeline must go straight to Kayengona and once the engineers have increased the capacity as according to the tender requirements then the ministry can step in and take over and supply to further areas that are in need for more water with new tenders.	Stephanie Strauss (GCS)	Thank you Honorable for that comment, the scope of this project is tender specific as you stated.
Ludwig Thikosho	How long is the project going to take and is it the same project that the minister announced for the water supply schemes across the region and country.	Stephanie Strauss (GCS)	With all the phases combined the project should take about 3 years for everything to be completed. It is the project announced by the Minister however the scope is limited to what we presented today. There may be further plans by the Ministry for water supply to the rest of the region.
Rundu Public Meeting			
Disho Muruti	How big is the new site, where is it located, and will it affect the birds that we observe in the flood plain?	Stephanie Strauss (GCS)	The new site is about six hectares and is located behind the police station, it is not located in the flood plain so the birds should not be impacted by this new site.
Disho Muruti	My first concern is with the growing population of Rundu especially in the informal settlements the projection of 2037 seems like a short period or like it is too close. It would be better if the water supply could be increased to a projection of the next twenty years or so.	Stephanie Strauss (GCS)	The Namwater team have used these projections and predictions to estimate the required demand for the area and additional provision can then further be made in future.

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Question/Comment By	Question/Comment	Respondent	Response
Disho Muruti	My second concern is with regards to the Ndama area where I am a resident. The mosquitoes at the backwash pond seem much larger than in any other area if compared to those at the river flood plains. I am not certain about the statistics, but I believe that the malaria cases in the Ndama area are significantly higher than anywhere else in Rundu.	Stephanie Strauss (GCS)	We take not of your concern.
Disho Muruti	My other concern is with NORED and the electricity already being an issue in Rundu and NORED already has many problems. Will the new equipment and infrastructure not put more strain on this struggling situation?	Stephanie Strauss (GCS)	The new development will include addressing the supply of electricity to the new infrastructure.
Sakaria Bartlomeus (NamWater)	From the presentation I see the pipeline going to Kayengona runs from Kehemu site and I was wondering why it not diverts across the road first before going to Kayengona to make provision for new development in that area because the houses in that area are increasing at drastic rate between Kehemu and Kayengona.	Stephanie Strauss (GCS)	This is noted and will be communicated to the proponent for consideration.

45 Feld Street, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

Question/Comment By	Question/Comment	Respondent	Response
Disho Muruti	I am not sure if this part of the water abstraction but the water in the river has been shallowing causing the levels to be much lower than usual.	Stephanie Strauss (GCS)	There may be various factors contributing to the shallowing of the river. In terms of the abstraction there is a commission (OKACOM) that oversees the amount of water that is allowed to be abstracted from the river for the various countries using the river water.
Rundu Town Council Meeting			
Olavi V. E. Nathanael (CEO Rundu Town Council)	There are a few areas that have water pressure issues like Kehemu and Sauyemwa and would be great if this was addressed.	Stephanie Strauss (GCS)	Comment noted.
Olavi V. E. Nathanael (CEO Rundu Town Council)	Why would they not renovate the outdated towers as opposed to constructing new ones. The towers at the Industrial and Kehemu sites are quite outdated.	Stephanie Strauss (GCS)	The project involves doing an assessment of the existing infrastructure to determine whether they are still in good condition. Those that are in good condition will remain and the older infrastructure will be replaced.
Olavi V. E. Nathanael (CEO Rundu Town Council)	The proposed pipeline from Kehemu to Kayengona is a concern because the people living in the surrounding area fall in the ultra-low to low-income community and these houses often have no	Stephanie Strauss (GCS)	Comment noted.

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Question/Comment By	Question/Comment	Respondent	Response
	water due to non-payment and it has been observed before that people would illegally tap into the pipelines as they are desperate for water.		
Olavi V. E. Nathanael (CEO Rundu Town Council)	The stormwater gully next to the new proposed site (Erf 3) behind the police station is a major problem and will this water drainage system be diverted?	Stephanie Strauss (GCS)	The engineers are aware of this and it is being considered in the design of the site.
Olavi V. E. Nathanael (CEO Rundu Town Council)	There are a few areas that have water pressure issues like Kehemu and Sauyemwa and would be great if this was addressed.	Stephanie Strauss (GCS)	Comment noted.
Olavi V. E. Nathanael (CEO Rundu Town Council)	Why would they not renovate the outdated towers as opposed to constructing new ones. The towers at the Industrial and Kehemu sites are quite outdated.	Stephanie Strauss (GCS)	The project involves doing an assessment of the existing infrastructure to determine whether they are still in good condition. Those that are in good condition will remain and the older infrastructure will be replaced.
Olavi V. E. Nathanael (CEO Rundu Town Council)	The proposed pipeline from Kehemu to Kayengona is a concern because the people living in the surrounding area fall in the ultra-low to low-income community and these houses often have no water due to non-payment and it has been observed before that people would illegally tap into the pipelines as they are desperate for water.	Stephanie Strauss (GCS)	Comment noted.

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6 REGISTRATION OF I&APS AND THEIR COMMENTS / CONCERNS

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED RUNDU PURIFICATION PLANT UPGRADE, RUNDU, KAVANGO EAST REGION

I&AP Comments Form

Name:	Alpo	**Surname:**	Muronga
Organisation / interest:			
Postal / Residential address			
	Area:	Ndama	**Code:**
Contact details	**Tel:**	( )	
	Fax:	( )	
	Mobile:	(081) 7365503	
	Email:	heartonkey@gmail.com	

Please mark with an X to indicate whether you would like to participate in the process:

Yes, I would like to participate in this process and receive periodical updates	X
No, I am not interested in participating and do not wish to receive further information	

Preferred method of communication	Email	X	Fax		Post	
Date commented	28/04/2022					

Please indicate any issues, comments and concerns with regards to the proposed project (feel free to use the additional space or attach additional pages, as required)

None

Please indicate in which aspects you would require more information

Please indicate the contact details of any IAPs whom you think should be contacted

Name:	Erick	**Surname:**	Muronga
Tel:	( )	**Fax:**	( )
Mobile:	(081) 2976891		
Email:			

In order to be registered as an IAP for this project, fax, mail, or e-mail the completed registration form before or on 5 May 2022 to:

Contact Person: Stephanie Strauss
Tel: +264 61 248 614
Fax: +264 61 238 586
Cell/WhatsApp: +264 81 3076 205
Email: stephanies@gcs-na.biz
Postal Address: PO Box 81808, Windhoek

6 REGISTRATION OF I&APS AND THEIR COMMENTS / CONCERNS

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED RUNDU PURIFICATION PLANT UPGRADE, RUNDU, KAVANGO EAST REGION

I&AP Comments Form

Name:	Benigna	**Surname:**	SwaAboi
Organisation / interest:			
Postal / Residential address	Plbag 2090 Rundu		
Contact details	**Area:** Rundu Namwater	**Code:**	066
	Tel: ( )		
	Fax: ( )		
	Mobile: ( ) 0813110339		
	Email: benignaSwaAboi@gmail.com.		

Please mark with an X to indicate whether you would like to participate in the process:

Yes, I would like to participate in this process and receive periodical updates	Yes
No, I am not interested in participating and do not wish to receive further information	

Preferred method of communication	Email	✓	Fax		Post	
Date commented	(DD / MM / YYYY)					

Please indicate any issues, comments and concerns with regards to the proposed project (feel free to use the additional space or attach additional pages, as required)

All in orde

Please indicate in which aspects you would require more information

Please indicate the contact details of any IAPs whom you think should be contacted

Name:		**Surname:**	
Tel:	( )	**Fax:**	( )
Mobile:	( )		
Email:			

In order to be registered as an IAP for this project, fax, mail, or e-mail the completed registration form before or on 5 May 2022 to:

Contact Person: Stephanie Strauss
Tel: +264 61 248 614
Fax: +264 61 238 586
Cell/WhatsApp: +264 81 3076 205
Email: stephanies@gcs-na.biz
Postal Address: PO Box 81808, Windhoek

Stephanie Strauss

From: Alex Delle Donne <alex@water-solutions.co.za>
Sent: Thursday, May 5, 2022 2:29 PM
To: Stephanie Strauss; lamburonaj@namwater.com.na
Cc: Namibia
Subject: Rundu Purification Plant - AIP | IWS Namibia

Dear Stephanie,

I trust you are well.

Please register **Impact Water Solutions Namibia (Pty) Ltd** as IAP for the above project using the email address **namibia@water-solutions.co.za**

Thank you.

Alex Delle Donne
Country Manager:
Namibia

Impact Water Solutions Namibia (Pty) Ltd
PO Box 9779, Windhoek

IWS
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www.water-solutions.co.za

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Stephanie Strauss

From: Vanessa Stein <Vanessa.Stein@meft.gov.na>
Sent: Thursday, May 5, 2022 3:48 PM
To: Stephanie Strauss
Subject: THE PROPOSED RUNDU PURIFICATION PLANT UPGRADE, RUNDU, KAVANGO EAST REGION

Good day Ms Strauss

Please find comments below to the above subject.

The aerial photo of the new proposed site is very small and makes for poor visibility even when you zoom in. From what I could make out from the proposed site is that one corner is heavily populated with trees. This would involve mass clearing of the site and poses a concern. Are there protected species among these trees? Are they slow growing species? Directorate of Forestry: Rundu Office should be consulted on land clearance as this requires special permits and proper disposal of cleared trees if granted permission and permits.

Thank you

Kind regards,

Vanessa Stein
Forester
National Botanical Research Institute (NBRI)
Ministry of Environment, Forestry And Tourism
Windhoek
Namibia
Tel: +264-61-2022013
Fax: +264-61-258153
E-mail: Vanessa.Stein@mawf.gov.na
webpage: www.nbri.org.na

APPENDIX J

LAND APPLICATION APPROVAL FROM RUNDU TOWN COUNCIL

RUNDU TOWN COUNCIL

OFFICE OF THE CHIEF EXECUTIVE OFFICER

Tel: (+264 66) 266 400
Fax: (+264 66)
Email: pa.ceo@rundutown.org
Website: www.rundutown.org

Erf 1212, Maria Mwengere Street

Private Bag 2128
Rundu, **NAMIBIA**

Enquiries: **(Abraham Adriano)**
Cell: (+264 66) (266400)

Our Ref: **(NAM/01)**

Date: 10 February 2022

Namibia Water Corporation Ltd
Private Bag 13389
Windhoek
Namibia

Attention: Mr. Abraham Nehemia

RE: REQUST FOR ACCESS TO THE ALLOCATED LAND FOR THE PROPOSED NEW RUNDU WATER TREATMENT PLANT

The above subject matter bears reference

We are pleased to inform you that approval has been granted to the Namibia Water Corporation Ltd to access the allocated Erf for the proposed water treatment plant in Rundu, while the statutory processes are still on going. As this project is of high importance and has been delayed for a long time it is against this background that your firm is granted access to the proposed Erf 3 measuring approximately 61572m^2 located in the proposed subdivision of consolidated Erf X (incorporated Erf X; Erven 1220/Rem and 1229) into 57 Erven and remainder, Rundu Extension 3

Refer to the contact details above for any additional information that you may require.

Sincerely,

Olavi V.E. Nathanael (Mr.)
CHIEF EXECUTIVE OFFICER

Rundu Town Council
Private Bag 2128
10 FEB 2022
TEL: +264 66 266 418
FAX: +264 66 266 718
Chief Executive Officer

All official correspondence must be addressed to the Chief Executive Officer

45 Feld Street, Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 **Fax:** (+264) 61 238 586 **Web:** www.gcs-na.biz

Environmental and Social Management Plan for the Proposed Rundu Purification Plant Upgrade, Rundu, Kavango East Region

ESMP

Final

23 September 2022

Namibia Water Corporation Ltd

GCS Project Number: 21-0009

Client Reference: P-NA-E00-005





Environmental and Social Management Plan for the Proposed Rundu Purification Plant Upgrade, Rundu, Kavango East Region

Environmental Management Plan

Version – Draft

23 September 2022

NamWater

21-0009

DOCUMENT ISSUE STATUS

Report Issue	Final		
GCS Reference Number	GCS Ref – 21-0009		
Client Reference	P-NA-E00-005		
Title	Environmental and Social Management Plan for the Proposed Rundu Purification Plant Upgrade, Rundu, Kavango East Region		
	Name	**Signature**	**Date**
Author	Stephanie Strauss		April 2022
Document Reviewer	Magnus van Rooyen		April 2022

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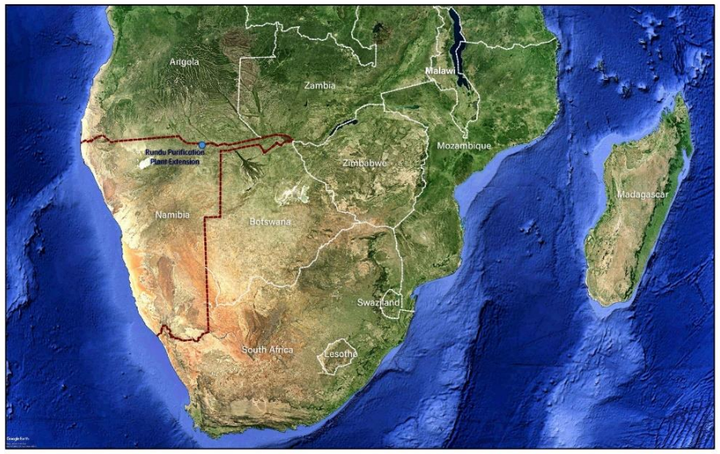
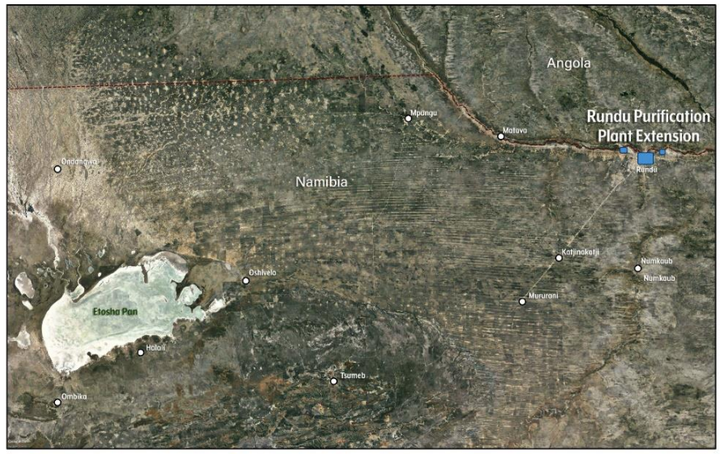
1 OVERVIEW

1.1 Project Background

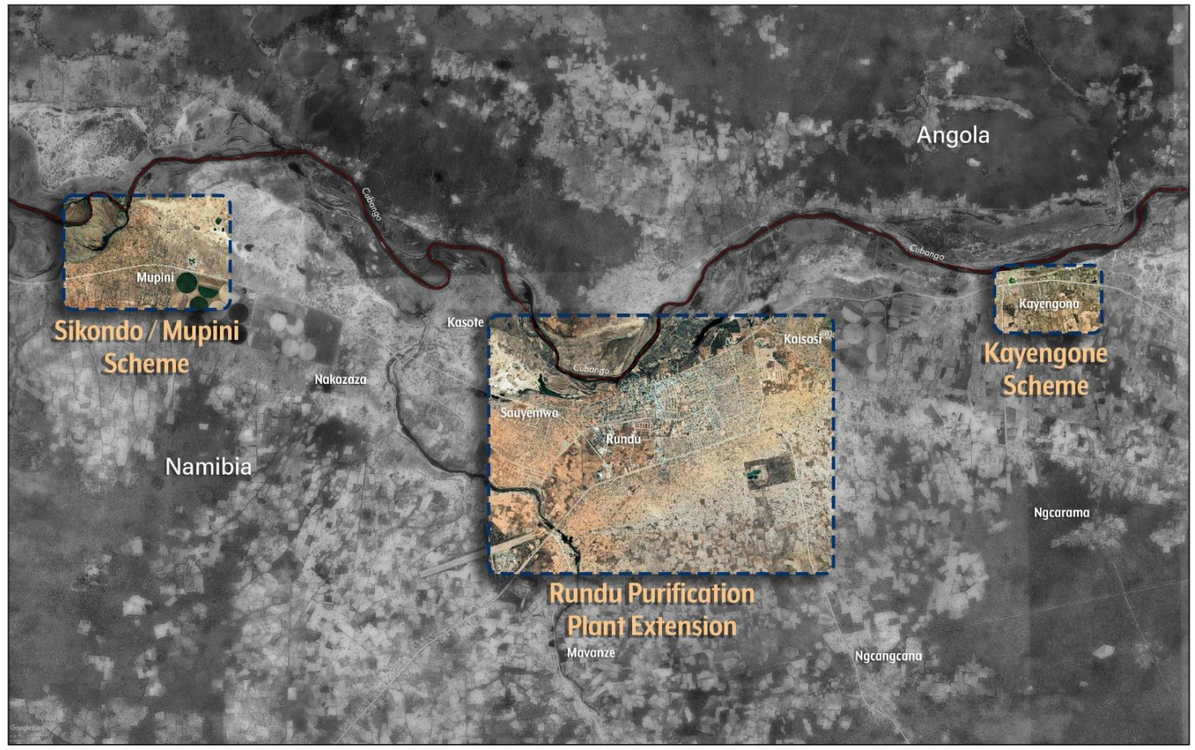
The Proponent proposes to upgrade the existing water supply schemes at Rundu and Nkarapamwe (inclusive of construction of a new water treatment plant at Rundu with a capacity of 1 800 m^3/h, upgrading of water supply abstraction, reservoirs and conveyance systems) and the decommissioning of the old water treatment plant and associated redundant infrastructure at Rundu. The locality and overview of the existing schemes can be seen on **Figure 1-1** and **Figure 1-2**.



1 Area Location Map
N.T.S.



2 Area Location Map - Site Location
N.T.S.



3 Area Location Map - Scheme
N.T.S.

NOTES

1. ALL DIMENSIONS ARE IN METRES (M) UNLESS NOTED OTHERWISE.

REV	DATE	DESCRIPTION	D	C	A
P01	24.03.2022	FINAL ISSUE	M.C.	P.C.	N.B.

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E JENNIC@GCS-SA.BIZ
W WWW.GCS-SA.BIZ

CLIENT: NAMWATER Namibia Water Corporation Ltd

PROJECT: RUNDU PURIFICATION PLANT EXTENSION

TITLE: AREA LOCATION MAPS

SCALES @ A1	DRAWN	CHECKED	APPROVED
N.T.S.	M. Cheevers	P. Chetty	N. Bhojaram
	DATE 10.02.2022	DATE 14.02.2022	DATE 14.02.2022

SUITABILITY CODE: A1 | SUITABILITY DESCRIPTION: STAGE APPROVED

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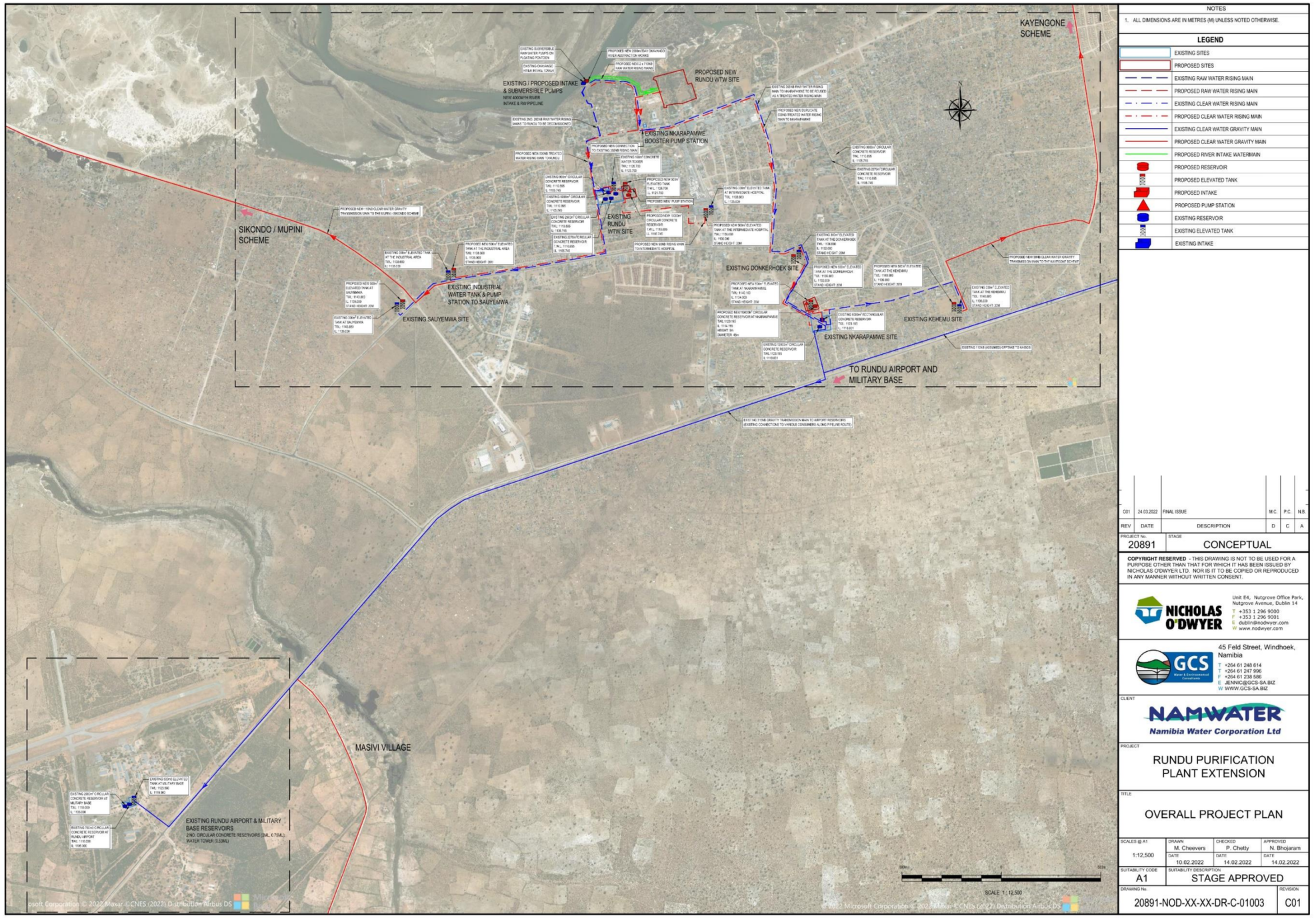
Figure 1-1: Locality of the existing Rundu Purification Plant



NOTES

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LEGEND

- EXISTING SITES
- PROPOSED SITES
- EXISTING RAW WATER RISING MAIN
- PROPOSED RAW WATER RISING MAIN
- EXISTING CLEAR WATER RISING MAIN
- PROPOSED CLEAR WATER RISING MAIN
- EXISTING CLEAR WATER GRAVITY MAIN
- PROPOSED CLEAR WATER GRAVITY MAIN
- PROPOSED RIVER INTAKE WATERMAIN
- PROPOSED RESERVOIR
- PROPOSED ELEVATED TANK
- PROPOSED INTAKE
- PROPOSED PUMP STATION
- EXISTING RESERVOIR
- EXISTING ELEVATED TANK
- EXISTING INTAKE

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W WWW.GCS-SA.BIZ

CLIENT: NAMWATER Namibia Water Corporation Ltd

PROJECT: RUNDU PURIFICATION PLANT EXTENSION

TITLE: OVERALL PROJECT PLAN

SCALES @ A1	DRAWN	CHECKED	APPROVED
1:12,500	M. Cheevers	P. Chetty	N. Bhojaram
	DATE 10.02.2022	DATE 14.02.2022	DATE 14.02.2022

SUITABILITY CODE: A1 | SUITABILITY DESCRIPTION: STAGE APPROVED

DRAWING No. 20891-NOD-XX-XX-DR-C-01003 | REVISION: C01

Figure 1-2: Overview of existing Rundu water supply network inclusive of proposed upgrades

1.2 Purpose of the EMP

Regulation 8 of the Environmental Management Act's (EMA) (7 of 2007) Environmental Impact Assessment Regulations (2012) requires that an Environmental Management Plan (EMP) be included as part of the scoping Environmental Assessment (EA) process. A 'management plan' is defined as:

"*…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored*."

An EMP is one of the most important outputs of the EA process as it synthesises all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the Environmental Impact Assessment (EIA) Process and the required environmental management on the ground during project implementation and operation. It is important to note that an EMP is a legally binding document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and should be amended to adapt to project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of this document is therefore to guide environmental management throughout the following life-cycle stages of the proposed development, pre-operation (planning and design), construction, operation, and decommissioning.

The following phases are addressed in this EMP:

- **Planning and design (Pre-operation)** - the period, prior to the commencement of the construction phase, during which preliminary legislative and administrative arrangements are carried out in preparation of the proposed activities;
- **Construction** – the period during which construction of the proposed sites and associated infrastructure will be ongoing;
- **Operation** - the period during which the water treatment plant and associated infrastructure will be operational.
- **Decommissioning** – Should the development be closed; this phase will be implemented.

1.3 Environmental Assessment Practitioner (EAP)

GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS" hereafter) has been appointed by Namibia Water Corporation (NamWater or the proponent) as independent environmental consultants to conduct the required Environmental Impact Assessment (EIA) which includes compiling an EMP for the proposed development. The EMP is to be submitted with the scoping report as supporting documents to the application for an Environmental Clearance Certificate (ECC) to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT). The EMP will also be used by Contractors as well as the Proponent in guiding them during the proposed operations to ensure that impacts on the environment are limited or avoided altogether.

1.4 Legal Requirements

The contents of the EMP must meet the requirements Section 8 (j) of the EIA Regulations. The EMP must address the potential environmental impacts of the proposed activity on the environment throughout the project life cycle. It must also include a system for assessment of the effectiveness of monitoring and management arrangements after implementation. The proponent therefore has the responsibility to ensure that the proposed activity as well as the EIA process conforms to the principles of the EMA and must ensure that any contractors appointed by them also comply with such principles.

Table 1-1 below lists the requirements of an EMP as stipulated by Section 8 (j) of the EIA Regulations.

Table 1-1: Applicable and relevant Namibian legislations and guidelines for the EA process

Legislation	Permit/Approval/Requirement	Contact Details
Environmental Management Act 2007 Environmental Impact Assessment (EIA) Regulations (EIAR) (GG No. 4878)	Amendments (required every 3 years) to this EMP will require an amendment of the ECC for these developments. Activities listed in Government Notice (GN) No. 29 of GG No. 4878 require an ECC.	Mr Damian Nchindo Department of Environmental Affairs, Ministry of Environment, Forestry and Tourism Tel: 061 284 2701
Water Act 54 of 1956	Prohibits the pollution of underground and surface water bodies (S23 (1)). Liability of clean-up costs after closure/abandonment of an activity (S23 (2)).	Mr Witbooi (Department of Water Affairs): Tel: (061) 208 7226

Legislation	Permit/Approval/Requirement	Contact Details
Water Resources Management Act No.11 of 2013	The act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
Forestry Act 12 of 2001	The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation. These provisions are only guidelines.	If there are trees within the proposed footprint of the project area that need to be removed, the proponent should notify the local Forestry Department of the number and/or type of trees to be removed and apply for permit to remove protected tree species.

1.5 Assumptions and Limitations

This EMP has been drafted with the acknowledgment of the following assumptions and limitations:

- This EMP has been drafted based on the scoping-level Environmental Impact Assessment (EIA) for the proposed development. No additional specialist studies were included as part of the assessment; and
- The mitigation measures recommended in this EMP document is based on the risks/impacts in the scoping report which were identified based on the provided project description and site investigation. Should the scope of the project change, the risks will have to be reassessed and mitigation measures provided accordingly.

1.6 Report Structure

This EMP lays out the management actions for the proposed township establishment activities. The EMP addresses the following phases:

- **Planning and design (Pre-operation)** - the period, prior to the commencement of the construction phase, during which preliminary legislative and administrative arrangements are carried out in preparation of the proposed activities;
- **Construction** – the period during which construction of the proposed sites and associated infrastructure will be ongoing;
- **Operation** - the period during which the water treatment plant and associated infrastructure will be operational.
- **Decommissioning** – Should the development be closed; this phase will be implemented.

2 ROLES AND RESPONSIBILITIES

2.1 Organizational structure for environmental and social management

A provisional reporting and communications structure for this project pertaining to environmental and social matters is indicated in **Figure 2-1** below

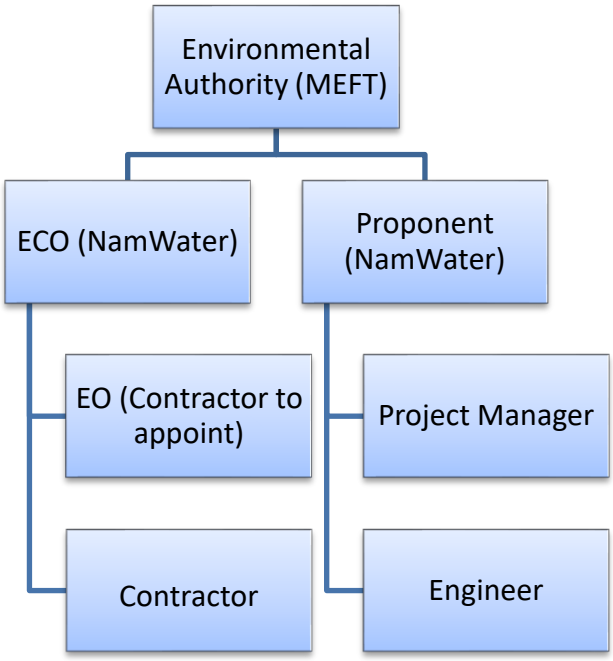

Figure 2-1: Organisational Structure

NamWater (the Proponent) is ultimately responsible for the implementation of the EMP. The Proponent may delegate this responsibility at any time, as they deem necessary, from planning and design to operation and maintenance phase and decommissioning phase (if considered). The delegated responsibility for the effective implementation of this EMP will rest on the following key individuals which may be fulfilled by the same person:

- Proponent's Representative (Project Manager/Site Supervisor)
- Environmental Control Officer
- Engineer/Contract Manager
- Contractor
- Environmental Officer

2.2 Proponent's Representative

If the Proponent does not personally manage all aspects of the planning and design, construction and operation and maintenance phase activities and decommissioning, referred to in this EMP, they should assign this responsibility to a suitably qualified individual referred to in this plan as the Proponent's Representative (PR). The Proponent may decide to assign the role of a PR to one person for both phases. Alternatively, the Proponent may decide to assign a separate PR for each component i.e. planning and design, construction, operation and maintenance and decommissioning phase. The PR's responsibilities are included in **Table 2-1** below.

Table 2-1: Responsibilities assigned to the Proponent's Representative for planning and design, construction, operation and maintenance and decommissioning phases

Responsibility	Project Phase
Managing the implementation of this EMP and updating and maintaining it when necessary	Throughout the lifetime of the project
Management and monitoring of individuals and/or equipment on-site in terms of compliance with this EMP	Throughout the lifetime of the project
Issuing fines for contravening EMP provisions	Throughout the lifetime of the project

2.3 Environmental Control Officer

The Proponent should assign the responsibility of overseeing the implementation of the whole EMP on the ground from the planning and design phase to operation and maintenance phase to a designated person, referred to in this EMP as the Environmental Control Officer (ECO). The Proponent may decide to assign this role to one person for both phases or may assign separate individual ECOs to oversee EMP implementation during each phase. The ECOs will have the following responsibilities:

- Management and facilitation of communication between the Proponent, PR and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting site inspections (recommended minimum frequency is monthly during construction and bi-annually during operation) of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);
- Advising the PR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the PR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

2.4 Engineer/Contract Manager

The Engineer in the context of the ESMP refers to the company or companies so named in the Contract, whose function it is to administer the Contract as an agent to the proponent. The term “Engineer” may also refer to “Employer’s Agent” or “Project Manager” depending on the construction contract. It will be the responsibility of the Engineer to oversee the overall design of the project and compliance with the ESMP and to incorporate any potential environmental aspects mentioned into the design.

The role of the Engineer/Contract Manager (pertaining to environmental matters) will include:

- Acting as an agent to the proponent on matters relating to the environment, and compliance with the ESMP.
- Receiving reports from the ECO and reporting to the proponent, and ensuring issues raised in the reports are addressed by the responsible parties.
- Approving, in consultation with the ECO, the Contractor’s Method Statements required in terms of this ESMP.

- Ensuring the Contractor is aware of its duty to be proactive and effective in implementation and management of environmental protection measures.
- Ensuring the Contractor is aware of their responsibilities in terms of this ESMP, including (but not limited to):
    - Approving the Environmental Site Officer (EO) nominated by the Contractor to oversee the implementation of this ESMP.
    - Ensuring that the Contractor is aware that a register of public complaints shall be maintained, that all public comments or issues shall be appropriately reported and addressed, and that proof of such shall be maintained for compliance purposes.
    - Instructing the Contractor to cease work, if so required by the CA, the ECO or ESMP, and issuing fines or disciplinary action to the responsible parties in the event of non-compliance of the ESMP, as necessary.
    - Supporting the ECO in his/her role and responsibilities by ensuring the Contractor undertakes the requisite remedial action in the event of non-compliance.

2.5 Contractor

The contractor refers to the main appointed Contractor responsible for any site activities, or portion of the site activities required for the construction phase of the project. The Contractor shall be responsible for ensuring the day-to-day implementation of the ESMP during the construction activities and, therefore, must be well-versed in the requirements of this document. The Contractor shall conduct activities in a manner that will cause the least possible disturbance to the existing amenities, whether natural or man-made, in accordance with all applicable legal requirements. Disturbance or disruption of the daily lives of local communities shall be avoided, wherever possible.

The role of the Contractor (pertaining to environmental matters) will include:

- Liaison with the Contract Manager, ECO and CA as required.
- Assuming the responsibility for the administration and implementation of sections of the ESMP relevant to the Contract.
- Nominating a suitable member of staff to fulfil the role of EO and providing the details of this person to the Contract Manager for approval.

- Ensuring all work areas and site activities pertaining to the Contract are conducted in an environmentally sensitive manner and in accordance with the relevant sections of the ESMP.
- Providing environmental awareness training, staff induction training and emergency response procedures to all relevant staff, ensuring that they are adequately informed of the requirements of the ESMP pertaining to their site role, and that they clearly understand the written Code of Conduct.
- The Contractor is also responsible for all sub-contractors, suppliers and service providers and must ensure that all persons on site (temporary or permanently) have undergone induction training and are conversant with the ESMP or relevant sections of the ESMP pertaining to their role on site. The Contractor must task the EO to monitor the activities of sub-contractors and service providers to ensure they comply with the ESMP requirements.
- Supplying method statements required in terms of this ESMP (either specified, or for any activities that are proposed as variations to the standard construction practices detailed or referred to in the Contract Documents, or for any activities requiring special attention as specified in this ESMP and/or requested by the ECO or Competent Authority).
- Liaising closely with the ECO on any environmental management issues, environmental incidents or events, or emergencies affecting the environment.
- Addressing the findings of the ECO inspections; reacting to any instructions issued by the Contract Manager with respect to non-compliance with the ESMP, emergency or unforeseen situations; reacting to complaints/issues raised by the public.
- Providing an Environmental Incident Report File and a Complaints Register.

2.6 Environmental Officer

The Environmental Officer (EO) refers to the nominated staff member of the Contractor who will fulfil the role of the Contractor's environmental representative to ensure compliance with the ESMP and relevant environmental legislation. The EO shall liaise closely with the Contract Manager and the ECO and shall ensure that the works on site are conducted in an environmentally responsible manner. Therefore, the EO must be fully conversant with all the requirements of the ESMP, conditions of the ECC, and relevant permits and licenses. The EO will liaise with the ECO in all matters relating to the implementation of the ESMP.

The duties and requirements of the EO must include:

- Liaison with the Contractor and ECO on matters relating to the environmental considerations on site.
- Assisting with the compilation of environmental components of Method Statements on behalf of the Contractor.
- Being on site throughout the duration of construction, and being dedicated to the project.
- Undertaking daily inspections of work areas to ensure all activities are being undertaken in accordance with the ESMP.
- Maintaining site documentation and records pertaining to the ESMP and environmental matters and approvals.
- Providing a regular and routine account of environmental matters for the ECO, including any environmental incidents, events or accidents, and reporting on any entries in the Environmental Incident Report File or Complaints Register. This account may take the form of a written report or checklist or similar, or meeting with the ECO.
- Overseeing the implementation of corrective action for non-conformances within the stipulated timeframes.
- Responding to and reporting on environmental accidents, incidents and events within appropriate time frames, and ensuring that all works requiring remediation are undertaken in accordance with the ECO or Contract Manager's instructions

3 ENVIRONMENTAL MANAGEMENT PLAN ACTIONS

3.1 Key Potential environmental impacts to be managed

From the EIA, the following key potential impacts have been identified per project phase and are summarised in **Table 3-1** below.

Table 3-1: Summary of key potential environmental impacts per project phase

	Project Phase	**Potential impacts identified in the EA**
1	Pre-Construction	Siting of plant infrastructure, Electricity/power availability/sufficiency, Traffic flow

2	Construction	Biodiversity disturbance and loss, surface and groundwater contamination, traffic, soil erosion, archaeological, health and safety, dust, noise, waste, temporary employment creation, disturbance of local residents, interruption of business activities.
3	Operation	Soil, surface and groundwater, noise, health and safety, hazardous substance handling and storage, increased water supply, increased energy usage and waste.
4	Decommissioning	Noise and dust, health and safety risks, soil erosion, soil and groundwater impacts and waste generation

The aim of the management actions of the EMP is to avoid potential impacts where possible. Where impacts cannot be avoided, measures are provided to reduce the significance of these impacts.

Management actions recommended to manage the potential impacts rated in the EA carried out for the proposed development are presented in the following tables. The management actions were compiled based on the four project phases:

- Planning and design phase (pre-construction) (**Table 3-2**);
- Construction (**Table 3-3**);
- Operation and maintenance phase management actions (**Table 3-4**);
- Decommissioning (**Table 3-5**).

The responsible persons at NamWater should assess these commitments in detail and should acknowledge their commitment to the specific management actions detailed in the table of the next subchapters.

3.2 Phase 1: Planning and Design Management Actions

The management requirements detailed in **Table 3-2** need to be carried out before any activities commence on site while necessary preliminary legislative and administrative arrangements are made in preparation for the proposed activities on site.

Table 3-2: Planning and design management actions

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
EMP Implementation	Lack of EMP implementation	• The proponent should appoint a Proponent's Representative (PR) that will act as their on-site implementing agent. • This person should be responsible to ensure that the Proponent's responsibilities are executed in compliance with relevant legislation and this EMP.	PR to be appointed	Proponent	Pre-construction
Biodiversity	Biodiversity loss and habitat destruction	• Vegetation should be cleared only where absolutely necessary and if cleared, numbers of protected, endemic and near endemic species removed should be documented. • Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry.	No disturbance to unmarked areas. Number of trees removed. Existence of bare surfaces after project work start.	PR	Throughout all project phases

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Stormwater	Flooding	• Stormwater drainage system to be included within the design of the plant.	Stormwater management plan	Proponent	Throughout all project phases
Communication	Lack of communication (proper liaison between the communities/landowners and the implementing agencies and or their contractors)	• The proponent should appoint a Public Relation Officers (PROs) to liaise with the communities/landowners. • The PROs should be introduced to the community leaders or local authorities and his or her contact details provided to them prior to undertaking activities for easy communication during the construction activities and subsequent operational phase. • The agencies should compile a clear communication procedures/plans which should include a grievance mechanism • The agencies should enter into written agreements with landowners and or communal land leaders before carrying out works on such land.	PRO should be appointed for each sub-project or as required Complaints logbook Land use agreements and permits	PRO	Throughout all the project phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Community involvement in decision making	Lack of community's involvement in decision making and mainstreaming of indigenous knowledge in the planning process through consultations	• The affected local communities should be consulted and provided with ample time to give their input on the project activities in the early stages of planning • The local knowledge of the community members with regards to the project activities should be considered and incorporated into the planning of the projects	Community consultation input process List of records of community consultation/engagement	PRO	Throughout this phase
Involuntary resettlement	Displacement of local people to pave way for the project activities	• The social values (cultural) of the affected people should be respected and handled with dignity. • As per the AfDB requirements, It seeks to ensure that when people must be displaced they are treated fairly, equitably, and in a socially and culturally sensitive manner; that they receive compensation and resettlement assistance so that their standards of living, income-earning capacity, production levels and overall means of livelihood.	Involuntary resettlement consultation and agreements with affected communities/people Compensation policy shared with the affected people	Ministry of Land Reform	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Construction schedule	Construction inconveniences to communities	• Convenient construction schedules should be prepared and be shared with the Regional Constituency offices, local and Traditional Authorities, so that they can inform the local communities of when to expect the construction works in their areas and the anticipated inconveniences and the duration.	On-going engagement / communications with landowners and local leaders	Environmental Control Officer (ECO)	Pre-construction
Water Resources utilisation	Water abstraction and use	• The proponent should apply for and obtain water abstraction and use permits from the Department Water Affairs and Forestry at MAWF. • The proponent will ensure adherence to water volume allocations in the permits as well as permits' renewal as per their stipulated periods throughout projects' operations.	Water abstraction and use permits are issued and conditions contained therein are adhered to	Proponent	Pre-operation and throughout the operations
Land Use	Land use permits/agreements and or leaseholds	• The proponent should consult with the landowners and or traditional authorities or relevant land users to obtain a written land use/leasehold agreement prior to constructing infrastructure.	No complaints of landowners and authorities with regards to unfair and unauthorised land uses	PRO	Pre-construction

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• All relevant land permits and leaseholds documents should be obtained from the landowners or authorities. • Proper consultations should be done with the affected landowners and authorities with regards to land use and the project activities.	All land use agreements and permits are in place and obtained prior to utilizing the land		
Construction materials	Sourcing of construction materials from unauthorised or uncertified service providers	• Sand required for construction and other locally derived building materials should be planned for prior to construction.	Certification of construction material and equipment suppliers	ECO	Pre-construction

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Construction and operational phase workers	Labour recruitment	• Preference for both casual works during construction and operational & maintenance work should be given to residents/locals in that area. • No recruitment should be done on project sites. This should be carried out at the respective regional constituency offices. • Preference of employment should be given to the youth and women.	Employment of people from the community No complaints of unfair recruitment of outsiders at the expense of local people.	NamWater: Human Resource Department For construction, the responsibility falls on the contractor	Pre-construction (for construction workers) and operation (for operational phase workers)
Visual (sense of place)	Visual	• Where required, infrastructures should be camouflaged to cause less of a nuisance in project areas. • All the necessary options to improve the aesthetic of the infrastructures should be considered and incorporated in the designs. This should be done so that the water infrastructures blend in with the surrounding areas or at least enhance it for a better appeal to the public.	No complaints of sight/visual nuisance from the neighbouring landowners or local communities	Planning and Design Engineer	Pre-construction

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Construction contractors	Appointment of contractors	• For all the construction works, preference should be given to local companies (construction contractors) from the project areas in that region. • Construction Contractors from out of the area/region can only be considered in the case that there are no capable/qualified or interested local construction companies. • No tendering processes (apart from tender related site visits) or appointment of construction contractors should be done on project sites. The tendering process should be done at the implementing agency's premises as per their procurement / tendering procedures.	No complaints of unfairness or corruption from contracting outsiders at the expense of local companies Record of companies contracted for the construction works	NamWater: Procurement Unit	Pre-construction
Vehicular Traffic	Traffic Safety	• Enough and visible construction notices to be erected close to the site access from local main roads should be planned for. These will serve as a warning or an alert to vehicle drivers about upcoming construction works in the area.	Site drawings/layouts including parking lots, loading zones and traffic signals	Planning and design Engineer	Pre-construction and throughout the project phases

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Enough materials offloading and loading zones and parking for project vehicles should be included in the design phase.			

3.3 Phase 2: Construction Phase Management Actions

The management actions for the construction phase during which the construction activities will take place are listed in **Table 3-3**.

Table 3-3: Construction phase management actions

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
ESMP training	Lack of ESMP awareness and the implications thereof	• Employees appointed for construction work must ensure that all personnel are aware of necessary health, safety, and environmental considerations applicable to their respective work.	Less to no record of contravening with the ESMP	ECO	Throughout all the project phases
Monitoring	EMP non-compliance	• The ECO or the Proponent/Proponents Representative should monitor the implementation of this EMP. • The Proponents Representative should inspect the site throughout the construction phase at least on a monthly basis. • Bi-annual audits should be conducted of site activities by an external ECO.	Less to no record of contravening with the ESMP	ECO	Throughout all the project phases
Land Use	Land use agreements	• The implementing agencies should maintain on-going consultations/engagements	No complaints from landowners and authorities with regards to unauthorised land uses or breaching of land use agreements	PRO	Throughout all the project phases

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
			On-going engagements with landowners and authorities Prompt responses to landowners and authorities by implementing agencies regarding the land use grievances		
Waste Management	Visual impact and soil contamination	• The construction site should always be kept tidy. • All domestic and general waste produced daily should be cleaned and contained daily. • No waste may be buried or burned. • Waste containers (bins) should be emptied regularly and removed from site to the nearest municipal waste disposal site. • All recyclable waste needs to be taken to the nearest recycling depot. • Hazardous and domestic / general waste must be disposed separately and at the appropriate facilities.	No improper disposal of waste on the project sites or in the surrounding areas Waste is sorted and stored in respective waste containers, i.e. according to waste type	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Construction workers should be sensitised to dispose of waste in a responsible manner and not to litter. • No waste may remain on site after the completion of the project. • Waste containers shall be stored above ground and under covering. • Domestic waste shall be contained, and storage areas shall be contained to prevent scavenging by local persons or animals.			
Hazardous Waste	Soil and groundwater contamination	• All heavy construction vehicles and equipment on site should be provided with a drip tray. • All heavy construction vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of construction vehicles should take place only at a designated workshop area. • Hazardous waste, including emptied chemical containers should be safely stored on sites where they cannot be reached and used by the unsuspecting and uniformed locals for personal use. No waste should be improperly disposed of on sites or its surroundings, i.e. unapproved waste sites	No improper discarding of such waste on project sites or at any unapproved sites Records of waste disposal	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• A comprehensive list of all potentially hazardous wastes and estimated volumes shall be compiled for all activities. A hazardous materials inventory shall be kept and be readily available for inspection by implementing agencies and relevant authorities. • Specifications for storing and handling of all hazardous waste and substances (e.g. fuel and chemicals) shall be adhered to. Specific attention shall be paid to designing the fuel storage sites and control during filling to manage pollution risks. • All hazardous waste that cannot be handled safely shall be temporarily stored before being removed to a hazardous waste disposal site by authorised service providers.			
	Material Safety Data Sheets (MSDS) usage	• Material Safety Data Sheets shall be used in all cases in assisting in assessing the possible risk and best approach to handling and disposal methods. These shall be available at locations/sites where chemicals are stored and used.	Availability of MSDSs for all hazardous materials. Disposal / handling consistent with requirements	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
	Spill management	• The necessary tools, materials and expertise shall be readily available to deal with spills of oil, fuels, lubricants and other hazardous materials. Spill clean-up kits shall be available on site. • All spills of fuels, oils or other hazardous substances shall be immediately cleaned up and measures taken to remediate the spill. The incident shall be reported to the respective implementing agency's Safety, Health and Environmental (SHE) representative. • The necessary tools, materials and expertise shall be readily available to deal with spills of oil, fuels, lubricants and other hazardous materials. Spill clean-up kits shall be available on site.	No spills on site soils Fuels, oils and other hazardous substances are well stored and sealed in their containers on sites	ECO	Throughout this phase
Wastewater	Surface and Groundwater contamination	• Use of the toilets instead of the veld must be strictly adhered to. • If grey water can be collected from ablution facilities at the contractors' camp it should be recycled and: o Used for dust suppression; o Used to water vegetable gardens or to support a small nursery in local communities (as and when agreed upon by such communities); and/or o Used to clean equipment.	No improper disposal of wastewater on the project sites or in the surrounding areas	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• All run off materials such as wastewater and other potential contaminants should be contained on site and disposed of in accordance with municipal wastewater discharge standards, so that they do not reach to ground or surface water systems. • Wastewater (excluding sewage) should be drained into lined / impermeable catch pits, big enough for daily / weekly usage without overflowing. Water from these catch pits should be removed from site to the nearest wastewater treatment facility by an approved wastewater removal company.			
Soil	Soil contamination	• Spill control preventative measures should be put in place to manage soil contamination. • An impermeable liner should be laid down (particularly beneath cement mixers) on the site area in order to prevent contaminants from reaching to surrounding soils and eventually groundwater systems. • Potential contaminants such wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils.	No visible oil spills on the ground or contaminated spots.	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Contaminants such as hydrocarbons should be stored, handled, and managed appropriately. These must be collected on site and disposed at an appropriate facility that is licenced to receive such waste. • Soil contamination should be monitored on site daily by PR and monthly by ECO. • ECO(s) should ensure that the contractor have sufficient number of drip trays available on-site and that these are utilised in the event of leakage from construction trucks or vehicles. • Contaminated soils onsite that may have resulted from leakage/spillage construction vehicles or equipment should be removed to a depth dependent on the size of the spill and replaced with clean soil. The contaminated soil should be removed and disposed at a designated landfill site suitable to receive contaminated soil. • Visual soil assessment for signs of contamination at vehicle holding, parking and activity areas. • Place oil drip trays under parked construction vehicles and hydraulic equipment at the site.			

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Soils	Land degradation	• Soil erosion preventative measures should be put in place manage soil disturbance. Site soils should not be disturbed, if not needed or related to the actual construction works. • Overburden material should be handled more efficiently during this phase to avoid erosion when subjected erosional processes.	No signs of soil erosion	ECO	Throughout this phase
Biodiversity (Flora)	Localised loss of habitat and vegetation	• All areas of interest should be clearly marked to prevent damage to areas unintended for the projects' footprints. • Where clearing and/or damage is unavoidable, permits for clearing protected plant species should be obtained from the Forestry Department. • With regards to the vegetation on or within proximity of site, the following mitigation measures should be implemented: • (a) Even if certain vegetation is found within actual site footprints, this does not mean that it should be removed. Therefore, care should be taken when preparing the site without destroying the vegetation.	No disturbance to unmarked areas. Occurrence of soil erosion due vegetation removal Number of trees removed. Existence of bare surfaces after project work start	Environmental Control Officer (ECO) MAWF; Department of Forestry Management	Prior to construction

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• (b) Vegetation found on the sites, but not on the site infrastructure footprints should not be removed or disturbed in any way but should be left to preserve biodiversity on the site. • Environmental awareness on the importance of biodiversity preservation should be provided to the project workers.			
Biodiversity (Fauna)		• Project workers should refrain from killing species (big or small) that may be found on and around the sites. • Workers should refrain from disturbing, killing or stealing locals' animals and/or small soil animals' species found on sites. • Environmental awareness on the importance of biodiversity preservation should be provided to the site contractors and workers.	No snaring or killing of local domestic animals	ECO	Throughout this phase
Dust and noise	Nuisance impacts	• The contractor(s) should supress dust associated with construction activities by using a reasonable amount of water as required. • If feasible, wastewater should be treated to an acceptable water quality level, so that it can be used for dust suppression, if needed.	No. complaints from the public about excessive dust and noise generation	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Noise levels during construction activities should be kept within the allowable standards for urban areas. • Noise levels should adhere to the SANS restrictions on noise. • Work hours should be restricted to between 08h00 and 17h00 due to the use of heavy equipment, power tools and the movement of heavy vehicles. • Noisy equipment should be shut down when not in use (when not needed) to avoid unnecessary noise on site. • Workers performing noisy tasks should be rotated regularly (work on shifts) to avoid exposing them to excessive noise for a long period of time in a day. • Workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure. • Workers should ensure that they wear the necessary PPE at all times on work sites.			
Air quality	Hydrocarbon emissions from vehicles	• Vehicles and machinery on site should be serviced regularly to prevent emission of harmful gases. • Sensitive site selection and siting of project components.	No complaints from the public about vehicle emissions.	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Use of modern equipment meeting appropriate emissions standards, and regular preventative maintenance. • Dust control and suppression measures such as dampening, watering of dust sources, use of vegetation hedges etc. • No use of ozone depleting substances during construction. • Ensure sewage storage and treatment facilities are adequately contained; cover sludge with lime/earth at disposal sites.			
Health and Safety	Health and safety impacts	• A comprehensive health and safety plan should be developed for construction activities. • The contractor(s) should ensure that all personnel are provided with personal protective equipment (PPE), such as coveralls, gloves, safety boots, safety glasses and hard hats at all times. • Workers should ensure that they wear the PPE at all times on work sites. • No workers should be allowed to drink alcohol during working hours. • No workers should be allowed on site if under the influence of alcohol.	Comprehensive health and safety plan for all construction activities compiled. No injuries reported and recorded. Implementation of procedures and programmes.	Site/Project Manager	Prior to site setup activities

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• An appropriate location should be indicated on the site for the parking of construction and operation vehicles. • No unauthorised access should be allowed to the construction sites.	Workers wearing full PPE while on sites		
Health and safety	Accidental fire outbreak	• Portable fire extinguishers should be provided on site. • No open fires to be created by project personnel.	No wildfires recorded (due to presence of workers)	ECO	Throughout this phase
Water	Groundwater contamination	• No wastewater / effluent should be allowed to leave the site premises without proper control. • These should be disposed of in accordance with municipal wastewater discharge standards. • Regular maintenance and monitoring of construction equipment and vehicles should be done to detect early spills or leakages. • An emergency plan should be available for major / minor spills at the construction site during operation activities (with consideration of air, groundwater, soil, and surface water). • Groundwater impact awareness training should be provided to the employees involved in this phase.	Number of spills or leakages reported	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Archaeology	Loss of heritage resources	• Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a "chance find" procedure should be applied in the order they appear below: o If operating machinery or equipment, stop work; o Demarcate the site with danger tape; o Determine GPS position if possible; o Report findings to the construction foreman; o Report findings, site location and actions taken to superintendent; o Cease any works in immediate vicinity; o Visit site and determine whether work can proceed without damage to findings; o Determine and demarcate exclusion boundary; o Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by archaeologist; o Inspect site and confirm addition to project GIS; o Advise the National Heritage Council of Namibia (NHCN) and request written permission to remove findings from work area; and	Preservation of all artefacts that are discovered around project area	ECO	Prior to site setup activities

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		○ Recovery, packaging and labelling of findings for transfer to National Museum. • Should human remains be found, the following actions will be required: ○ Apply the chance find procedure as described above; ○ Schedule a field inspection with an archaeologist to confirm that remains are human; ○ Advise and liaise with the NHCN and Police; and • Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.			
Noise	Nuisance impacts	• Work hours should be restricted to between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. If an exception to this provision is required, all residents within the 500 m radius should be given 1 week's written notice. • Machinery and vehicles should be serviced regularly so that they function normally without excessive noise. • Noise from vehicles and equipment on site should be reduced to acceptable levels.	Complaints from residents about noise.	ECO	At site set up and throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• When operating equipment, workers should be provided with applicable personal protective equipment (PPE), such as earplugs.			
Traffic safety	Increase in traffic density.	• Enough and visible construction notices should be erected close to the site access from local main roads. This will serve as a warning or an alert to vehicle drivers about upcoming construction works in the area. • Enough materials offloading and loading zones and parking for project vehicles should be included in the design phase. • Drivers should drive slowly (40km/hour or less), and on the lookout for livestock and wildlife. • All drivers of the project vehicles should be in possession of valid and appropriate driving licenses to operate such vehicles. • Vehicle drivers should adhere to the road safety rules. • Project vehicles should be in a road worthy condition and serviced regularly in order to avoid accidents as a result of mechanical faults of vehicles. • Vehicle drivers should only make use of designated site access roads provided. • Vehicles drivers should not be allowed to operate vehicles while under the influence of alcohol.	No complaints from members of the public/ local communities regarding project related vehicular traffic safety Enough parking and loading zones on sites	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• No heavy trucks or project related vehicles should be parked outside the allocated or designated project site boundaries. • The area(s) intended for the maintenance of equipment, vehicles and machinery shall be located on an impermeable surface and shall have a drainage and collective sump system (with oil/water separator). No hydrocarbon contaminated water may be discharged into the environment.			
HIV and AIDS	Potential increase of prevalence of HIV and AIDS, as well as other STIs prevalence.	• The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. • Provision of condoms and sex education through distribution of pamphlets. These pamphlets can be obtained from local health facilities.	Number of new infections recorded linked to project workers.	MoHSS Operational NGOs like UNICEF	Throughout this phase.
Rehabilitation	Visual impact	• Upon completion of the construction phase consultations should be held with the local community/property owner(s) regarding the post-construction use of remaining excavated areas (if applicable). • In the event that no post-construction uses are requested, all excavated/degraded areas need to be rehabilitated as follows:	No of complaints regarding rehabilitation of the sites	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		○ Excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill. ○ Rehabilitated excavated areas need to match the contours of the existing landscape. ○ The rehabilitated area should not be higher (or lower) than nearby drainage channels. This ensures the efficiency of revegetation and reduces the chances of potential erosion. ○ Topsoil is to be spread across excavated areas evenly. ○ Deep ripping of areas to be rehabilitated is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. • Ripping should be done along slopes, not up and down a slope, which could lead to enhanced erosion.			
Topsoil	Loss of topsoil and associated opportunity costs	• When excavations are carried out, topsoil[1] should be stockpiled in a demarcated area.	No proliferation of informal vehicle tracks. No new erosion gullies	ECO	Throughout this phase

[1] Topsoil is defined here as the top 150mm of surface material, which accounts for the seedbank.

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Stockpiled topsoil should be used to rehabilitate post-construction degraded areas and/or other nearby degraded areas if such an area is located a reasonable distance from the stockpile. • The use of existing tracks to avoid disturbance of new areas should be considered.			
Fire	Fire prevention and management	• A fire prevention and fire emergency management plan shall be prepared as part of the method statement for the implementing agencies. The plan shall include, but not be limited to, the following: o Sources of fire risk; o Measures to minimise the risk of accidental bush fires caused by any activity related to the works; o Measures to control an accidental bush fire. o Firefighting equipment shall be provided at specified localities on the work site. o This equipment shall include, but not be limited to, fire extinguishers and fire-resistant clothing for fire fighters o Suitable signs should be placed in areas of fire risk, such as no smoking, no open or naked flames, etc.	Minimum to no records of fire on project sites Fire signs placed at potential fire risk areas such as the fuel storage areas	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Social nuisance	Influx of out-of-area people into the project areas	• The proponent and their project contractors should prioritize the employment of local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. This is to avoid the influx of outsiders into the area. • The locals to be employed during the project phases should be provided with the necessary training of skills required for the project to avoid bringing in many out-of-area employees. • The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. • Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms, so that they can co-live in harmony with the local community. • Construction workers or any project related worker should be prohibited from getting involved in sexual relations and/or engage in sexual activities with locals' young girls. • Any construction worker who will be found or seen engaging in sexual relations with young girls shall be reported to the site managers and necessary actions taken against that worker.	No record of public complaints against contractors No records of sexual relations between contractors and local young girls, especially school children (underage)	ECO PRO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Social impact	Potential damage or invading of private properties	• The proponent and their project contractors should inform their workers on the importance of respecting the local communities' properties by not intruding or damage their homes, fences or killing their livestock. • Any workers or site employees that will be found guilty of intruding peoples 'private properties should be called in for disciplinary hearing and/or dealt with as per their employer's code of employment conduct • Site workers should be advised to respect the community and local's private properties, values and norms. • No worker should be allowed to wander in people's private yards or fences while on sites. • Site workers are not allowed to kill or in any way disturb local livestock or vegetation. • No worker should be allowed to, without permission cut down or damage trees belonging either to the landowners or in the community vegetation/forests. • The property and rights of all landowners or land occupiers should always be respected.	No record of complaints related to property damage by the public against contractors	ECO PRO	Throughout this phase

3.4 Phase 4: Operational Phase Management Actions

The table below (**Table 3-4)** presents the management action for operational phase.

Table 3-4: Operational phase management actions

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
ESMP Training	Lack of EMP awareness and the implications thereof	• All contractors appointed for maintenance work at the site must ensure that all personnel are aware of necessary health, safety, and environmental considerations applicable to their respective work.	Less to no record of contravening with the ESMP	ECO	Throughout all the project phases
Personnel	Recruitment of qualified personnel	• Suitably qualified and/or skilled personnel should be appointed to run the plant as required (which may include processing technicians, mechanical technicians and electrical technicians) based on the technology employed and the relevant expertise required to ensure efficient operation of the plant.	Relevant qualified personnel employed	NamWater Human Resources	Throughout this phase
Water	Surface and groundwater contamination	• Contaminated runoff from the various operational activities should be prevented from entering any surface or ground water bodies. • Ensure that surface water accumulating on-site are channelled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment.	Storm water management system in place	Design Engineer	Throughout all the project phases

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Disposal of waste from the various activities should be properly managed.			
Maintenance and emergency procedures	Environmental impacts associated with maintenance activities as well as proactive intervention to avoid, and if required, to respond to emergencies	• Establish regular reporting procedures on maintenance • Undertake regular inspection and maintenance of all infrastructure to ensure in working order and to assess damaged / deficient equipment, as per the O&M Manual. • Review, and if necessary, revise maintenance manual. • Establish emergency procedures guidelines for the blockage/failure, flooding, contaminant removal and disinfection, power failure and fire of the scheme. • Implement the response procedures when emergency incident occurs. • Complete the incident report checklist in the case of emergency and keep with monitoring records for submission. • Undertake annual education course for all operational staff. • Review, and if necessary revise emergency manual.	No. of incidents	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Facility Management and Operations	Water loss	• NamWater to attend to damage to the scheme components resulting in water loss as a matter of high priority.	Reports of damaged scheme components	Proponent	Throughout this phase
Routine Maintenance and repairs		• The condition of the infrastructure shall be inspected routinely and a maintenance list compiled. • Identified, preventative maintenance issues shall be undertaken as soon as possible. • Any wastes arising from the repair and maintenance work must be removed and disposed-off at a designated waste deposal site as part of the operation.	Reports of damaged scheme components	Operations Manager	Throughout this phase
Environmental Awareness		• Instilling a sense of environmental awareness and consideration in all employees, but especially those involved with the scheme operations is vital to the overall success of any environmental management plan. • It is therefore recommended that a general environmental awareness course for the Scheme Staff Members, who may be required to carry out duties on the scheme, be undertaken.	Environmental Awareness training	Proponent	Throughout the project lifespan

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Waste	Pollution	• All waste will be removed to an appropriate waste dump. • No waste should be buried. • General Waste: Includes waste paper, plastic, cardboard, harmless organic (e.g. vegetables) and domestic waste. • No littering will be allowed. The plant area will be kept free of waste at all times. • Provide sufficient waste bins at worksites. Make sure that all waste is removed from the worksites. • Hazardous Substances include: sewerage, fuels, lubrication oils, hydraulic and brake fluid, solvents, paints, anti-corrosives, insecticides and pesticides, chemicals, acids etc. It should be disposed of at designated hazardous disposal sites. • Contaminated soil should be stored in drums and taken to the nearest appropriate waste dumpsite. • Do not change oil on uncovered ground. Drip trays will be used to catch oil when vehicles are repaired in the field.	No improper discarding of such waste on project sites or at any unapproved sites Records of waste disposal	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline

		• Used oil and hydraulic fluids will not be discarded on the soil or buried. It will be removed from site and taken back to an appropriate dump.
		• In the event of a hazardous spill:
		  o Immediately implement actions to stop or reduce the spill.
		  o Contain the spill.
		  o Arrange implementation of the necessary clean-up procedures.
		  o Collect contaminated soil, water and other materials and dispose it at an appropriate waste dumpsite.
		• Used solvents and grease should be stored in drums or other suitable containers. It should be sealed and recycled or disposed at an appropriate disposal site.
		• Hazardous waste should not be burnt.
		• Bunding, concrete slabs and/or other protective measures should be installed where hazardous materials are handled.			

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Ensure that the staff are informed and have information pertaining to the management of spills or ingestion.			
Hazardous Materials	Pollution and Health and Safety	• Where hazardous materials are required for repair and maintenance work (including fuels and oils), care will be taken to ensure that a competent individual is appointed to enforce the responsible use of such materials. • The operational staff or maintenance teams shall carry a copy of the relevant Material Safety Data Sheet (MSDS) whenever using such materials. • The Scheme Supervisor shall ensure that persons working with hazardous materials have been trained in the handling of such substances, as well as in emergency procedures to be followed in the event of an accidental spillage or medical emergency. • Maintenance teams shall also carry a spill kit containing the appropriate neutralizing chemicals, absorbent materials and other relevant equipment required to undertake a clean-up of any spill that may occur.	No improper discarding of such waste on project sites or at any unapproved sites Records of waste disposal	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Noise	Noise pollution and disturbance	• All silencing mechanisms on all equipment must be in a good state of repair. • Except for in emergency situations, no amplified sound may be broadcast. • All routine maintenance shall be restricted to daylight hours	Complaints from residents about noise.	ECO	Throughout this phase

3.5 Phase 5: Decommissioning Phase

The management actions for the decommissioning phase during which the redundant infrastructure will be dismantled and disposed of are listed in **Table 3-5**.

Table 3-5: Decommissioning phase management actions

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
ESMP training	Lack of ESMP awareness and the implications thereof	• Employees appointed for decommissioning work must ensure that all personnel are aware of necessary health, safety, and environmental considerations applicable to their respective work.	Less to no record of contravening with the ESMP	ECO	Throughout all the project phases
Waste Management	Visual impact and soil contamination	• The site should always be kept tidy. • All domestic and general waste produced daily should be cleaned and contained daily. • No waste may be buried or burned. • Waste containers (bins) should be emptied regularly and removed from site to the nearest municipal waste disposal site. • All recyclable waste needs to be taken to the nearest recycling depot. • Hazardous and domestic / general waste must be disposed separately and at the appropriate facilities. • Construction workers should be sensitised to dispose of waste in a responsible manner and not to litter.	No improper disposal of waste on the project sites or in the surrounding areas Waste is sorted and stored in respective waste containers, i.e. according to waste type	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• No waste may remain on site after the completion of the project. • Waste containers shall be stored above ground and under covering. • Domestic waste shall be contained, and storage areas shall be contained to prevent scavenging by local persons or animals.			
Hazardous Waste	Soil and groundwater contamination	• All heavy construction vehicles and equipment on site should be provided with a drip tray. • All heavy construction vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of construction vehicles should take place only at a designated workshop area. • Hazardous waste, including emptied chemical containers should be safely stored on sites where they cannot be reached and used by the unsuspecting and uniformed locals for personal use. No waste should be improperly disposed of on sites or its surroundings, i.e. unapproved waste sites	No improper discarding of such waste on project sites or at any unapproved sites Records of waste disposal	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• A comprehensive list of all potentially hazardous wastes and estimated volumes shall be compiled for all activities. A hazardous materials inventory shall be kept and be readily available for inspection by implementing agencies and relevant authorities. • Specifications for storing and handling of all hazardous waste and substances (e.g. fuel and chemicals) shall be adhered to. Specific attention shall be paid to designing the fuel storage sites and control during filling to manage pollution risks. • All hazardous waste that cannot be handled safely shall be temporarily stored before being removed to a hazardous waste disposal site by authorised service providers.			
	Material Safety Data Sheets (MSDS) usage	• Material Safety Data Sheets shall be used in all cases in assisting in assessing the possible risk and best approach to handling and disposal methods. These shall be available at locations/sites where chemicals are stored and used.	Availability of MSDSs for all hazardous materials. Disposal / handling consistent with requirements	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
	Spill management	• The necessary tools, materials and expertise shall be readily available to deal with spills of oil, fuels, lubricants and other hazardous materials. Spill clean-up kits shall be available on site. • All spills of fuels, oils or other hazardous substances shall be immediately cleaned up and measures taken to remediate the spill. The incident shall be reported to the respective implementing agency's Safety, Health and Environmental (SHE) representative. • The necessary tools, materials and expertise shall be readily available to deal with spills of oil, fuels, lubricants and other hazardous materials. Spill clean-up kits shall be available on site.	No spills on site soils Fuels, oils and other hazardous substances are well stored and sealed in their containers on sites	ECO	Throughout this phase
Wastewater	Surface and Groundwater contamination	• Use of the toilets instead of the veld must be strictly adhered to. • If grey water can be collected from ablution facilities at the contractors' camp it should be recycled and: o Used for dust suppression; o Used to water vegetable gardens or to support a small nursery in local communities (as and when agreed upon by such communities); and/or o Used to clean equipment.	No improper disposal of wastewater on the project sites or in the surrounding areas	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• All run off materials such as wastewater and other potential contaminants should be contained on site and disposed of in accordance with municipal wastewater discharge standards, so that they do not reach to ground or surface water systems. • Wastewater (excluding sewage) should be drained into lined / impermeable catch pits, big enough for daily / weekly usage without overflowing. Water from these catch pits should be removed from site to the nearest wastewater treatment facility by an approved wastewater removal company.			
Soil	Soil contamination	• Spill control preventative measures should be put in place to manage soil contamination. • An impermeable liner should be laid down (particularly beneath cement mixers) on the site area in order to prevent contaminants from reaching to surrounding soils and eventually groundwater systems. • Potential contaminants such wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils.	No visible oil spills on the ground or contaminated spots.	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Contaminants such as hydrocarbons should be stored, handled, and managed appropriately. These must be collected on site and disposed at an appropriate facility that is licenced to receive such waste. • Soil contamination should be monitored on site daily by PR and monthly by ECO. • ECO(s) should ensure that the contractor have sufficient number of drip trays available on-site and that these are utilised in the event of leakage from construction trucks or vehicles. • Contaminated soils onsite that may have resulted from leakage/spillage construction vehicles or equipment should be removed to a depth dependent on the size of the spill and replaced with clean soil. The contaminated soil should be removed and disposed at a designated landfill site suitable to receive contaminated soil. • Visual soil assessment for signs of contamination at vehicle holding, parking and activity areas. • Place oil drip trays under parked construction vehicles and hydraulic equipment at the site.			

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Soils	Land degradation	• Soil erosion preventative measures should be put in place manage soil disturbance. Site soils should not be disturbed, if not needed or related to the actual construction works. • Overburden material should be handled more efficiently during this phase to avoid erosion when subjected erosional processes.	No signs of soil erosion	ECO	Throughout this phase
Dust and noise	Nuisance impacts	• The contractor(s) should supress dust associated with construction activities by using a reasonable amount of water as required. • If feasible, wastewater should be treated to an acceptable water quality level, so that it can be used for dust suppression, if needed. • Noise levels during construction activities should be kept within the allowable standards for urban areas. • Noise levels should adhere to the SANS restrictions on noise. • Work hours should be restricted to between 08h00 and 17h00 due to the use of heavy equipment, power tools and the movement of heavy vehicles.	No. complaints from the public about excessive dust and noise generation	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Noisy equipment should be shut down when not in use (when not needed) to avoid unnecessary noise on site. • Workers performing noisy tasks should be rotated regularly (work on shifts) to avoid exposing them to excessive noise for a long period of time in a day. • Workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure. • Workers should ensure that they wear the necessary PPE at all times on work sites.			
Air quality	Hydrocarbon emissions from vehicles	• Vehicles and machinery on site should be serviced regularly to prevent emission of harmful gases. • Sensitive site selection and siting of project components. • Use of modern equipment meeting appropriate emissions standards, and regular preventative maintenance. • Dust control and suppression measures such as dampening, watering of dust sources, use of vegetation hedges etc. • No use of ozone depleting substances during construction.	No complaints from the public about vehicle emissions.	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Ensure sewage storage and treatment facilities are adequately contained; cover sludge with lime/earth at disposal sites.			
Health and Safety	Health and safety impacts	• A comprehensive health and safety plan should be developed for construction activities. • The contractor(s) should ensure that all personnel are provided with personal protective equipment (PPE), such as coveralls, gloves, safety boots, safety glasses and hard hats at all times. • Workers should ensure that they wear the PPE at all times on work sites. • No workers should be allowed to drink alcohol during working hours. • No workers should be allowed on site if under the influence of alcohol. • An appropriate location should be indicated on the site for the parking of construction and operation vehicles. • No unauthorised access should be allowed to the construction sites.	Comprehensive health and safety plan for all construction activities compiled. No injuries reported and recorded. Implementation of procedures and programmes. Workers wearing full PPE while on sites	Site/Project Manager	Prior to site setup activities

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Health and safety	Accidental fire outbreak	• Portable fire extinguishers should be provided on site. • No open fires to be created by project personnel.	No wildfires recorded (due to presence of workers)	ECO	Throughout this phase
Noise	Nuisance impacts	• Work hours should be restricted to between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. If an exception to this provision is required, all residents within the 500 m radius should be given 1 week's written notice. • Machinery and vehicles should be serviced regularly so that they function normally without excessive noise. • Noise from vehicles and equipment on site should be reduced to acceptable levels. • When operating equipment, workers should be provided with applicable personal protective equipment (PPE), such as earplugs.	Complaints from residents about noise.	ECO	At site set up and throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
Traffic safety	Increase in traffic density.	• Enough and visible construction notices should be erected close to the site access from local main roads. This will serve as a warning or an alert to vehicle drivers about upcoming construction works in the area. • Enough materials offloading and loading zones and parking for project vehicles should be included in the design phase. • Drivers should drive slowly (40km/hour or less), and on the lookout for livestock and wildlife. • All drivers of the project vehicles should be in possession of valid and appropriate driving licenses to operate such vehicles. • Vehicle drivers should adhere to the road safety rules. • Project vehicles should be in a road worthy condition and serviced regularly in order to avoid accidents as a result of mechanical faults of vehicles. • Vehicle drivers should only make use of designated site access roads provided. • Vehicles drivers should not be allowed to operate vehicles while under the influence of alcohol. • No heavy trucks or project related vehicles should be parked outside the allocated or designated project site boundaries.	No complaints from members of the public/ local communities regarding project related vehicular traffic safety Enough parking and loading zones on sites	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• The area(s) intended for the maintenance of equipment, vehicles and machinery shall be located on an impermeable surface and shall have a drainage and collective sump system (with oil/water separator). No hydrocarbon contaminated water may be discharged into the environment.			
Rehabilitation	Visual impact	• Upon completion of the construction phase consultations should be held with the local community/property owner(s) regarding the post-construction use of remaining excavated areas (if applicable). • In the event that no post-construction uses are requested, all excavated/degraded areas need to be rehabilitated as follows: o Excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill. o Rehabilitated excavated areas need to match the contours of the existing landscape. o The rehabilitated area should not be higher (or lower) than nearby drainage channels. This ensures the efficiency of revegetation and reduces the chances of potential erosion. o Topsoil is to be spread across excavated areas evenly.	No of complaints regarding rehabilitation of the sites	ECO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		○ Deep ripping of areas to be rehabilitated is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. • Ripping should be done along slopes, not up and down a slope, which could lead to enhanced erosion.			
Topsoil	Loss of topsoil and associated opportunity costs	• When excavations are carried out, topsoil[2] should be stockpiled in a demarcated area. • Stockpiled topsoil should be used to rehabilitate post-construction degraded areas and/or other nearby degraded areas if such an area is located a reasonable distance from the stockpile. • The use of existing tracks to avoid disturbance of new areas should be considered.	No proliferation of informal vehicle tracks. No new erosion gullies	ECO	Throughout this phase
Fire	Fire prevention and management	• A fire prevention and fire emergency management plan shall be prepared as part of the method statement for the implementing agencies. The plan shall include, but not be limited to, the following: ○ Sources of fire risk; ○ Measures to minimise the risk of accidental bush fires caused by any activity related to the works;	Minimum to no records of fire on project sites Fire signs placed at potential fire risk areas such as the fuel storage areas	ECO	Throughout this phase

[2] Topsoil is defined here as the top 150mm of surface material, which accounts for the seedbank.

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		○ Measures to control an accidental bush fire. ○ Firefighting equipment shall be provided at specified localities on the work site. ○ This equipment shall include, but not be limited to, fire extinguishers and fire-resistant clothing for fire fighters ○ Suitable signs should be placed in areas of fire risk, such as no smoking, no open or naked flames, etc.			
Social nuisance	Influx of out-of-area people into the project areas	• The proponent and their project contractors should prioritize the employment of local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. This is to avoid the influx of outsiders into the area. • The locals to be employed during the project phases should be provided with the necessary training of skills required for the project to avoid bringing in many out-of-area employees. • The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. • Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms, so that they can co-live in harmony with the local community.	No record of public complaints against contractors No records of sexual relations between contractors and local young girls, especially school children (underage)	ECO PRO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• Construction workers or any project related worker should be prohibited from getting involved in sexual relations and/or engage in sexual activities with locals' young girls. • Any construction worker who will be found or seen engaging in sexual relations with young girls shall be reported to the site managers and necessary actions taken against that worker.			
Social impact	Potential damage or invading of private properties	• The proponent and their project contractors should inform their workers on the importance of respecting the local communities' properties by not intruding or damage their homes, fences or killing their livestock. • Any workers or site employees that will be found guilty of intruding peoples 'private properties should be called in for disciplinary hearing and/or dealt with as per their employer's code of employment conduct • Site workers should be advised to respect the community and local's private properties, values and norms. • No worker should be allowed to wander in people's private yards or fences while on sites. • Site workers are not allowed to kill or in any way disturb local livestock or vegetation.	No record of complaints related to property damage by the public against contractors	ECO PRO	Throughout this phase

Aspect	Impact	Mitigation Measure (s)	Key Performance Indicator (KPI)	Responsibility	Timeline
		• No worker should be allowed to, without permission cut down or damage trees belonging either to the landowners or in the community vegetation/forests. • The property and rights of all landowners or land occupiers should always be respected.			

4 RECOMMENDATIONS FOR MONITORING

The main objective of monitoring is to ensure that the identified negative impacts and their mitigation measures are implemented by responsible organisations. Monitoring will act as a check balance between environment and development i.e. to determine whether the mitigation measures have been successful in such a way that the pre- program environmental and social condition have been restored, improved upon or worse than before and to determine what further mitigation measures may be required.

4.1.1 Environmental and Social Monitoring Plan

The proponent and it's contractors must monitor the implementation of the ESMP. The main components to be monitored include:

- Environmental issue to be monitored and the means of verification;
- Specific areas, locations and parameters to be monitored;
- Applicable standards and criteria;
- Monitoring of the procurement of materials (checks that valid permits are in place);
- Duration; and
- Institutional responsibilities for monitoring and supervision

The **Table 4-1** below outlines the generic monitoring plan for the proposed activities.

Table 4-1: Environmental and Social Monitoring Plan

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Water and soil pollution									
Compromised water quality due to fuel and lubricant spills or wastewater	Complaints from communities /public within the project sites	To prevent contamination of surface water groundwater.	No complaints from communities about visible oil spills	Inspection of complaints logbooks	Weekly	ECO	ECOs > Site/Project Managers	A logged complaint	Further consultations with the communities and tests
Wastewater generated by project workers living on-site.	Open defecation and urination. Littering	To prevent environmental pollution	Adequate toilet facilities on site. Complaints from the public about open defecation, urination and littering.	Visual observation. Inspection of complaints logbook.	Weekly	ECOs	ECOs> Project/Site Managers	A logged complaint	Clean-up of affected areas.
Soils									
Loss of topsoil	Increased loss of soil	To prevent loss of topsoil	No proliferation of informal vehicle tracks.	Visual observation	Weekly	ECOs	ECOs> Project/Site Managers	Proliferation of new vehicle tracks	Rehabilitation of affected areas

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
			No new erosion gullies					Formation of new gullies in work areas	
Air Quality									
Increase in dust generation, which might negatively affect occupational and residential respiratory health.	Complaints from public about increased in dust generation.	To reduce public complaints and prevent negative changes in air quality due to project activities	No complaints from the public about increased dust generation.	Inspection of complaints logbook.	Weekly	ECOs	ECOs> Project/Site Managers	A logged complaint	Dust suppression around working areas to reduce fugitive dust
Hydrocarbon emissions from vehicles	Complaints from the public about increased vehicles fumes	Same as above.	No complaints from the public about increased vehicle emissions	Inspection of complaints logbook.	Weekly	ECOs	ECOs> Project/Site Managers	A logged complaint	Servicing of vehicles and machinery by certified service providers
Poaching									

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Illegal hunting of wildlife	Reported poaching incidents by projects team	To prevent illegal hunting of wildlife	Incidents reports of illegal hunting of wildlife by project workers.	Consultation with the local Police Service and anti-poaching units for reported incidents of poaching.	Weekly	ECOs Wildlife and Game Parks Department	ECOs> Project/Site Managers> local police service/anti-poaching unit	An incidents report logged with the local Police Service	Appropriate action will be decided by the local Police Service
Habitat Loss									
Localised loss of habitat and vegetation	Loss of habitat	To prevent loss of habitat outside areas of interest	No disturbance to unmarked areas within the project area	Visual observation	Weekly	MET MAWF	SHE Officers/ECOs> Project/Site Managers	Vegetation clearance outside of marked areas.	Rehabilitation of affected areas to the satisfaction of the SHE Officers /ECOs
Health and Safety									

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
No health and safety plan for project activities.	Compiled health and safety plan for project activities.	To prevent health and safety impacts	No significant health and safety incidents (i.e. serious injuries or loss of life)	Visual observation Inspection of complaints logbooks	Daily/ weekly	ECO and Site Managers	ECOs> Project/Site Managers Manager	Health and safety incident	Remedy the consequences
Potential increase in outbreak of wildfires due to project activities	Occurrence of wildfires	To prevent environment damage caused by wildfires	No wildfires recorded (due to presence of project workers on sites)	Visual observation	Daily	ECO Wildlife and Game Parks Department	SHE Officers/ECOs> Project/Site Managers > local police service	Outbreak of wildfires caused by project workers	Rehabilitation of affected areas
Archaeology and cultural heritage									
Potential disturbance to archaeological and cultural heritage resources	Presence or unearthing of archaeological or cultural heritage resources	To prevent destruction of artefacts	Preservation of all artefacts that are discovered around project area	Inspection of records of findings	Daily	ECO	ECOs> Project Archaeologist>National Heritage Council (NHC)	Unearthing of archaeological or cultural heritage resources	Cease all activity on site and wait for NHC to inspect site
Employment Creation									

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Creation ofemployment	Creation of employment opportunities	To ensure that locals, especially youth and women benefit from the project To ensure that the number of outsiders employed on local projects is low to none, therefore preventing future social conflicts/crashes in terms of local norms, values and property invading or damage by outsiders.	Number of locals employed during construction and operational activities Records of conflicts and crashes caused by project related outsiders	Inspection of employment records Inspection of site social record books	Monthly	ECO	Project/Site Managers	Number of those employed Origin of employed people from the local/project communities)	None
Noise									

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Potential increase in noise	Above ambient noise levels.	To ensure that generated noise does not disturb residents.	Complaints from residents about noise generated.	Inspection of complaints logbook	Weekly	ECOs	ECOs> Project/Site Managers	A logged complaint about above normal noise levels	Revision of site activities
Traffic									
Increase in traffic density on declared Roads Authority (RA) roads or damage to these.	Complaints from the public about increase in traffic on RA roads. Complaints about damage to RA roads caused by movement of project vehicles and machinery.	To ensure continued ease of access to RA roads by residents	No complaints from the public about increase off traffic due to project activities	Inspection of logbooks	Weekly	ECOs	ECOs> Project/Site Managers > Roads Authority	A logged complaint about traffic increase or damage to RA roads	Find alternative access roads for the team. Rehabilitation of affected roads
HIV and AIDS									

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Potential increase in HIV and AIDS prevalence.	New HIV or STIs infections	To prevent new infections in the area	No new HIV or STIs infections recorded	Liaison with local health facilities	Monthly	MoHSS	Site Managers > Ministry of Health and Social Services	Recorded new HIV or STIs linked to the project workers	Continued sex education and provision of condoms
Littering									
Environmental pollution from solid waste throughout the project phases	Scattered litter	To prevent littering of the general project area	No visible litter around the project area	Visual observation	Daily	ECOs MET	Site/Project Managers	Visible littering around project sites	Clean-up of the affected areas and ensuring project workers utilise waste containers provided.

5 GRIEVANCE REDRESS MECHANISM

The Grievance Redress Mechanism (GRM) will provide a way to provide an effective avenue for expressing concerns and achieving remedies for communities. Social accountability will need to be strengthened through the effective GRM. The GRM is established to ensure that complaints are directed and expeditiously addressed by the relevant agencies which are to enhance responsiveness and accountability.

5.1 Complaints/Grievance Logging Procedure

The Grievance Redress Procedure is outlined in **Figure 5-1** below. Complaints are to be submitted to the relevant Scheme Supervisor by completing the compliant form. These must be received/reported to the local GRP and will be recorded in the compliant logbook/sheet. The GRP would then screen and assess the complaint and determine whether it can be resolved locally or whether it would require further action, in which case it would be referred to Head Office and the relevant Project manager will take the appropriate action. In all instances the decision is to be communicated to the complainant. Refer to the **Appendix 1** for the grievance application form.

For the duration of the ESIA, grievances may be submitted in writing at the NamWater Rundu office (Eugene Kakakuru Street, Rundu) in the comments box located at reception.

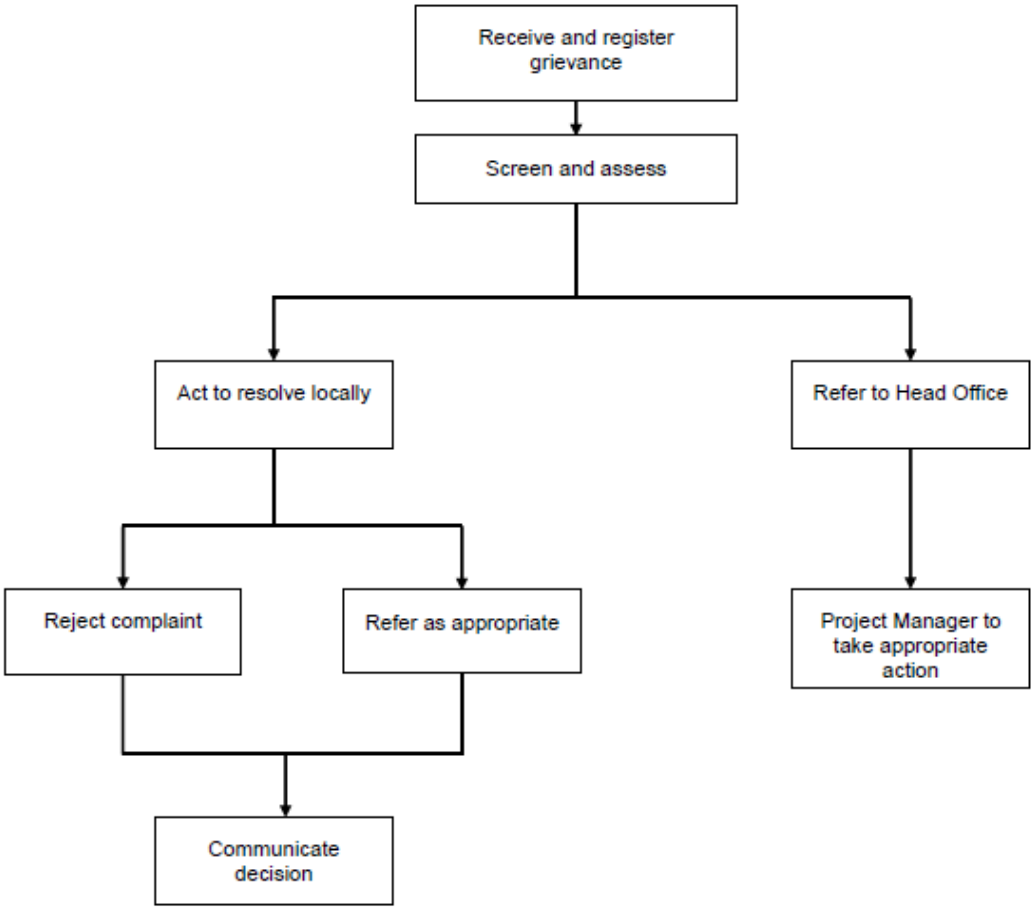

Figure 5-1: Grievance Redress Procedure

5.2 Accountability Mechanisms

AfDB recognize that even with strong planning and stakeholder engagement, unanticipated issues can still arise. Therefore, the ISSs are underpinned by an accountability mechanism outlined below:

- Independent Review Mechanism (IRM) that ensures individuals, peoples, and communities affected by projects have access to appropriate grievance resolution procedures for hearing and addressing project-related complaints and disputes.

The aim of IRM is to provide people adversely affected by a project financed by the AfDB, with an independent mechanism through which they can request the AfDB to comply with its own policies and procedures.

The IRM intervenes when affected people or communities submit a complaint. In this way, the IRM can be considered as a recourse instrument for project affected people who have previously been unable to resolve their problems with the AfDB's Management. The Independent Review Mechanism helps project-affected stakeholders, AfDB partners (governments, NGOs, businesses) and others jointly address grievances or disputes related to the social and/or environmental impacts of AfDB-supported projects.

What IRM do?

- *Problem Solving – Mediation*
- *Compliance Review – Investigation*
- Advisory Service
- Outreach

Further information, including how to submit a compliant to IRM, is found on the AfDB website at: https://www.afdb.org/en/about-us/organisational-structure/independent-review-mechanism-irm

6 NAMWATER ENVIRONMENTAL CODE OF CONDUCT

What is an Environmental Code of Conduct?

It is a set of rules that everybody has to follow in order to minimise damage to the environment.

What is the ENVIRONMENT?

The ENVIRONMENT means the surroundings within which people live. The ENVIRONMENT is made up of the **soil, water, plants,** and **animals** and those characteristics of the soil, water, air, and plant and animal life that influence **human health and well-being**. **People** and **all human activities** are also part of the environment and have to be considered during the operation of the Scheme.

Do these ENVIRONMENTAL RULES apply to me?

YES, The Environmental Rules apply to EVERYBODY. This includes all permanent, contract, or temporary workers as well as any other person who visits the Scheme. Every person will be required to adhere to the Environmental Code of Conduct.

ALL PERSONNEL must study and keep to the

Environmental Code of Conduct

The SCHEME SUPERVISOR will issue warnings and will discipline ANY PERSON who breaks any of the Environmental Rules. Repeated and continued breaking of the Rules will result in a disciplinary enquiry and which may result in that person being asked to leave the Scheme permanently.

What if I do not understand the ENVIRONMENTAL RULES?

ASK FOR ADVICE, if any member of the WORKFORCE does not understand, or does not know how to keep any of the Environmental Rules, that person must seek advice from the SCHEME SUPERVISOR. The PERSON that does not understand must keep asking until he/she is able to keep to all the Environmental Rules.

Safety and Security

1. Only enter and exit roadways and construction areas at demarcated entrances.

2. Wear protective clothing and equipment as per signboards at the Scheme and according to instructions from your SCHEME SUPERVISOR.

3. Report to your SCHEME SUPERVISOR if you see a stranger or unauthorised person in the construction area.

4. Never enter any area that is out of bounds or that is demarcated as dangerous without permission of your SCHEME SUPERVISOR.

5. Never climb over any fence or enter private property without permission of the landowner or your SCHEME SUPERVISOR.

6. Do not remove any vehicle, machinery, equipment, or any other object from the construction site without the permission of your SCHEME SUPERVISOR.

7. Keep clear of blasting sites. Follow the instructions of your SCHEME SUPERVISOR.

8. Never enter or work in the Scheme while under the influence of alcohol or other intoxicating substances.

9. All staff should know the emergency procedures in case of accidents.

Waste Disposal

10. Learn the difference between different types of waste, namely:

- general waste, and

- hazardous waste.

Containers will be provided for different types of wastes.

General Waste includes waste paper, plastic, cardboard, harmless organic (e.g. Vegetables) and domestic waste

Hazardous Waste includes objects, liquids or gases that are potentially dangerous or harmful to any person or the environment. Sewage, fuel, tyres, diesel, oils, hydraulic and brake fluid, paints, solvents, acids, soaps and detergents, resins, old batteries, etc. are all potentially hazardous.

11. Learn how to identify the containers for the different types of wastes. Only throw general waste into containers, bins or drums provided for general waste.

12. Recycle drums, pallets and other containers.

13. Never bury or burn any waste on site, all waste is to be disposed in allocated refuse disposal containers, bins or bags.

14. Never overfill any waste container. Inform your SCHEME SUPERVISOR if you notice a container that is nearly full.

15. Do not litter.

16. Do not bury litter or rubbish in the backfill trench.

Plants and Animals

21. **Do not ever pick any plants, or catch any animal.** People caught with plants or animals in their possession will be handed to the authorities for prosecution.

22. Never feed, tease, play with, or set devices to trap any animal or livestock. Wild animals are not to be domesticated.

23. Keep off the rock outcrops unless given specific permission by the SCHEME SUPERVISOR to be there.

24. Never cut down any tree or branches for firewood.

25. Never leave rubbish or food scraps or bones where it will attract animals, birds, or insects.

26. Rubbish must be thrown into allocated waste disposal bins/bags.

27. Always close the gates behind you.

Preventing Pollution

28. Only work with hazardous materials in bunded areas.

29. Never discard any hazardous substances such as fuel, oil, paint, solvent, etc. into stream channels or onto the ground. Never allow any hazardous substances to soak into the soil.

30. Clean up spills immediately.

31. Immediately report to your SCHEME SUPERVISOR when you spill, or notice any hazardous substance overflow, leak or drip or spill on site, into the streambeds or along the road.

32. Immediately report to your SCHEME SUPERVISOR when you notice any container, which holds hazardous substances overflow, leak or drip. Spillage must be prevented.

33. Only wash vehicles, equipment and machinery, containers and other surfaces at work site areas designated by your SCHEME SUPERVISOR.

34. Do not change oil on uncovered surfaces.

35. If you are not sure how to transport, store, use, or get rid of any hazardous substances ask your SCHEME SUPERVISOR for advice.

Health

36. Drink lots of clean water every day.

37. Use toilets that have been provided.

38. Take the necessary precautions to avoid contracting HIV / AIDS. Condoms are available at most Clinics.

39. Inform your SCHEME SUPERVISOR when you are sick.

40. Do not work with any machinery when you are sick.

41. If you are working in malaria areas, you must take the necessary precautions.

Dust Control

42. Do not make any new roads or clear any vegetation unless instructed to do so by your SCHEME SUPERVISOR.

43. Keep to established tracks and pathways.

44. Keep within demarcated work areas.

Saving Water

47. Always use as little water as possible. Reduce, re-use and recycle water.

48. Never leave taps or hose pipes running. Close all taps after use.

49. Report any dripping or leaking taps and pipes to your SCHEME SUPERVISOR.

Working Hours

50. You may only work on weekends and after hours with the consent of the SCHEME SUPERVISOR.

Archaeological and Cultural Objects

52. If you find any archaeological, cultural, historical or pre-historical object on the construction site you must immediately notify your SCHEME SUPERVISOR.

53. Never remove, destroy, or disturb any cultural, historical, or pre- historical object on site.

Cultural and Historical Objects include old buildings, graves or burial sites, milestones, old coins, beads, pottery and military objects.

Pre-Historical objects include fossils and old bones, old human skeletal remains, pieces of pottery and old tools and implements.

Sensible Driving

54. Tracks and roads should be kept to a minimum. Where possible follow existing roads.

55. No off-road driving is allowed.

56. Never drive any vehicle without a valid licence for that vehicle class and do not drive any vehicle that is not road-worthy.

57. Never drive any vehicle when under the influence of alcohol.

58. **Always** keep your headlights on when driving on dusty roads.

59. Keep to the roads as specified by your SCHEME SUPERVISOR. Vehicles may only be driven on demarcated construction roads. Drivers should always use three points turns, “u-turns” are not allowed. Do not cut corners.

60. Do not drive on rocky outcrops.

Noise

61. Keep noise levels as low as possible.

62. Do not operate noisy equipment outside normal working hours.

Fire Control

63. Do not make open fires, use a drum or tin and do not collect any vegetation to burn.

64. Do not smoke or make fires near refuelling depots or any other area where fuel, oil, solvents, or paints are used or stored. Fireplaces should be at a safe distance from fuel and explosive storage sites as well as vehicle parking sites.

65. Cigarette butts should always be thrown in allocated refuse bins. Make sure that the cigarette butt is out before throwing it into the bin.

66. Immediately notify your SCHEME SUPERVISOR if you see an unsupervised fire at the campsite or construction site.

Dealing with Environmental Complaints

67. If you have any complaint about dangerous working conditions or potential pollution to the environment, talk to your SCHEME SUPERVISOR.

68. If any person complains to you about noise, lights, littering, pollution, or any harmful or dangerous condition, immediately report this to your SCHEME SUPERVISOR.

NP du Plessis

Tell: 061-71 2093

Cell: 081 127 9040

OR

Jolanda Murangi

Tell: 061-71 2105

Cell: 081 144 1528

APPENDIX 1

GRIEVANCE REGISTRATION FORM