



ENVIRONMENTAL IMPACT ASSESSMENT: THE PROPOSED GRAVITY SEWER LINE AND SEWER PUMPSTATIONS ALONG OMARURU RIVER TO OMARURU TOWN, ERONGO REGION-NAMIBIA.

ENVIRONMENTAL SCOPING REPORT (ESR)

DATE: OCTOBER 2021



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PROJECT NAME	Environmental Impact Assessment for the proposed gravity sewer line and sewer pumpstations along Omaruru River to Omaruru Town, Erongo Region-Namibia
STAGE OF REPORT	Final Environmental Scoping Report
CLIENT	<p>Omaruru Municipality</p> <p>Enquiries: Project Engineer Mr. Joseph Haipinge Tel: +264 813559569 E-Mail: jnhaipinge@gmail.com</p> 
LEAD CONSULTANT	<p>EnviroPlan Consulting cc</p> <p>Enquiries: Tendai E. Kasinganeti Tel: +264813634904 E-Mail: tendai@enviroplanconsult.com</p> 
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AUTHOR/S	Tendai E. Kasinganeti

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Definitions

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA (R)	Environmental Impact Assessment (Report)
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Plan Report
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&APs	Interested and Affected Parties
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

i. Purpose of This Environmental Impact Assessment Report

This Environmental Scoping Report (ESR) follows on the Scope of Work delineated by Omaruru Municipality for the proposed construction of a 3.5 km gravity sewer line and installation of various pumpstations along Omaruru River to Omaruru Town Oxidation ponds. Existing information and input from commenting authorities, Interested and Affected Parties (I&APs) was used to identify and evaluate potential environmental impacts (both social and biophysical) associated with the proposed project.

Environmental flaws associated with the proposed project were identified through this ESR. A conscious decision was made based on the recommendations and guidelines by the Directorate of Environmental Affairs EIA guidelines in order to assess both significant and less significant environmental impacts proposed by the development. The developed Environmental Management Plan (EMP) for this proposed activity will have to be effectively implemented by the client, to ensure that adverse environmental impacts are not considered.

The detailed assessment of the anticipated impacts was undertaken with the purpose of highlighting any areas of concern regarding to the proposed project during the construction, an independent sensitivity mapping analysis was undertaken. This analysis characterised the development site on the significant environmental aspects in order to reflect the sites suitable and unsuitable (no-go) development footprint areas.

This report will also be used to motivate and define the previously identified, project alternatives (i.e., site, technology and layout) based on the findings of the environmental baseline study and the suitability of the site to the type of development. This EIAR has been compiled in accordance with the regulatory requirements stipulated in the EIA Regulations (2012), promulgated in terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007))

The ESR was commissioned because the proposed establishment triggered the application for an environmental clearance certificate as the following listed activity will be triggered by the proposed energy generation activities.

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES

2.1 The construction of facilities for waste sites, treatment of waste and disposal of waste

WATER RESOURCE DEVELOPMENTS

8.8 Construction and other activities in water courses within flood lines.

Anticipated Environmental Impacts

- Low potential environmental impacts because the proposed site is already disturbed from human encroachment.
- Adding on a management plan has been developed to mitigate any anticipated possible impacts of the project to the environment.
- Relative or moderate social impact (positive)

Social Impact

The project is generally expected to improve the socio-economic environment of Omaruru through provision of bulk sewer reticulation infrastructure. Interested and Affected Parties were notified of the project through Site notices and newspaper adverts and all relevant information on consultation is covered in this document and Appendix A of the document.

Recommendation

It is concluded that most of the impacts identified during this Environmental Assessment can be addressed through the recommended mitigation and management actions for the construction of the sewer line and installation of pump stations. Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and durations. All developments could proceed provided that general mitigation measures as set out are implemented as a minimum.

It is therefore recommended that the proposed activity is authorised, to eliminate the use of soak-away systems and other unsustainable sewerage waste handling methods being used by occupants residing within the areas without sewerage reticulation systems. better than it is currently through the full compliance to the developed Environmental Management Plan.

NB: The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process. All data from unpublished research utilised for the purposed of this project is valid and accurate. The scope of this investigation is limited to assessing the potential biophysical, social and cultural impacts associated with the proposed project.

1. CHAPTER ONE: BACKGROUND

1.1. Introduction

Omaruru Municipality herein referred to as the proponent intends to construct a bulk gravity sewer line including pump stations to pump sewer for disposal at the Omaruru sewer oxidation ponds. The project has been necessitated by existence of some ervens within the town that did not have sewer reticulation since the town was proclaimed. Additionally, the continued growth of the town, without expansion of the major sewer handling infrastructure in Omaruru was becoming a challenge, since the use of the traditional septic tanks was becoming a threat to groundwater quality as well as general health and sanitation within the town.

In terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)) and the Environmental Assessment Regulations of 2012; an EIA is required to obtain an Environmental Clearance Certificate from the Ministry of Environment and Tourism (MET) before the proposed sewer reticulation infrastructure can be constructed. This is done to ensure that a full background of potential pipeline construction impacts on the biophysical environment can be identified, and allow for effective mitigation of the impacts through the development of an Environmental Management Plan (EMP).

Furthermore, as per the requirements of the Environmental Management Act No. 7 of 2007, Omaruru Municipality has appointed EnviroPlan Consulting cc to conduct an Environmental Assessment (EA) and develop an Environmental Management Plan (EMP) for the development. This has been followed by an application for Environmental Clearance Certificate (ECC) to the Ministry of Environment and Tourism (MET): Directorate of Environmental Affairs (DEA).

In this respect, this document forms part of the application to be made to the DEA's office for an Environmental Clearance certificate for the proposed bulk gravity sewer line in accordance with the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts regulations (GN 30 in GG 4878 of 6 February 2012).

1.2. Project Location and Rational

The proposed area is located to the North of Omaruru Town, stretching parallel to the Omaruru River banks and Omaruru town.

Since independence there have been no major upgrade in terms of transitioning from traditional sewer systems such as septic tanks into modern sewer reticulation systems for households east of the Omaruru train station, and this has been proving to be a major challenge as the municipality is failing to cope with on-demand emptying of septic tanks.

It is however the intention of the municipality to construct a bulk sewer pipeline where most of these households and businesses will be connected to. Additionally, this set to provide for any future developments either business, industrial or residential. Figure 1 gives the locality of the proposed project.

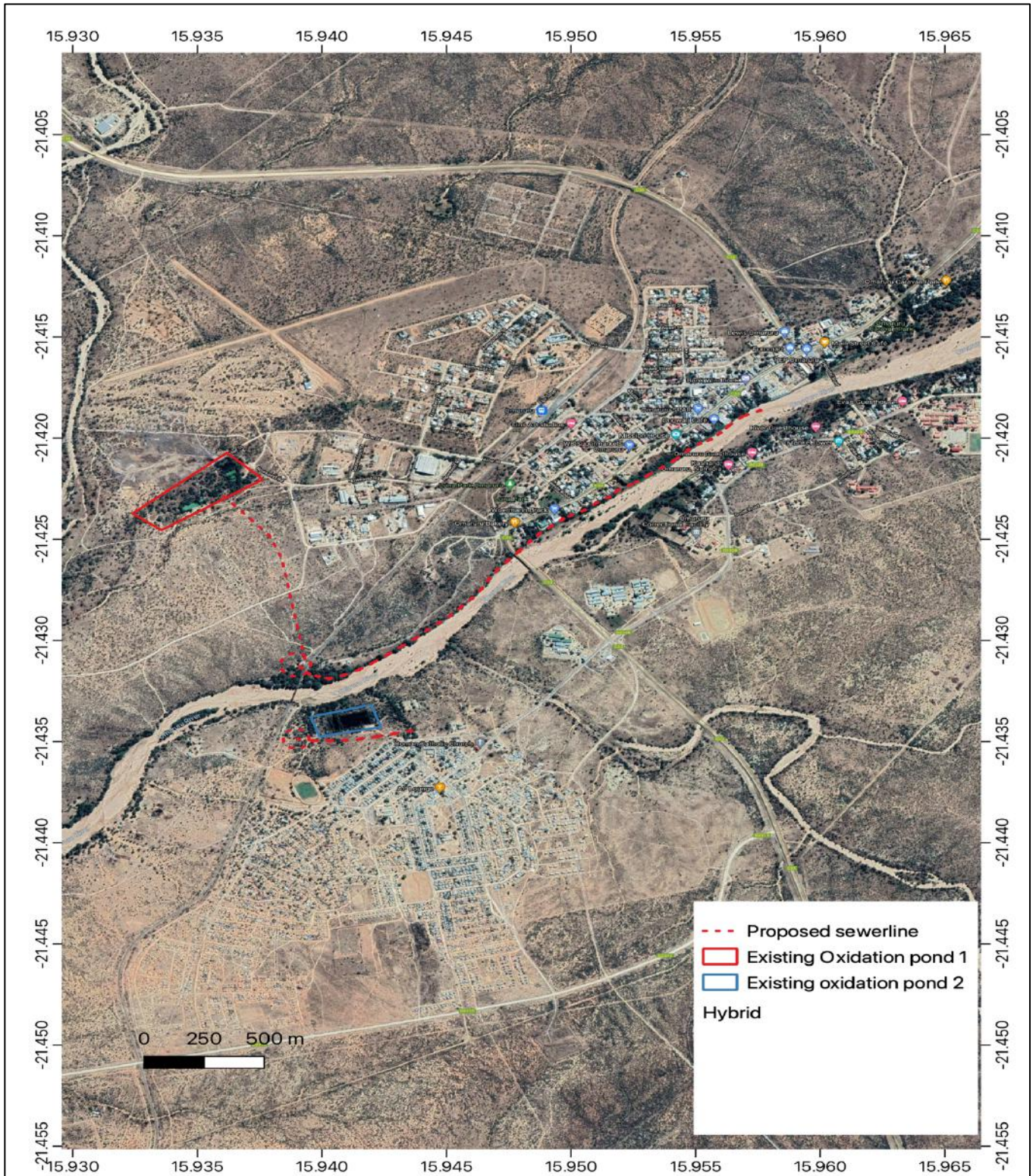


Figure 1: Project Locality

1.3. Project Background

Currently Omaruru municipality does not have a bulk sewer handling pipeline to service its CBD and areas around the CBD. A greater portion of Omaruru CBD and areas around are relying on septic tanks to handle their sewer waste. The situation however is fast deteriorating because of the growing population and the pressure exerted on the municipality to conduct septic emptying routines because of the frequency of emptying. Additionally, the costs of and sustainability of running septic tanks can be expensive for the local residents and businesses hence the need to provide for a more effective and efficient sewer reticulation system.

The existing sewer line connecting from the residential locations is also currently old and dilapidated, hence the new proposed sewer line, which will support all sewer reticulation systems within the town. The oxidation pond which was currently being used locations such as Ozondje will be decommissioned and all sewer will be pumped to the main sewerage oxidation ponds, hence a new sewer line stretching for 3.5 km will be constructed from a connection behind Omaruru Rest camp to connect the existing oxidation pond in Ozondje to the main oxidation pond, via a series of pump stations since the gravity sewer line will not have enough pressure to reach the sewer oxidation ponds.

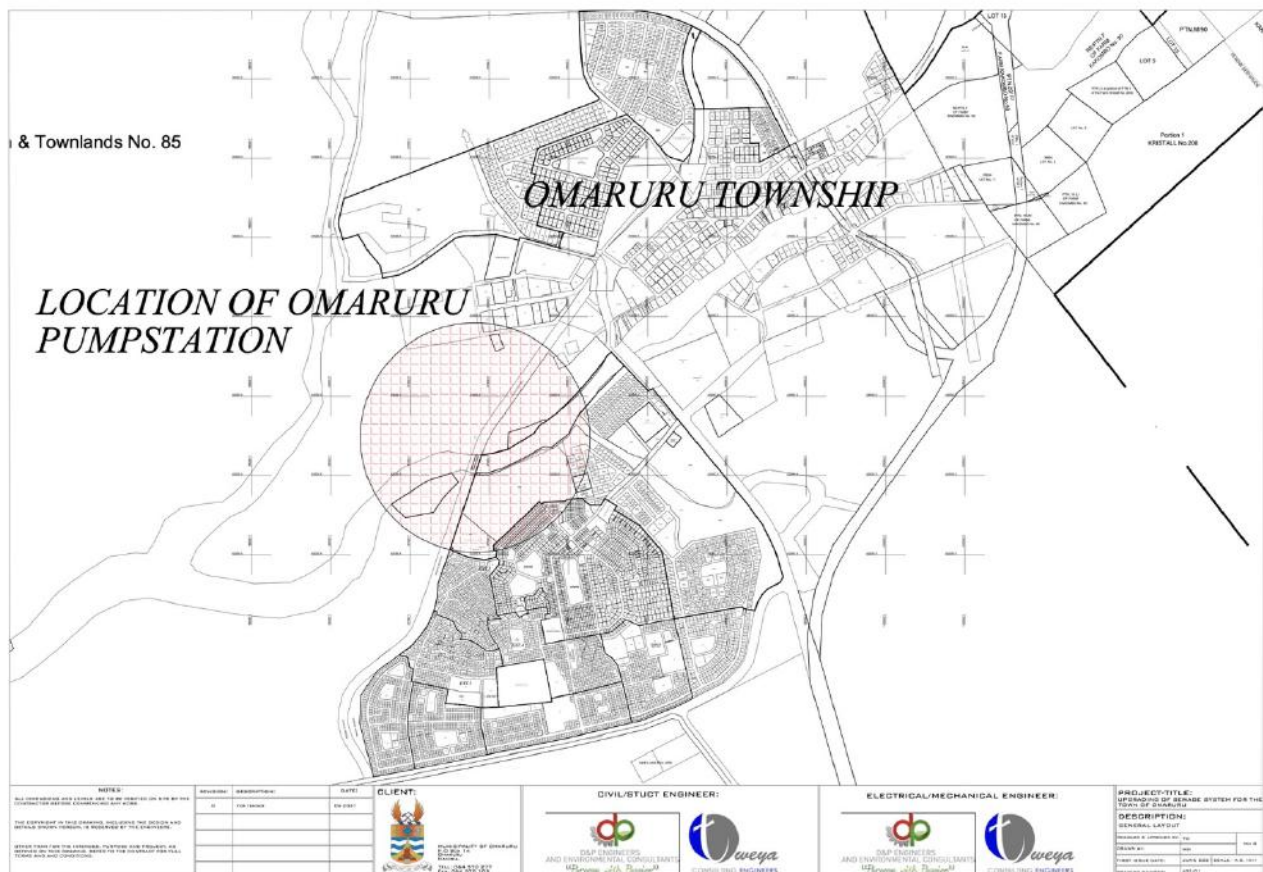


Figure 2: Pump station locality

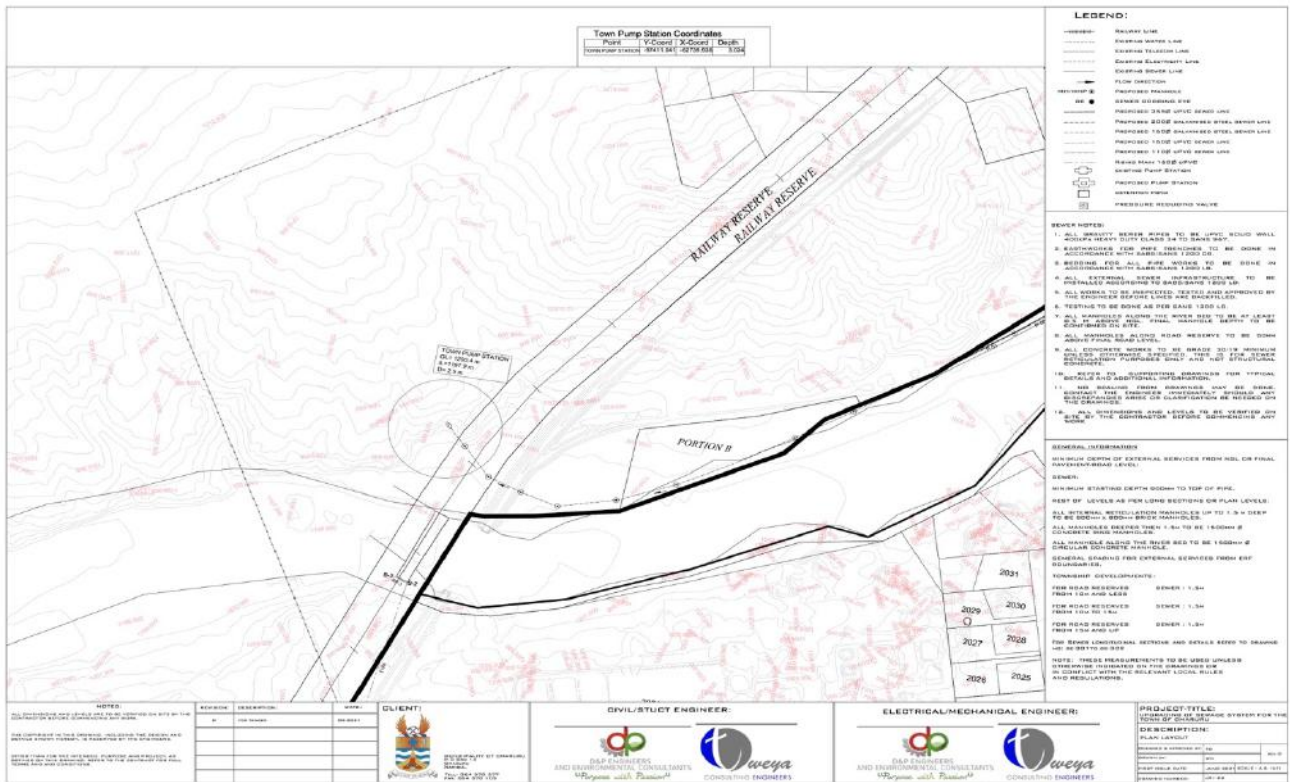


Figure 3: Pipeline and pump station locality and specifications

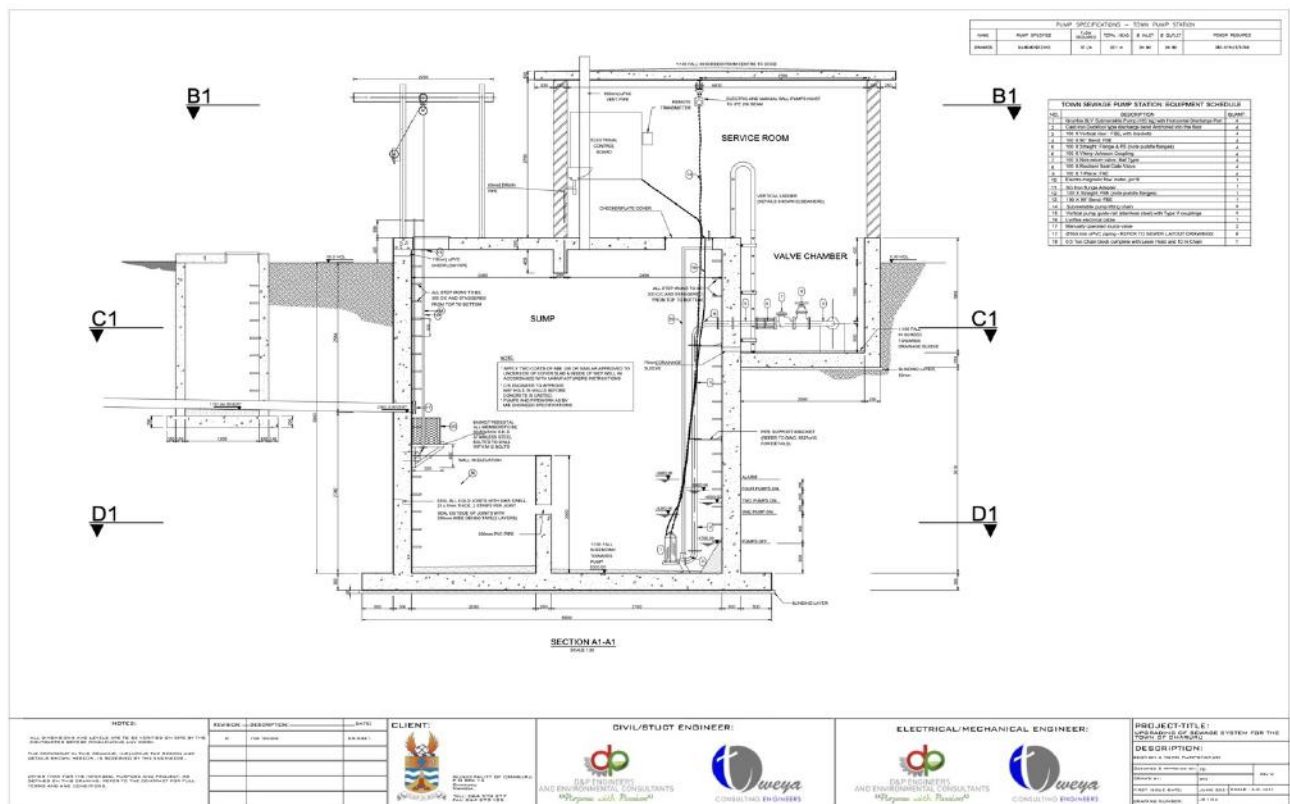


Figure 4: Pump station design

1.4. Project alternatives

The EIA Regulations stipulates that the Scoping process should investigate alternative development options to any proposed developments. The following alternative was analyzed;

- **No-Go Alternative:**

The no-development alternative is the option of not going ahead with the new sewer line. This alternative is undesirable in terms of the current status quo which uses septic tanks that pose great risk to groundwater quality. Should the proposed development not take place, the town is deprived of fundamentally important infrastructure to handle waste water. **The No-go option will not be a viable alternative at this stage.**

- **Project location alternatives:**

The current proposed site will be running parallel to the Omaruru river as this will allow for the “gravity” option to be realized and additionally this will allow both the CBD and the residential locations located to the south-east to be serviced by one bulk/sewer line..

1.5. The “need” and “desirability” of the proposed activities

The need and desirability of the above-mentioned projects are explained as follows:

- The current septic tank usage is threatening ground and surface water quality.
- Septic tanks are expensive for both the municipality and the residents to service and operate.
- The current sewer reticulation system is old and inadequate, hence the need to upgrade.
- There is need to provide for future development in the town since the population is fact growing.

Existing oxidation ponds, also planned for upgrade.



Current land cover along the Omaruru river bed. The river is seasonal.



Omaruru River bank vegetation cover, the sewer line right of way will follow a least destructive route.



Residential houses bordering with the Omaruru River bank, the Erven boundaries will also be next to the sewer line planned right of way.



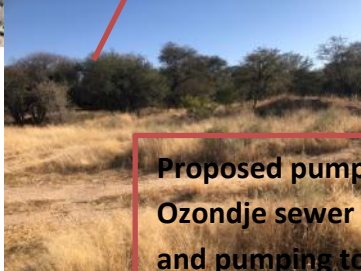
Leaking sewer reticulation to be soon replaced by the new sewer line.



Ozondje oxidation pond, to be decommissioned.



Proposed pump station site (connecting Ozondje sewer line and main gravity line and pumping to the main oxidation ponds.



Ozondje houses in proximity to the Ozondje Oxidation pond.



2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. Introduction

An important part of the EIA is identifying and reviewing the administrative, policy and legislative frameworks concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the proposed project. This section looks at the legislative framework within which the proposed development will conform to; the focus is on the compliance with the legislation during the planning, construction and operational phases. All relevant legislations, policies and international statutes applying to the project are highlighted in the table below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

Table 1: Policies, legal and administrative regulations

The pursuit of sustainability is guided by a sound legislative framework. In this section, relevant legal instruments as well as their relevant provisions have been surveyed. An explanation is provided regarding how these provisions apply to the proposed project operations.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	The articles 91(c) and 95(i) commits the state to actively promote and sustain environmental welfare of the nation by formulating and institutionalizing policies to accomplish the Sustainable objectives which include: <ul style="list-style-type: none"> - Guarding against overutilization of biological natural resources, - Limiting over-exploitation of non-renewable resources, - Ensuring ecosystem functionality, - Maintain biological diversity. 	<ul style="list-style-type: none"> - Through implementation of the Environment Management Plan, the proponent shall be advocating for sound EMP as set out in the constitution. Installation of the sewerage reticulation system is necessary for any town to ensure that water and soil contamination is ensured by handling all sewerage waste appropriately. - During construction adhering to the both article 91 and 95, maintains the biological diversity in the project environment and procedures will form part of the EMP.
National Development Plans		<ul style="list-style-type: none"> - Namibia’s overall Development ambitions are articulated in the National Vision 2030. At the operational level, five-yearly national development plans (NDP’s) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. The Government has so far launched a 4th NDP focusing on high and sustained economic growth, increased income equality Employment creation. 	<ul style="list-style-type: none"> - The proposed project will create employment which will work towards the NDP and Vision 2030 and at the same time ensuring environmental sustainability.
Archaeology	National Heritage Act 27 of 2004	<ul style="list-style-type: none"> - Section 48(1) states that “A person may apply to the Namibian Heritage Council (NHC) for a permit to carry out works or activities in relation to a protected place or protected object” 	<ul style="list-style-type: none"> - Any heritage resources discovered would require a permit from the NHC for relocation.

	National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979	<ul style="list-style-type: none"> - “No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: - Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD; or - any other archaeological or palaeontological finds 	<ul style="list-style-type: none"> - The proposed site of development is not within any known monument sites, both movable and immovable as specified in the Act, however in finding any materials specified in the Act, contractors on site will take the required route and notify the relevant commission.
Environmental	Environmental Management Act 7 of 2007	<ul style="list-style-type: none"> - Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). - Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project (Section 2(b-c)). - According to Section 5(4) a person may not discard waste as defined in Section 5(1)(b) in any way other than at a disposal site declared by the Minister of Environment and Tourism or in a manner prescribed by the Minister. - Details principles which are to guide all EIAs 	<ul style="list-style-type: none"> - This Act and its Environmental Impact Assessment Regulations (GN 30 in GG 4878 of 6 February 2012 should forms and guide this EIA study. - Waste management guidelines as specified by the Act will be duly identified and adhered to. The Project will follow this act accordingly and consider all aspects inclusive of the assessment process and acquire environmental clearance certificate. -
	EIA Regulations GN 57/2007 (GG 3812)	<ul style="list-style-type: none"> - Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). - Details the requirements for what should be included in a Scoping Report (GN No 30 S8) an EIA report (GN No 30 S15). 	<ul style="list-style-type: none"> - This Act and its regulations should inform and guide this EIA process. - An Environmental Management Plan has also been developed, and Omaruru Municipality will comply to its provision.
	Pollution and Waste Management Bill (draft)	<ul style="list-style-type: none"> - This bill defines pollution and the different types of pollution. It also points out how the Government intends to regulate the different types of pollution to maintain a clean and safe environment. - The bill also describes how waste should be managed to reduce environmental pollution. Failure to comply with the requirements considered an offence and is punishable. 	<ul style="list-style-type: none"> - The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environs from sewer transportation, handling and disposal activities. - Omaruru waste management by-laws will be abided to.

	Soil Conservation Act 76 of 1969	<ul style="list-style-type: none"> - This Act makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic of Namibia. 	<ul style="list-style-type: none"> - The Project impact on soil will rather be localised, however the Act should provide for guidelines of operation during construction to prevent soil erosion and contamination during operation.
	National Biodiversity Strategy and Action Plan (NBSAP2)	<ul style="list-style-type: none"> - The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia, putting together management of matters to do with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems. 	<ul style="list-style-type: none"> - Forming part of the EIA of and EMP for this Project, the proponent will consider all associated impacts, both acute and long term, and will propose methods and ways to sustain the local biodiversity.
Forestry	Forest Act 12 of 2001	<ul style="list-style-type: none"> - Tree species and any vegetation within 100m from a watercourse may not be removed without a permit (S22(1)) - Provision for the protection of various plant species. 	<ul style="list-style-type: none"> - The clearing of vegetation is prohibited (subject to a permit) 100m either side of a river. Certain tree species occurring in the area are protected under this Act. Permits must be obtained from MEFT in accordance with the Act. - The development is will affect some riverine vegetation, however most of the area is already affected by housing development. Where necessary, land clearing permit should be sought for from MEFT: Directorate of forestry.
Water	Water Act 54 of 1956	<ul style="list-style-type: none"> - The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: 	<ul style="list-style-type: none"> - The protection of ground and surface water resources should guide development's layout plans. - All Contamination of ground and underground water resources is a possibility in the instance of sewerage treatment facilities. However

		<ul style="list-style-type: none"> - A permit application in terms of Sections 21(1) and 21(2) of the Water Act is required for the disposal of industrial or domestic wastewater and effluent. - Prohibits the pollution of underground and surface water bodies (S23(1)). - Liability of clean-up costs after closure/ abandonment of an activity (S23(2)). - Protection from surface and underground water pollution 	technologies that have high efficiency in wastewater handling, to ensure that water resources will not be affected.
Land use	Local Authorities Act No. 23 of 1992	<ul style="list-style-type: none"> - This Act and all relevant municipal by-laws are applicable since the mining activities occur within the Omaruru Townlands. - This Act provides for the determination of local authority councils, the establishment of such councils and defines the powers, duties, and functions of these councils. Some of the powers, duties and functions of local authority councils are to: 'to establish, carry on and maintain sand, clay, stone or gravel quarries and works for the manufacture of bricks and tiles, and to dispose of sand, clay, stones, gravel, bricks and tiles exploited or manufactured from such quarries. 	- The Omaruru Municipality is the responsible Local Authority of the area in which the proposed activity will be located.
Health and Safety	Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety of Employees at work'.	<ul style="list-style-type: none"> - 135 (f): "the steps to be taken by the owners of premises used or intended for use as factories or places where machinery is used, or by occupiers of such premises or by users of machinery about the structure of such buildings of otherwise to prevent or extinguish fires, and to ensure the safety in the event of fire, of persons in such building;" (Ministry of Labour and Social Welfare). - This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices. 	- The proponent will employ several people from the local and shall ensure securing a safe environment and preserving the health and welfare of employees at work. This will include applying appropriate hazard management plans and enforcing Occupational Health and Safety (OHS) enforcement by contractors.
	Public Health and Environmental Act, 2015	<ul style="list-style-type: none"> - Under this act, in section 119: "No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by 	- The the proposed project plan will operate r in a manner that ensures safe health to local

		him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	<p>residents near the project site, as well as safe health and safety to employee.</p> <ul style="list-style-type: none"> - The municipality will also ensure that all legal requirements of the project in relation to protection of the health of their employees and surrounding residents is protected. Personal protective equipment shall be provided for employees to minimize process related illnesses such as cholera.
Services and Infrastructure	Road Ordinance 1972 (Ordinance 17 Of 1972)	<ul style="list-style-type: none"> - Width of proclaimed roads and road reserve boundaries (S3.1) - Control of traffic during construction activities on trunk and main roads (S27.1) - Infringements and obstructions on and interference with proclaimed roads. (S37.1) - Distance from proclaimed roads at which fences are erected (S38) 	<ul style="list-style-type: none"> - Although the project is a major boost for the town, the proponent needs to ensure that the development do not affect the major roads, water supply infrastructure and any other important services during the construction activities.

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. Socio-economic

The town of Omaruru, which is situated in the Erongo Region has a population of 8 577 in 2011 (NSA, 2011). The town lies next to the Omaruru River, 50 km North of Karibib along the C33 Road. Omaruru town boasts of a large quantity of groundwater and an ephemeral river that runs through the townlands. Although the river is dry most of the times the town is relatively green, due to large ground water reserves and the fertile soil of the surrounding area. The town extends over approximately 352 km² of land.

Omaruru town has experienced remarkable and exponential growth in various areas such as infrastructural development, roads, and expansion in the town planning scheme, business ventures and its community. However, the growth in population has also resulted in pressure on the available services, hence the need by the municipality to upgrade its major sewer reticulation handline pipeline. The social services provided in the town of Omaruru range from educational, health, financial, tourism, transport and other administrative services provided by government and related offices.

The location of the town, on the surfaces of abundance underground water from Omaruru River has always been an opportunity to farmers for sustainable water supply although it comes at a high cost since investments are required in form of windmills to source underground water for agriculture purposes. Omaruru is also surrounded by commercial farms which mostly farm livestock like cattle and sheep. Also common in most of these farms is wildlife animals which provides an opportunity of game farming on the wildlife animals. The town has two wine producing companies Kristall Kellerie and Erongo vineyard, which uses grapes to make wine and related products. The two companies produce their own grapes on the farms they operate, of which the harvested grapes are used to make wine products. Electricity supply in the town of Omaruru is managed by the Erongo Regional Electricity Distributor (ErongoRED). In 2015, the country's largest solar plant, Omburu PV plant was opened in Omaruru, which up to now is highly recognized source of clean energy to the country. Omaruru is the only Namibian town that is not connected to the NamWater pipeline network. Water in Omaruru is extracted from underground water through boreholes, hence the dire need to protect the groundwater resources from sewer pollution.

3.2. Climate

Omaruru is located in Erongo Region in central Namibia with daytime warm to hot temperatures throughout the year, while the nights are mild to cool in winter. The mean annual rainfall is highly variable and may range between 200 - 300 mm in some parts of the EPL Area. The distribution of rainfall is extremely seasonal with almost all the rain falling in summer - from November to April with occasional with mean annual gross evaporation of about 3300 mm. The local project area has the following three distinct seasons:

- ❖ A dry and relatively cool season from April to August with average daytime highs of 23°C and virtually no rainfall during this period;
- ❖ A hot and dry season from September to December with minimal and variable rainfall falling (<20mm per month) and average daytime highs of 30°C, which regularly exceed 40°C, and;
- ❖ A hot and rainy season from January through to March with >50mm per month falling during this period (although this is extremely variable) and average high temperatures of 29°C.

3.3. Fauna and flora

Omaruru falls within the Nama Karoo biome and is arid to semi-arid characterized by thick grassland savannah. The riparian vegetation of the area consists of trees and shrub strata such as *Combretum imberbe* (Leadwood), *Acacia erioloba*, *Faidherbia albida* (Ana tree) and *Prosopis*. Due to collection of firewood by inhabitants of the adjacent settlements, grazing and trampling of domestic animals and frequent veld fires.

Due to the high disturbance of area, the local fauna is limited to domestic animals as well as some birds, reptiles, amphibians, and small mammals. The area has also been disturbed with various uncoordinated vehicular and human tracks observed within the riverbed and surrounding plains. Large wild animals are mostly found in private farms and the adjacent game farms.



Table 2: Riparian vegetation, land cover and activities along the Omaruru River

Due to the high disturbance of area, the local fauna is limited to domestic animals as well as some birds, reptiles, amphibians, and small mammals. The area has also been disturbed with various uncoordinated vehicular and human tracks observed within the riverbed and surrounding plains. Large wild animals are mostly found in private farms and the adjacent game farms.

3.4. Topography and Landscape

The topography of the area surrounding the town consists of hilltops, flat areas and drainage or catchment areas which drain toward the main Omaruru river (an ephemeral river draining west into the Atlantic Ocean). The landscape is classified as an area of dissection and erosional cutback. Local drainage is well developed, and runoff takes place toward the ocean. The area is drained by the Omaruru River and its tributaries. The rivers are not perennial streams and flow only after a substantial rainfall. For the rest of the year the rivers are dry sandy water courses.

3.5. Hydrogeology and Geology

The area is covered by thick desert sand of Quaternary age. Underlying the Quaternary sediments is the Damara Sequence rocks of the Swakop Group. The Swakop Group is made up of the Khomas and Ugab subgroups. The Khomas subgroup comprises of the Kuiseb, Karibib and Chuos formations. The Ugab subgroup is characterised by the Rossing formation. All the underlying formations are classified as hard rock formations. Groundwater flow would be mostly along fractures, faults (secondary porosity) and other geological structures present within the formations. The town is located within the Water Control Area called the Omaruru Aquifer. The geohydrology of the area comprises of rock bodies which generally have low groundwater potential.

The underlain geology comprises of granites, limestones, and sandstones. Geological faults occur in some rocky types at areas of weaknesses and can be conduits for any seepage contamination. The Omaruru River Aquifer is a Water Controlled Area which stretches upstream from the road bridge at the town Center for a distance of about 30 km.

The Kalahari Super Group sediments are mainly confined to the alluvium of the Omaruru River and its tributaries flowing from the east to the west into the Atlantic Ocean and form very thin surficial cover throughout the basin. Within the river and tributaries, the sands and gravel deposits vary in thickness and thicken mainly in the Omaruru Delta.

The Omaruru Delta (Omdel) is a porous aquifer with high ground water potential. It generally has good quality water and recharges occurs through leakages from rivers and by artificial recharge. The alluvial aquifer is formed of 4 palaeochannels: the Main Channel; Northern Channel; Northern Elevated Channel and Southern Elevated Channel. The Main Channel is the only channel with potable water. Sand layers are, on average, about 40, 65 and 20 m thick in the downstream, middle and upstream sections of the aquifer, respectively. Local lithological variations produce local aquitards. Transmissivity ranges from 290 to 700 m²/day, and storage coefficient ranges from 0.01 to 0.06 (Nawrowski 1990). The water table ranges from 19 to 55m depth and the aquifer layers are typically unconfined. Boreholes are between 12 and 124 m deep.

3.6. Water Supply

Despite the absence of surface water, except for short periods, the beds of the Omaruru River and its tributaries are wide and filled with sand and gravel of considerable thickness. Because of the porous nature of the sand and gravels they contain large quantities of underground water at

shallow depths even during times of drought. Numerous springs occur at intervals in the bed of the Omaruru River.

Open water is in variably connected with the presence of natural barriers such as diabase and pegmatite intrusions in the riverbed as at Omaruru, Okombahe, and Aubinhonis. Omaruru River is one of the major ephemeral drainage systems that carry seasonal runoff across landscapes of the central region of Namibia. Although water flows on the surface in this river for only a few days each year, its aquifers provide large amounts of freshwater for human, animal, mining and industrial use. The system is highly productive and communities, farmers and conservancies along the river take full advantage of this resource by grazing their livestock, game watering, irrigations watering and other activities after the wet season. It is also worth mentioning that Omaruru River is the main source of replenishing Omaruru Aquifer which is the main supply of freshwater in the town and surrounding areas.

3.7. Hydrology

A reconnaissance level field assessment was conducted to confirm the current hydrologic conditions at the proposed area and to identify potential hydrologic risks associated with proposed development.

- The proposed pipeline will be constructed along the banks of the Omaruru River, however all activities will not be conducted within the river bed, and there will be no massive excavation works since the pipeline will be above-ground on a platform.
- The project is not anticipated to affect negatively or alter the current flow of the Omaruru River and its tributaries.
- Freshwater fauna and flora are present within the Omaruru River and the project will have no interaction with the riverine ecosystem, hence no detailed assessment is required on River ecology.

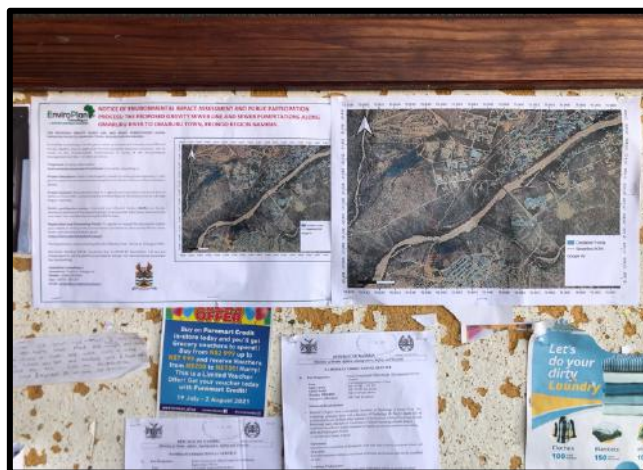
4. CHAPTER FOUR: PUBLIC CONSULTATION

Public and Stakeholder involvement, is a key component of the EA process. The public consultation process, as set out in Section 21 of Regulation No 30 of EMA, has been followed during this assessment and the details thereof documented below.

4.1. Printed Media

4.1.1. Background Information Document

A Background Information Document (BID) was drafted at the onset of the EA process to act as a useful information handout about the proposed project development. In addition, the BID provided details on the public consultation process with contact details for further information. This document was advertised for availability through various means of newspaper articles, public meeting and electronic mail; see Appendix A of this document.



4.1.2. Newspaper Advertisements & Articles

Newspaper notices about the proposed project and related Environmental Assessment processes was circulated in two newspapers for two weeks. These notices appeared in the “Confidante” and “New Era” newspapers, shown in Appendix A.



4.1.3. Site Notices

A site notice was placed at the project site. These provided information about the project and related EA while providing contact details of the project team.

Figure 5(top): Site Notice at different points around the project site.

Figure 6(middle) Notice at Omaruru Spar.

Figure 7: Notice Municipality notice board



4.1.4. Building a Stakeholder Database

A stakeholder database for the project collected through a variety of means. During the advertisement of the project (through public notices in local newspapers and site-notices) the list was augmented as Interested & Affected Parties (I&AP) registered and contact information of stakeholders updated, Please refer to Appendix A.

4.1.5. Stakeholder Meetings & Key Conversations

A public meeting was not conducted due to COVID 19 restrictions, however in-depth consultation with the community was conducted with door to door engagement. The consultant also took to consulting the affected land owners, the municipality as well as expected beneficiaries to the project.



Figure 8: Door to door consultative exercise conducted in Omaruru.

COVID 19 Regulations were observed, hence a public was not conducted.

4.1.6. Comments and review period

From the onset of the public consultation process and the initial information sharing through the BID, newspaper and site notices, various stakeholders have registered and provided comments. All of the immediate neighbours are in support of the project. The Scoping Report and Environmental Management Plan was made available to the public and stakeholders for comment and review. Questionnaires and proof of stakeholder's engagement are attached in appendix B of this EAR.

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. Overview

Omaruru Municipality has committed to sustainability and environmental compliance through coming up with a corrective action plan for all anticipated environmental impacts associated with the proposed sewer line construction and operational activities. This is also in line with the Namibian Environmental Management legislation and International best practices on town planning development processes. The proponent will implement an Environmental Management Plan (EMP) in order to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed to address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts.

5.2. Assessment Of Impacts

This section sets out the overall approach that was adopted to assess the potential environmental and social impacts associated with the project. To fully understand the significance of each of the potential impacts each impact must be evaluated and assessed. The definitions and explanations for each criterion are set out below in Table 3: Assessment Criteria and

Table 3: Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource
Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	
Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur at a later time or wider area
Cumulative	Combined effects of the project with other existing / planned activities
Probability	
Low	<25%
Medium	25-75%
High	>75%

(Adopted from ECC-Namibia, 2017)

Table 4: Impact Significance

Class	Significance	Descriptions
1	Major Impact	Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non-compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

(Adopted from ECC-Namibia, 2017)

Table 5: Environmental Impacts and Aspects Assessment

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
TOPOGRAPHY	Landscape Scenery	Visual aesthetic impact	Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor
	Land Clearance, although only existing cleared sites will be prioritised	Visual aesthetic impact	Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor
SOIL	Soil	Contamination to soil from construction activities and sewer line leakages.	Construction and Operation	Moderate	Small	Local	Direct	Low <25%	Minor
	Soil	Spillages of fuel, oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor
	Soil	Erosion from pipeline construction and trenching.	Construction	Moderate	Small	Local	Direct	Low <25%	Minor
LAND CAPABILITY	Terrestrial ecology and aquatic ecosystems	Potential pollution	Construction and Operation	Permanent	Great	Local	Direct	Low <25%	Moderate
WATER	Surface water quality	-Water pollution from oils and lubricants from vehicles and machinery. -Poor maintenance of sewer line could result in leakages and	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Moderate

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		contamination of surface and groundwater.							
	Groundwater quality	-Water pollution from oils and lubricants - Poor maintenance of sewer line could result in leakages and contamination of surface and groundwater.	Operation	Moderate	Small	Local	Direct	Low <25%	Moderate
AIR QUALITY	Noise Pollution	-Noise during construction	Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Moderate
WASTE	Groundwater quality	-Hazardous waste such as waste oil and lubricants during construction. -Sewer leakages/bursts may pollute the river.	Operation	Short	Small	Local	Direct	Low <25%	Minor
	Topography and Landscape	Visual impacts due to infrastructure and unsustainable handling and disposal of waste.	Operation	Short	Small	Local	Direct	Low <25%	Minor
FAUNA	Aquatic life	Antifouling paints, eutrophication and sedimentation of streams.	Construction	Moderate	Small	local	Direct	Low <25%	Minor
	Terrestrial ecology and biodiversity	Destruction of vertebrate fauna (e.g. road kills; fence and	Construction	Long	Moderate	Local	Direct	Low <25%	Minor

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		construction /land clearing mortalities)							
FLORA	Terrestrial ecology and biodiversity	Proliferation of invasive species inland	Construction	Long	Moderate	Local	Direct	High >75%	Moderate
	Terrestrial ecology and biodiversity	Loss of unique flora and special habitats in the local environment because of general nuisance and animal migrate.	Construction	None	Moderate	Regional	Direct	Low <25%	Moderate
SOCIAL	Noise Pollution	Increased noise levels	Construction	Moderate	Small	Local	Direct	Low <25%	Minor
	Socio Economic Activities	Temporary and permanent employment prospects.	Construction	Long	Moderate	Regional	Direct	Medium 25 – 75%	Positive
	Improved sewer reticulation system	The residents will switch from traditional septic systems to modern sewer lines and oxidation ponds.	Operation	Short	None	Regional / National	Direct	Low <25%	Positive
HERITAGE/ARCHAEOLOGY	Artefacts, archaeological high value components	Destruction or affecting paleontological and archaeological artefacts	Construction	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate
HEALTH AND SAFETY	Health Sanitation	Poor ablution and waste management facilities	Construction	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		may be detrimental to human health.							
	Sewer leaks, spills and blockages	The sewer line can be a health hazard if there is poor maintenance and resulting in leaks, spills and blockages, which will be hazardous to human health.	Operation	Moderate	Great	Local	Direct	Medium 25 – 75%	Major

6. Conclusion

The proposed project will a positive role due to job creation and improving sewer handling options in Omaruru.

The Environmental Management Plan attached to this ESR should be used as a construction and operational manual. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

6.1. Assumptions and Conclusions:

- There were no objections or critical issues have been raised by the I&AP's.
- All identified key stakeholders agree with the proposed activities.
- The findings of the Scoping Assessment are considered sufficient and no additional specialist study is required.

6.2. EAP Recommendations

Based on the assessment and subsequent findings, it is environmentally acceptable and recommended that the proposed sewer line construction could proceed subject to strict adherence conditions of the EMP.

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