


***ENVIRONMENTAL IMPACT ASSESSMENT
FOR THE PROPOSED CONSTRUCTION
AND OPERATION OF A NEW SEWERAGE
TREATMENT PLANT IN OSHAKATI,
OSHANA REGION***

June 2020



Project Name:	<p align="center">ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A NEW SEWERAGE TREATMENT PLANT IN OSHAKATI, OSHANA REGION</p>
The Proponent:	<p align="center">Oshakati Town Council Private Bag 5530 Oshakati</p>
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Release Date:	<p align="center">June 2020</p>
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EXECUTIVE SUMMARY

Green Earth Environmental Consultants were appointed by the proponent, Oshakati Town Council, to conduct an environmental impact assessment for the proposed construction and operation of the sewerage treatment plant in Oshakati. The proposed plant will be located at the sites of the existing West and East ponds. The land within the immediate vicinity of the project site is predominately characterized by residential, industrial, farming and business activities.

In terms of the Regulations of the Environmental Management Act (No 7 of 2007), an Environmental Impact Assessment has to be done to address the following 'Listed Activities':

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES

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

2.2 Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976.

2.3 The import, processing, use and recycling, temporary storage, transit or export of waste.

WATER RESOURCE DEVELOPMENTS

8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems.

HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

9.1 The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.

9.2 Any process or activity which requires a permit, license or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, license or authorisation or which requires a new permit, license or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

From an Assessment Report (*Seifart, 2018*) compiled for the Proponent and onsite observations it is confirmed that:

- The sewer treatment plant and ponds cannot process the current sewer load of the Town;
- Ponds are filled to capacity with undertreated water flowing over into the surrounding areas which is illegal;
- The embankment of some of the ponds are damaged due to overfilling which allows untreated wastewater spills into neighbouring residential and farming areas;
- The rapid growth of the town as well as residents converting houses and businesses to waterborne toilet systems resulted that the system cannot cope with the additional sewer load;

- Currently the Oshakati oxidations ponds are operated outside the guidelines and requirements of the Ministry of Agriculture, Water and Forestry (Code of Practice: Vol. 2, 2008);
- The fences around the ponds have been damaged allowing unrestricted access to people and animals.

The key characteristics/environmental impacts of the proposed project are as follows:

Positive impacts	Negative impacts
The sewer generated by the inhabitants and activities of the town will be treated efficiently	Dust and noise will be generated during construction
The area currently required for the sewer treatment facility will be drastically reduced to be used for other more productive purposes	Risk of uncontrolled chlorine gas emissions or spillage during operations
The treated water will be reused for irrigation purposes allowing the Council to save on the total water usage of the Town	
The spillage/discharge of undertreated wastewater into the areas surrounding the water treatment works will be stopped	
The implementation of the proposed water treatment plant will bring the activity in line with the guidelines Ministry of Agriculture, Water and Forestry (Code of Practice: Vol. 2, 2008)	
Employment will be created during construction and operation and from the added irrigation activities	

The **Water Resources Management Act (No 11 of 2013)** stipulates conditions that ensure effluent that is produced to be of a certain standard. There should also be controls on the disposal of sewage, the purification of effluent, measures should be taken to ensure the prevention of surface and groundwater pollution and water resources should be used in a sustainable manner. Therefore the Town's sewer system must be upgraded to conform to applicable Namibian standards and the requirements of the Act.

The sewer system and treatment plant will be constructed in accordance with requirements of the town council. The project site is in a transformed state from an ecological perspective and human interference is largely visible. It is thus believed that the overall cumulative impact of the proposed treatment plant on the natural resources is expected to be extremely low. It is envisaged that the project will create work in the construction phase and after completion.

Negative impacts derived from the project are mainly associated with the construction phase for instance an increase in traffic, dust and noise. However, the construction and operational activities further on need to be controlled and monitored by the assigned

developers and the proponent. It is thus furthermore believed that the proposed project will not pose any long-lasting negative effects to neighbours or on the environment. The following Environmental Impact Assessment was conducted in accordance to the Environmental Management Act (No 7 of 2007) and the environment was taken in full consideration throughout the assessment. Additional details will be presented in the following report.

After assessing the Environmental Impact Assessment which follow on to this paragraph the Environmental Commissioner of the Ministry of Environment and Tourism is herewith requested to:

1. Accept and approve the Environmental Impact Assessment and Environmental Management Plan;
2. Issue an Environmental Clearance for the proposed construction and operation of the sewerage treatment plant in Oshakati and for the following “listed activities”:

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES

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

2.2 Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976.

2.3 The import, processing, use and recycling, temporary storage, transit or export of waste.

WATER RESOURCE DEVELOPMENTS

8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems.

HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

9.1 The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.

9.2 Any process or activity which requires a permit, license or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, license or authorisation or which requires a new permit, license or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

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LIST OF ABBREVIATIONS

ADWF	Average daily water flow
BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
DWAF	Department of Water Affairs and Forestry
EC	Environmental Clearance
ECO	Environment Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
I&APs	Interested and Affected Parties
MAWF	Ministry of Agriculture, Water and Forestry
MET	Ministry of Environment and Tourism
NGTF	New-Generation Trickling Filters
NSA	Namibian Statistics Agency
Ox Ponds	Oxidation ponds
STP	Oshakati Sewage Treatment Plant
TSS	Total Suspended Solids

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1. INTRODUCTION AND BACKGROUND

Green Earth Environmental Consultants were appointed by the proponent, Oshakati Town Council, to conduct an environmental impact assessment for the proposed construction and operation of the sewerage treatment plant in Oshakati for which an Environmental Clearance is required. The Environmental Management Act (No 7 of 2007) requires that an Environmental Impact Assessment be conducted to request a Clearance Certificate for the following “listed activities”:

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES

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2. PROJECT INFORMATION AND DESCRIPTION

2.1. STATUS OF OSHAKATI TREATMENT PLANT AND PONDS

The current situation regarding sewage discharge and treatment at Oshakati Town was assessed during a visit undertaken during November 2017, by invitation of Council's Engineering Department in conjunction with Aqua Utilities Corporation (Pty) Ltd.

Based on this visit Aquarius Consult CC, in 2018, did a thorough assessment and prepared a comprehensive assessment report (*Seifart, 2018*) regarding the condition of the existing sewage treatment plants at Oshakati East and West, which employ oxidation pond systems. A copy of the report is attached to this document. See below Map showing the locality of the ponds.

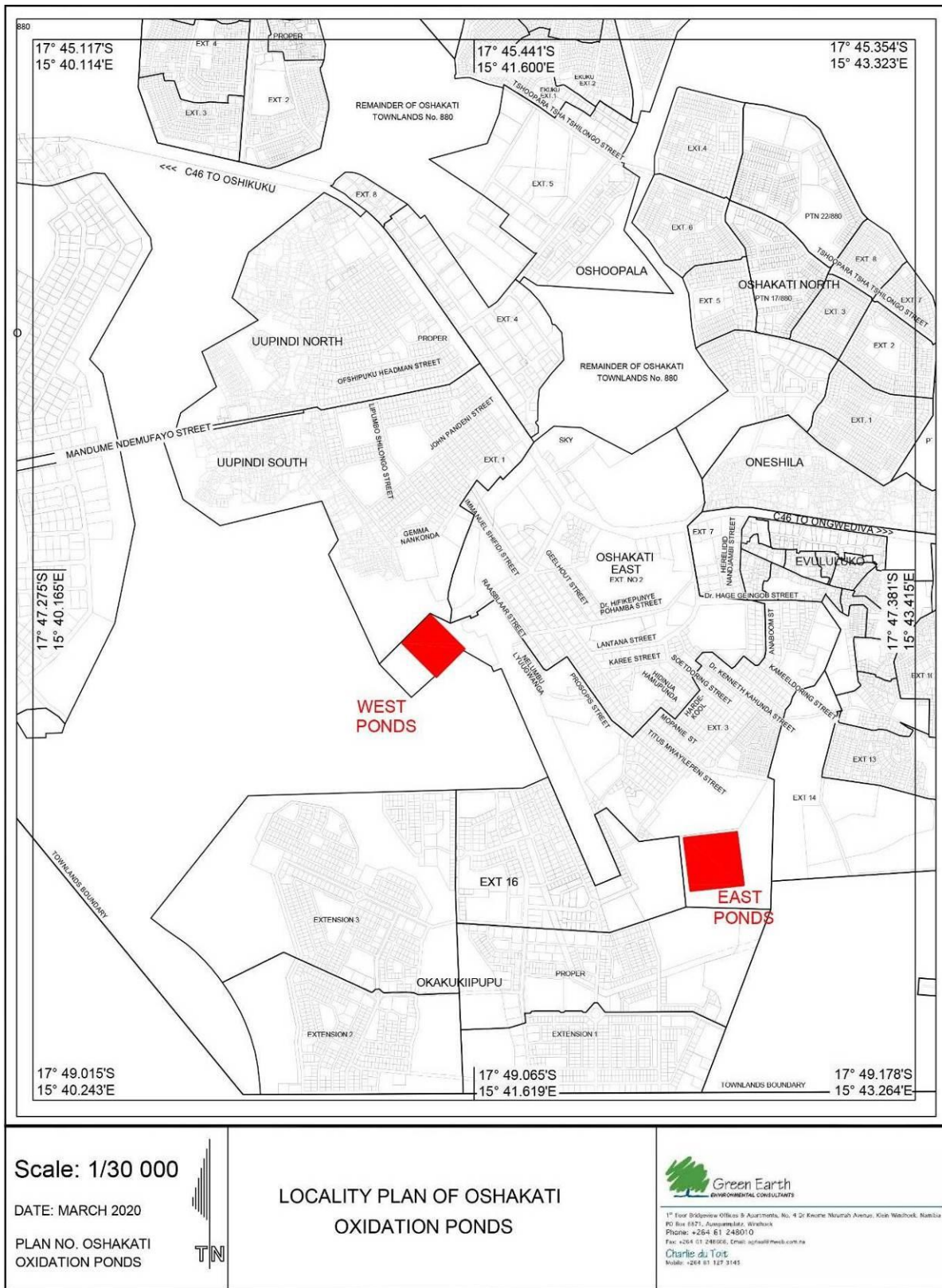


Figure 1: Locality Plan for the Oxidation Ponds



<p>Scale: 1/15 000</p> <p>DATE: MARCH 2020</p> <p>PLAN NO. OSHAKATI OXIDATION PONDS</p> 	<p>LOCALITY PLAN OF OSHAKATI OXIDATION PONDS</p>	 <p>1st Floor Bridgeway Offices & Apartments, No. 4 Of Kwana Namutah Avenue, Kite Westpark, Namibia PO Box 1821, Ausangwekwa, Windhoek Phone: +264 61 248010 Fax: +264 61 248008, Email: info@mecc.com.na Charlie du Toit Mobile: +264 81 127 3143</p>
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Figure 2: Locality Plan for the Oxidation Ponds with image

This report addressed the existing situation prevailing at the Oshakati Sewage Treatment Plant (STP).

Oshakati currently uses oxidation ponds (OxPonds) for treatment of all sewage collected. The sewage is transferred to two separate OxPonds, known as the “West Ponds” and the “East Ponds”, each of which has had multiple extensions and upgrades over the years. Various pump stations transfer sewage from the collection points and distribute it between the two OxPonds.

Oshakati has recently experienced significant development, with various residential extensions being serviced and connected to the sewerage system. This has resulted in the OxPonds currently not being able to cope with excessive inflows, especially during the rainy season and they are therefore hydraulically overloaded. Also, both the current OxPonds systems have a final effluent that discharges into an adjacent oshona that is freely accessible to animals and humans, which does not fulfill the basic requirements as specified by the Ministry of Agriculture, Water and Forestry (MAWF) in their Guidelines for Pond Systems (MAWF, Code of Practice: Vol. 2, 2008). Furthermore, the population of Oshakati has grown to a number in excess of the size where OxPonds are permitted as the only treatment means. Its population is even expanding at an above average growth rate, mainly due to urbanization from the surrounding rural areas.

Low-technology OxPonds have been the technology of choice for sewage treatment in Namibia in the past twenty to sixty years. It should however be noted that MAWF has two basic requirements for communities that wish to make use of OxPonds as only treatment method for their sewage:

- **No final effluent is allowed to be discharged into nature.** The MAWF Guidelines (Code of Practice: Vol. 2, 2008): “Generally, open ponds cannot produce a final effluent complying with the currently applicable Namibian standards for effluent discharge, viz the General Standard of Act No. 24 of 2004. Therefore, final effluent produced by a pond system will not be allowed for discharge into the environment.” This is not adhered to at Oshakati, where a large stream of insufficiently treated final effluent is discharged into the environment – this applies to both pond systems.
- **All water treated in ponds must be completely evaporated** because ponds are not able to produce a final effluent conforming to the General Standard. This requirement results in a good source of secondary water that is wasted instead of reused. Namibia is an arid country that needs to exploit its water resources more optimally and that is why MAWF does not allow use of ponds for larger communities. The MAWF Code of Practice (Vol. 2, 2008) states that: “Pond systems may only be considered if the ultimate load does not exceed 5 000 PE (population equivalents) or 800 kℓ/d...”, and further: “Since water is a scarce commodity in Namibia, reuse thereof is strongly encouraged”. The population of Oshakati exceeds latter figures by far, which requires the Town to implement more reuse projects to conserve potable water. However, this will require the final effluent that will be reused to conform at least to the General Standard.

The OxPonds at Oshakati are overloaded and especially during the rainy season, partly raw or inadequately treated final effluent overflows into the environment. This causes a serious health hazard for humans as well as animals. Some of the fences at the ponds show signs of damage and cattle dung can be seen within the pond area and all over the pathways, which allows animals to drink the insufficiently treated water. Also, fish is harvested from the ponds, which poses a serious danger of humans developing diarrhea and even cholera when coming into contact with this effluent and/or eating the fish.

Although problems mentioned above are the typical problems normally associated with OxPond systems, Aquarius Consult CC also observed and commented on some specific issues applicable to the Oshakati East and West OxPonds in the 2018 Report which needs to be addressed in the upgrading of the sewer plant.

2.2. OSHAKATI WEST PONDS

General Condition: The West Pond system consists of a total of 8 ponds, some of which are still in a very good condition and have been recently constructed or refurbished. All ponds have either Hyson cell or concrete embankments and, if the entire pond floor area of each primary ponds is constructed similarly to the embankments, these ponds can be considered to be lined. MAWF (Vol. 2, 2008) requires specifically the anaerobic and primary ponds to be lined.

Some of the embankments and especially the primary ponds, however, show significant growth of weeds, reeds and bushes. The primary ponds are completely overgrown with dense vegetation to such an extent that the water surface is not visible. This is unacceptable and the complete area needs to be freed from all growth. MAWF (Vol. 2, 2008) always requires owners to keep the ponds and embankments free from growth.

The locality of the West Ponds is shown on the Map below.

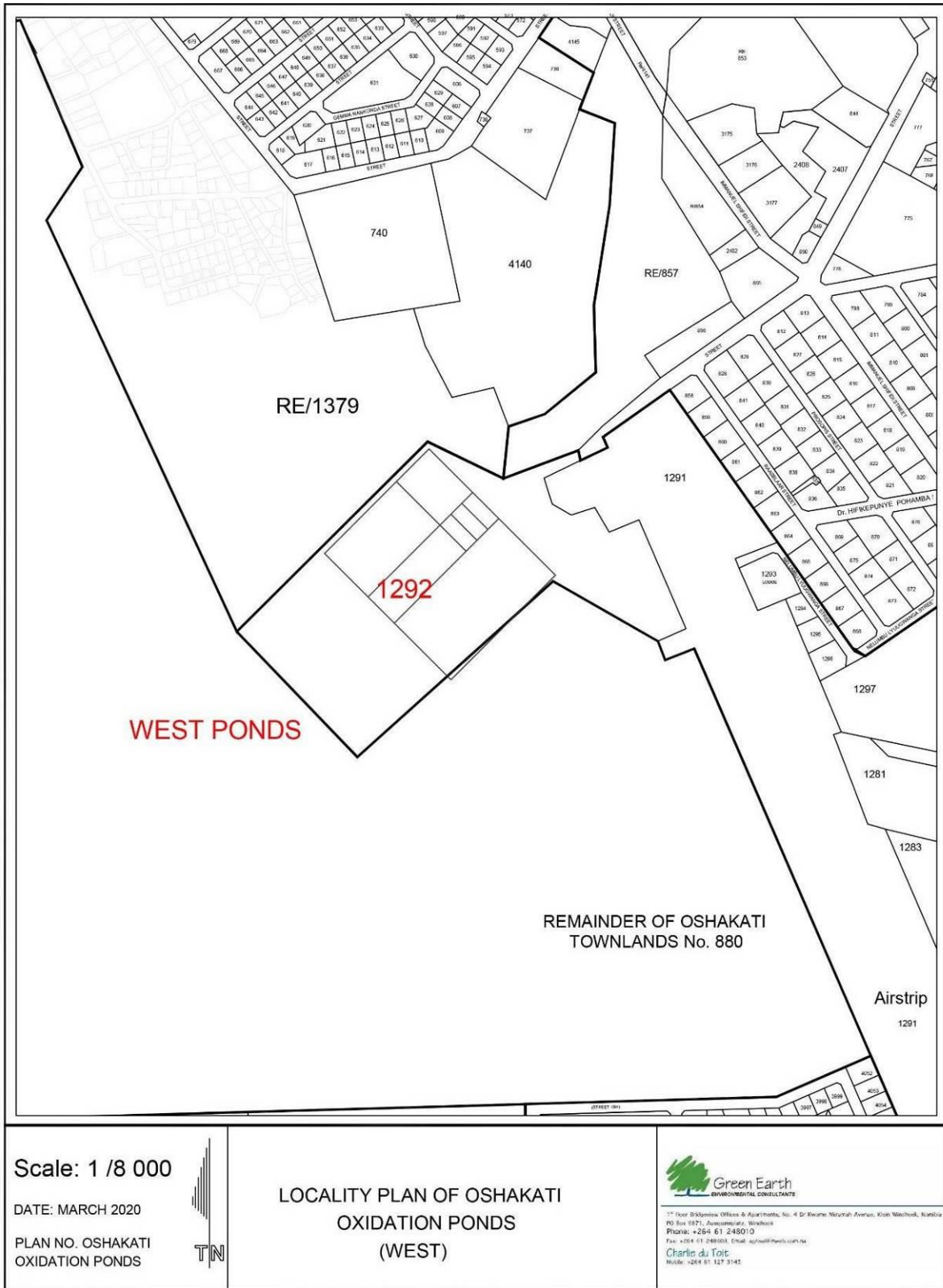


Figure 3: Locality of West Ponds



Figure 4: Locality Plan of West Ponds with image



Figure 5: Oshakati West Ponds – Primary ponds overgrown

While not as bad as at the primary ponds, the facultative and maturation ponds also show signs of vegetation. Aquarius Consult CC advised that these should also be cleaned, and all vegetation removed. At a few places, the embankments are damaged in these ponds, but not (yet) to such an extent that the water overflows out of the pond. It was also advised that these areas should be refurbished as soon as possible, to prevent further erosion and pond leakages.



Figure 6: Oshakati West Ponds – Minor vegetation growth

Aquarius Consult CC recommended that the West Ponds be cleaned by removing all grass and shrubs from inside the ponds as well as the embankments and surrounding, fenced-in area. In addition, the few areas where the embankments are damaged should be repaired.

Final Effluent Discharge: Despite low rainfall experienced in the summer of 2016/17, and the visit taking place in the dry season before the summer rainfalls of 2017/18 started, the ponds were found to discharge into an adjacent oshona. This means that hazardous and not fully treated wastewater is discharged into an unfenced area where it can come into contact with people and where animals drink, which presents a severe health hazard to the community.



Figure 7: Oshakati West Ponds – Final water discharge outside pond areas

Fencing: Whereas a new, proper fence (Nato razor wire) was provided around the OxPonds, there is evidence of many repairs done to the fence after having been damaged by people. An area under the south-western gate has been dug out and a hole has been cut in the fence at the southern corner, giving free access to humans inside the pond area. Also, evidence of fish being harvested was found at ponds, which poses danger to humans developing water-borne diseases such as diarrhea and cholera when coming into contact with this effluent and/or eating the fish if not well cooked



Figure 8: Oshakati West Ponds – damaged fence and evidence of fishing activities

MAWF (Vol. 2, 2008) requires a 1.8 m high diamond mesh (“jakkalsproef”) fence with locked, double gate for access. Furthermore, the fence must completely enclose the whole treatment plant area and must ensure that all animals and people are always kept out of the pond area. Aquarius Consult CC recommend that the Town Council’s continuous efforts to restore the fence and prevent access to the pond area are intensified to prevent further health hazards. Additional security guards should be employed to protect further removal of this fence or parts thereof and adequate warning signs in this regard should be put up.

2.3. OSHAKATI EAST PONDS

General Condition: The East Pond system consists of a total of 10 ponds and, as with the West Ponds, some are still in a very good condition and have been recently constructed or refurbished.

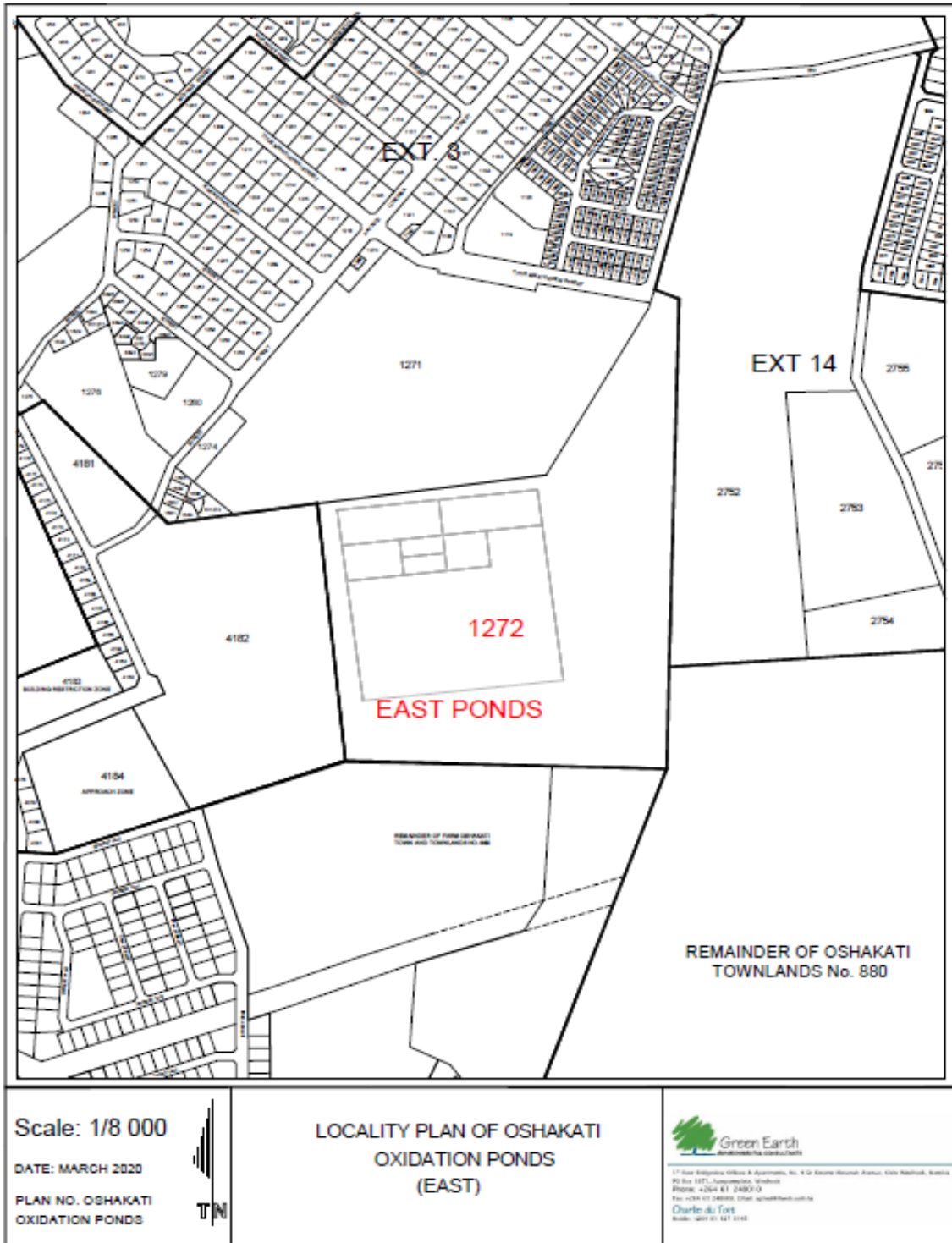


Figure 9: Locality of East Ponds





<p>Scale: 1/8 000</p> <p>DATE: MARCH 2020</p> <p>PLAN NO. OSHAKATI OXIDATION PONDS</p> 	<p>LOCALITY PLAN OF OSHAKATI OXIDATION PONDS (EAST)</p>	 <p>1st Floor Brickmeier Offices @ Asarimotse, No. 4 Di Kwane Nkuzi's Avenue, Kwaan Washhoek, Namibia PO Box 3371, Swakopmund - Windhoek Phone: +264 61 248010 Fax: +264 61 248008, Email: ognie@meb.com.na Charlie du Toit Mobile: +264 61 127 3143</p>
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Figure 10: Locality Plan of East Ponds with image

In general, the East Ponds appear in a slightly better overall condition as the West Ponds. All the ponds have either Hyson cell or concrete embankments and, as long as the entire pond floor area of the primary ponds are also constructed similarly to the embankments, the ponds can be considered to be lined, as required by MAWF (Vol. 2, 2008).



Figure 11: Oshakati East Ponds – March 2020

The general appearance of these ponds is good, and the area is kept neat and tidy. Some of the embankments show minor growth of weeds, reeds and bushes, but in general much less than at the West Ponds. Pond embankments seem to be in a fair condition. At a few places, the embankments are damaged in these ponds, but not (yet) to such an extent that the water overflows out of the pond. However, these areas should be refurbished as soon as possible, to prevent further erosion and pond leakages.



Figure 12: Oshakati East Ponds – Minor damage to embankments

The primary and large, facultative ponds are, however, overgrown with reeds and should be cleaned as a matter of urgency. The complete area needs to be freed from all growth, before it becomes a problem.



Figure 13: Oshakati East Ponds – Vegetation growth in primary and facultative ponds

Aquarius Consult CC therefore recommended that the East Ponds are urgently cleaned by removing all grass and shrubs from inside the ponds as well as the embankments and surrounding, fenced-in area. In addition, the few areas where the embankments are damaged should be repaired.

Final Effluent Discharge: At the time of the assessment visit, there was no overflow of the final pond to the environment. However, the visit took place before the rain season commenced and there was clear evidence that there had previously been final water discharged from the ponds into the surrounding area, with signs of water erosion and a previously ponded area just outside the plant fence. This means that, during the rainy season, hazardous and not fully treated wastewater is discharged into an unfenced area where it can come into contact with people and where animals drink, which presents a severe health hazard to the community.



Figure 14: Oshakati East Ponds – Final water health hazards at the ponds

Fencing: The fence seems to be in a relatively good condition, although there is evidence of repairs having been done at several places. Unfortunately, there will always be people that try to gain access to the ponds to water their livestock or to do fishing at the pond. The Town Council is doing their utmost in repairing the fences as and when damaged and proper signage prohibiting fishing and grazing is also clearly visible. Whereas this sign is large, clearly visible and serves its purpose, it is recommended to change “ENTRY AT OWN RISK” to “NO ENTRY FOR UNAUTHORIZED PERSONS”.



Figure 15: Oshakati West Ponds – Council’s Signage

3. TREATMENT CAPACITY OF OSHAKATI OXPONDS

Aquarius Consult CC calculated the actual treatment capacity of both the West and East Ponds to establish the current treatment capacity for comparison to the population of Oshakati.

Capacity: Due to uncertainties in the design capacity of these ponds, an assessment on site of the actual capacity of the OxPonds was made. The total pond area is approximately:

West Ponds:

- Anaerobic Ponds: 4 off, total area	= 47 500 m ²
- Primary Ponds: 2 off, total area	= 96 400 m ²
- Secondary (facultative) Ponds: 2 off, total area	= 54 000 m ²
SUB-TOTAL	= 197 900 m²

East Ponds:

- Anaerobic Ponds: 8 off, total area	= 52 900 m ²
- Primary Ponds: 1 off, total area	= 85 100 m ²
- Secondary (facultative) Ponds: 1 off, total area	= 28 500 m ²
SUB-TOTAL	= 166 500 m²
TOTAL COMBINED AREA	= 364 400 m²

When the MAWF Guidelines (Vol. 2, 2008) are followed, the total volume of effluent that can be treated in this plant would only serve approximately 10 000 people for the Oshakati West Ponds and 8 400 people for the East Ponds, for a combined total of 18

400 people. Latter figure compares badly with the current population estimated of approximately 40 000 - 45 000 for Oshakati, of which about 27 000 people are currently residing on erven that are already serviced, with a further 13 500 people's erven currently being serviced. This is based on the information given verbally by Mr Tomas Negongo of Oshakati Town Council (personal communication: 24 October 2017), who indicated that about 6 000 erven are currently serviced with another 3 000 in the process of being serviced. Since the town council and developers are currently driving services in order to connect up as many as possible existing and new households to the sewer system and also enforcing legislation to service and connect up households in future developments, additional treatment plant capacity is required. Aquarius Consult CC's estimate is that the capacity of the existing sewage treatment plant should now already cater for at least 30 000 people whose effluent currently already reaches the treatment plants. If the 3 000 erven currently being serviced are expected to be completed in the near future, the total treatment plant capacity to be provided now should be for 45 000 people.

From the above discussion it becomes clear that the existing pond systems for Oshakati are inadequate, require urgent attention and need to be upgraded, not only to cater for future growth, but also already to serve all existing users.

4. DEVELOPMENT OPTIONS

Based on the 2018 Report of Aquarius Consult CC, the Proponent have three (3) development options which is discussed in the section below.

4.1. OPTION 1: NO-GO OPTION

Under this option the Proponent can decide to keep the current sewer systems with no upgrade. The maintenance issues relevant to the East and West Ponds addressed in the 2018 Report of Aquarius Consult CC should be attended to, to ensure the optimal operation of the ponds, prevent undertreated water to flow into nearby surface draining systems and to keep people and animals from coming in contact with the untreated water.

The 'no-go option' is however not supported due to the following reasons:

- The Report of Aquarius Consult CC concluded that *"the existing pond systems for Oshakati are inadequate, require urgent attention and need to be upgraded, not only to cater for future growth, but also already to serve all existing users"*.
- The current Oshakati OxPonds do not meet the basic requirements of the MAWF which are:
 - (Code of Practice: Vol. 2, 2008): "Generally, open ponds cannot produce a final effluent complying with the currently applicable Namibian standards for effluent discharge, viz the General Standard of Act No. 24 of 2004. Therefore, final effluent produced by a pond system will not be allowed for discharge into the environment."

- Code of Practice (Vol. 2, 2008): “Pond systems may only be considered if the ultimate load does not exceed 5 000 PE (population equivalents) or 800 kl/d...”, and further: “Since water is a scarce commodity in Namibia, reuse thereof is strongly encouraged”.

The OxPonds at Oshakati are overloaded and especially during the rainy season, partly raw or inadequately treated final effluent overflows into the environment and therefore the no-go option is not supported by Green Earth Environmental Consultants.

4.2. OPTION 2: UPGRADING/EXTENDING EXISTING SYSTEM

A further development option to the Proponent is to extend the current oxidation ponds with bigger ponds (to evaporate all effluent produced). This option is not supported by Aquarius Consult CC and Green Earth Environmental Consultants due to:

- MAWF not allowing oxidation and evaporation ponds to serve communities in excess of 5 000 people and discharging more than 800 m³/d, because reuse of the final effluent is propagated. The current population served and sewage reaching the treatment plant already far exceeds latter figures;
- Evaporation ponds require large surface areas and open land is not readily available in the area. To cater for the currently needed capacity of approximately 4 500m³/d of effluent to be treated (45 000 people), will require approximately 893 000m² of constructed ponds. Compared with the currently constructed 365 000m² of ponds, it will mean that extensions totaling 2.4 times the existing pond area are required. Even if this land would be available, it would be expensive and could be better utilized for further industrial and/or housing developments or for producing agricultural products;
- Potential health hazard. During times of excessive rains, oxidation ponds become flooded and spill over into the floodplains. This poses a serious health hazard to humans and animals living in and crossing the floodplains and consuming fish caught in the ponds;
- Difficulty to keep people and animals from reusing effluent. Especially during the dry season, the people will damage the fences to allow their animals to feed and drink in the pond area, as happens currently;
- Reliable source of secondary water with high nutritional value (for plants). This effluent, once properly treated, is an asset because it forms a reliable source of water, especially in the dry season. Also, all important nutrients needed for plants are still contained in the final water, necessitating no or very little fertilizer for continuous, sustainable agricultural produce. Thus, the final water can be reused for parks, sports fields, gardens and selected agricultural produce.
- Future food security and huge potential for community upliftment. The effect of climate change is already experienced in Namibia and can be expected to intensify in the near future. The large amount of a good quality of final water

discharged reliably by this plant will make it attractive for community-based agricultural projects that want to address and implement poverty and upliftment programs. It will also contribute largely towards food security because a large, steady stream of water will be available daily for growing selected agricultural produce.

Extending the existing ponds by adding additional ponds is not an option and thus not supported.

4.3. OPTION 3: BIOLOGICAL TREATMENT PROCESS

Aquarius Consult CC in the 2018 Report advised that a treatment process giving a final effluent that can be reused for agricultural purposes should be favored. Several advanced biological treatment processes, that treat raw sewage to the General Standard and thus produce a final effluent that can be reused for agricultural purposes are currently available on the market. The most familiar ones would be the activated sludge process, submerged membrane bioreactors, rotating disc reactors and trickling filters. Aquarius Consult CC recommended that **new-generation trickling filter technology** be used, because it was found most applicable to local conditions and especially because it involves simple technology and is easy to operate and maintain.

New-Generation Trickling Filters (NGTF) effect advanced biological treatment of an effluent using attached-growth media technology to produce a high-quality final effluent. NGTF employ low-level mechanical technology in the form of submersible pumps, but latter require little service and maintenance. Generally, this technology is gaining increased acceptance throughout third world countries for the following reasons:

- Small footprint. To treat domestic effluent, NGTF need only ca 2-5% of the land area necessary for oxidation ponds (including evaporation).
- High quality final effluent. A final effluent exceeding the Namibian General Standard and WHO standards is produced. This will be safe for discharge even during periods of severe flooding of the area. Also, the final effluent can be reused for growing selected crops and aquaculture in line with WHO guidelines (WHO 2006a) or for gardening and lawns (e.g. sports fields and public parks) in the town.
- Simple technology. The only advanced mechanical equipment employed, are submersible pumps, which can be replaced without specific technical knowledge, and the drives for clarifier bridges (large plants only). Once commissioned, no further process control or adjustment to the process is required.
- Little mechanical equipment that can break. Under the latter, only the service/recycle pumps would be of concern, but designers always allow for duty and standby pumps.
- Little inspection, service and maintenance required. Only submersible pumps, which require periodic inspection and maintenance, are employed. However, the town will also need other pump stations to transfer sewage to the treatment plant and submersible pumps can therefore be regarded as standard mechanical equipment once a full reticulation system has been provided for the town.

- Low power requirements. NGTF use only ca 40 to 65% of the power required by other advanced treatment processes giving a comparable treated effluent, such as oxidation ditches or activated sludge processes. Not only will the continuous power demand be low, but standby power in the form of a standby generator can be provided at minimal costs.

For the specific conditions encountered at Oshakati, Trickling Filter Technology was therefore considered as most appropriate and most reliable technology to be employed.

5. PROPOSED NEW SEWAGE TREATMENT SYSTEM

The system proposed by Aquarius Consult CC and agreed upon by the Municipality is based on the use of new-generation trickling filter technology.

5.1. SYSTEM DESIGN PHILOSOPHY

The general and specific design aspects that have been taken into consideration by Aquarius Consult CC when designing the new Oshakati STP include:

5.1.1. GENERAL DESIGN ASPECTS

Similar construction and lay-out of all structures. To allow for phase implementation (see later), the plant is designed in multiple trains, with each train looking and operating the same, so that operators will find the same arrangement and equipment at all plant trains and will be familiar with the operation thereof.

Operation and maintenance. Emphasis was placed on simple operation, ease of maintenance and minimal process adjustments, coupled to familiar processes as also currently used at the STP.

General design aspects. The following aspects have been considered for choosing a specific unit treatment process:

- Known, well-proven unit processes and equipment will be employed;
- As the availability of electricity is limited and power costs are expensive – energy-intensive unit processes were avoided;
- Simplicity with regards to operation and maintenance;
- Limited reliance based on skilled personnel;
- Routine maintenance to be performed by locally trained personnel;
- A standby pump is provided for each set of duty pumps;
- Duplication of critical equipment such as pumps and valves will ensure limited stocks of spares can be kept on site.

Specific design aspects. Specific attention was given to the following, area specific aspects:

- Flooding. Large parts of northern Namibia are regularly flooded during the rainy season. Therefore, both plants were lifted approximately 1.5 m above natural ground level to ensure that they remain dry, even during times of severe flooding;
- Tamper-resistant plant operation. Emphasis was placed on incorporating unit processes and equipment such that operators cannot simply bypass critical equipment unless necessary for emergency maintenance purposes.
- Plant location. The new plant will be constructed at the site of the current West Ponds. This will allow all sewage that is currently pumped from various pump stations throughout the town to the West Ponds to discharge into the new plant, with no modifications to the sewage collection and transfer network required. Sewage that is currently discharged into the East Ponds will be collected in one of the existing ponds and will be transferred by a set of pumps to the new plant. This means that all of the existing transfer pump stations throughout the town will remain in use as is, and no rerouting of existing pump lines will be required.



Figure 16: Locality of the new plant

5.1.2. SPECIFIC DESIGN PARAMETERS

Aquarius Consult CC based the design and phasing of the proposed system on current discharge figures observed plus expected growth due to more consumers installing flush toilets and being connected up to the sewer network, as well as future expected growth for the next ten years. Since it will take already approximately three to four years to secure funds from Central Government, do a detail design, tendering, construction and putting into operation the extensions to this plant, a ten-year window is not very far into the future.

Population Estimate and Design Criteria

The *Table* below shows the population projection until 2028 based on actual population counts that were conducted by the Namibian Statistics Agency (NSA) in 2001 and 2011. Three scenarios are given:

- Population grows further at 0.9 % as experienced in the Oshana Region from 2001 to 2011;
- Population grows further at 1.4% as per the national average from 2001 to 2011;
- Population grows further at 3.5% due to urbanization;

Table 1: Population Projections for Oshakati – 2001 to 2028

Year	2001	2011	2018	2028
% Increase	Growth at 0.9% as experienced for Oshana Region between 2001 and 2011			

Population	28 255	36 541	38 906	42 553
% Increase	Growth at 1.4% as per current national growth rate between 2001 and 2011			
Population	28 255	36 541	40 276	46 283
% Increase	Growth at 3.5% due to urbanisation			
Population	28 255	36 541	46 490	65 579

Although the estimate of 3.5% growth due to urbanisation over the next ten years may be a bit high, Oshakati Town can be expected to show growth-rates substantially above the national average. Looking at the above figures, one should now already plan for serving ca 45 000 people, with another 15 000 additional inhabitants by 2028, thus 60 000 people in total. To serve latter amount of people will require treatment capacity to be provided of ca 4 500 m³/d (at 100 l/p/d).

Thus, three off treatment trains (=modules) need to be planned for now, each module serving 15 000 people and hydraulic capacity of 1 500 m³/d. Additional module(s) of 1 500 m³/d treatment capacity can then be added later, as the need arises and future growth-rate evolves. The *Table* below shows Aquarius Consult CC's recommended design figures for a new STP plant for Oshakati that needs to be allowed for at this stage already. It was recommended that Phase 1 consist of 3 off Modules for a total treatment capacity of 4 500 m³/d and Phase 2 of an additional Module of 1 500 m³/d to be provided within the next 10 years after construction of Phase 1.

Table 2: Population served and wastewater design volumes for Oshakati STP

DESIGN PARAMETER	UNITS	PLANT CAPACITY		
		Phase 1 now	Phase 2 future	TOTAL
Population served	PE	45 000	15 000	60 000
Sewage Discharged	m ³ /d	4 500	1 500	6 000
Average Dry Weather Flow m ³	m ³ /d	187.5	62.5	250
Peak Flow	m ³ /d	525	175	700

Based on the above figures, the corresponding organic loads for raw sewage discharged to the new works that need to be used for design purposes are shown in the Table below.

Table 3: Average Daily Design Wastewater Loads for new Oshakati STP

DESIGN PARAMETER	Basis	PLANT CAPACITY		
	Load (mg/l)	Phase 1 (kg/d)	Phase 2 (kg/d)	TOTAL (kg/d)
Chemical Oxygen Demand (COD)	1000	4 500	1 500	6 000
Biological Oxygen Demand (BOD)	500	2 250	750	3 000
Total Suspended Solids (TSS)	400	1 800	600	2 400
Peak Flow Ammonia-Nitrogen (NH ₄ -N as N)	35	157.5	52.5	210
Total Phosphates (TP as P)	25	112.5	37.5	150

The location of the three modules for Phase 1 (1 500 m³/d capacity each) will be on the existing site and will be finalised if and when the project goes ahead. Based on current inflow, Aquarius Consult CC recommend that 2 x 1 500 m³/d train are constructed at the West Pond site and one 1 500 m³/d train at the East Pond site, as the West Pond is currently the pond receiving more raw sewage inflow. The bulk of existing pump stations and pipework infrastructure could then be further used without requiring major changes.

5.1.3.FINAL WATER QUALITY

The plant will be designed that the final effluent that is produced will conform to the Namibian General Standard as per current Namibian legislation for final effluents (Water Act No. 54 of 1956) and will exceed European Standards (EC Directive 91/271/EHS) for plants of this size. New effluent quality standards have been drawn up and are currently being circulated by the Department of Water Affairs and Forestry (DWAF). These are expected to be legalized soon and the proposed design therefore already includes for adhering to the future Namibian General Standard for Effluents as well.

5.2. DESIGN OF THE SYSTEM

The advanced biological treatment utilizing Tricking Filter (TF) technology as employed for Oshakati will incorporate the following unit treatment processes:

- Inlet works with screening and grit removal in a grit channel;
- Suspended solids removal in a primary clarifier;
- Aerobic, biological carbonaceous material removal and nitrification in biofilters (tricking filters);
- Biomass removal in a secondary clarifier;
- Disinfection using chlorine gas;
- Sludge digestion in a humus tank with desludging to and sludge drying in on-site;
- drying beds.

The following figure depicts the proposed process schematics for the plant and unit processes.

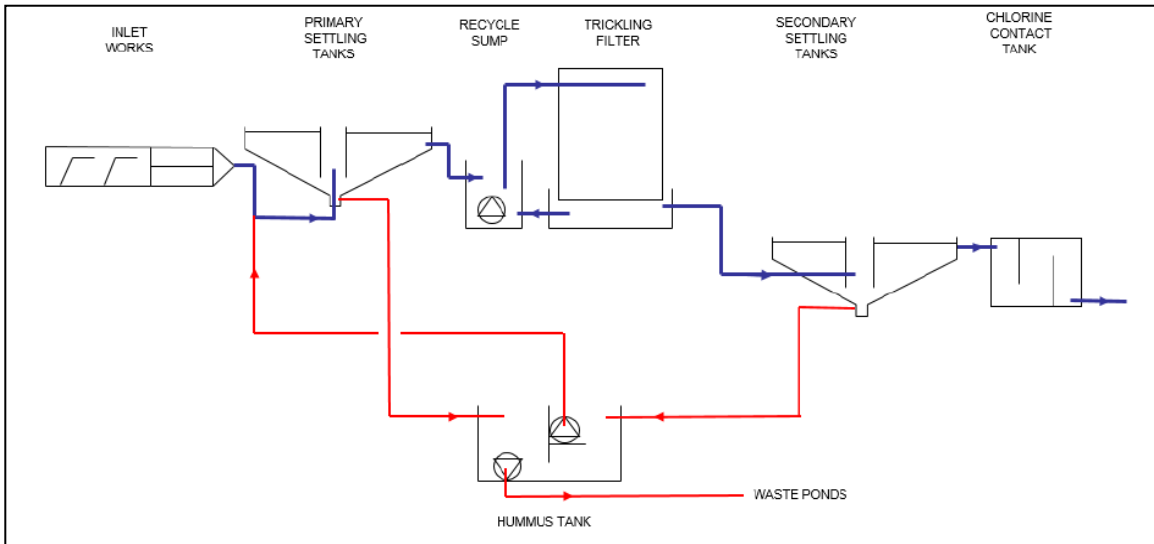


Figure 17: Process Schematic for Oshakati STP

The individual unit processes will be discussed in a similar order as the raw sewage:

5.3. INLET WORKS

A typical inlet works structure will serve two off trains, each sized for 1 500 m³/d average daily water flow (ADWF). Large objects such as plastic bags, bottles, rags and other, generally non-biodegradable material will be caught by a set (two off) of screens in series at the inlet to the treatment plant. These screens consist of static, parallel bars at a 45° angle with spacing between the bars of 25 mm for the first screen, followed by 10 mm for the second screen. The screens will be manually cleaned (raked) and the screenings collected and disposed of in a waste-bin that will be placed next to the screens. Final disposal of the screenings will be at the municipal solid-waste dump site.

After screening a set of grit removal, channels will ensure that the bulk of sand and grit can be removed from the sewage before further treatment. During normal operation both channels are in operation and heavy, mostly inorganic particles settle in these channels. During times of low inflow to the works, one channel is taken out of operation by inserting manual sluice gates on either side thereof and draining the water from it. The grit is then manually removed by an operator from the bottom of the channel and left to drip off and dry out on a ledge at the top of the channel.



Figure 18: Proposed inlet works with grit removal channel

After passing through the grit channels, the inflow will be split to feed two trains, thus to the inlet of the primary clarifiers. A flowmeter will be provided to measure inlet flows to each clarifier.

5.4. PRIMARY CLARIFIER (SETTLING TANKS)

Primary clarifiers are employed to remove 60% - 70% of total suspended solids (TSS) and 35 - 40% of COD/BOD in the raw sewage. One primary settler will be provided per train with main dimensions as follows:

- Diameter = 16,0 m
- Water depth (sidewall) = 3,5 m

The settler will be fitted with a central, stilling well to equally distribute the inflow, with the following dimensions:

- Diameter = 1,2 m
- Water depth (sidewall) = 2,5 m

Peripheral overflow weirs (V-notch) with a 500 mm wide Stamford baffle will be installed to prevent density currents and ensure equal draw-off of clarified effluent.

The settler will be fitted with a rotating (travelling) bridge driven by a peripheral bridge drive and scum and sludge-scraping mechanism at a peripheral speed between 1.5 and 2 m per minute. The peripheral drive runs on the outside wall of the clarifier and the sludge is moved towards the central sludge hopper for periodic sludge withdrawal.

Sludge and scum are withdrawn by opening the desludge valve (mechanically when the bridge passes over the desludge valve opening mechanism).



Figure 19: Clarifier with Rotating Bridge

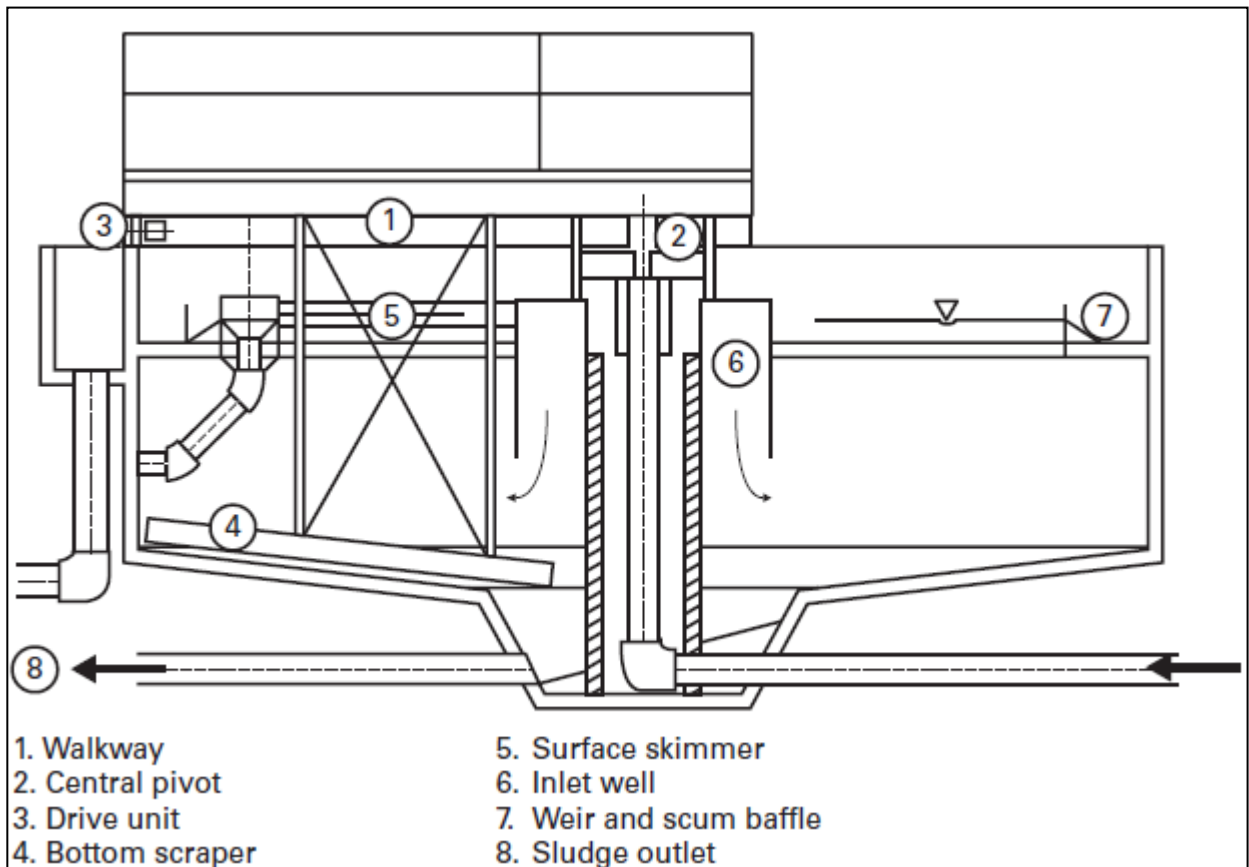


Figure 20: Clarifier with Rotating Bridge Illustration

5.5. TRICKLING FILTER SYSTEM

The trickling filter system consists of a feed/recycle sump, which is sized for and acts as anoxic reactor for denitrification, the trickling filter tower and trickling filter basin.

5.5.1. TRICKLING FILTER FEED SUMP

After primary treatment, the overflow from the primary settler/clarifier, is discharged into a pump sump, from where it is recirculated by open impellor submersible pumps (2 duty, 1 standby) through the trickling filter. This sump is sized with a hydraulic retention time that allows anoxic conditions to prevail.

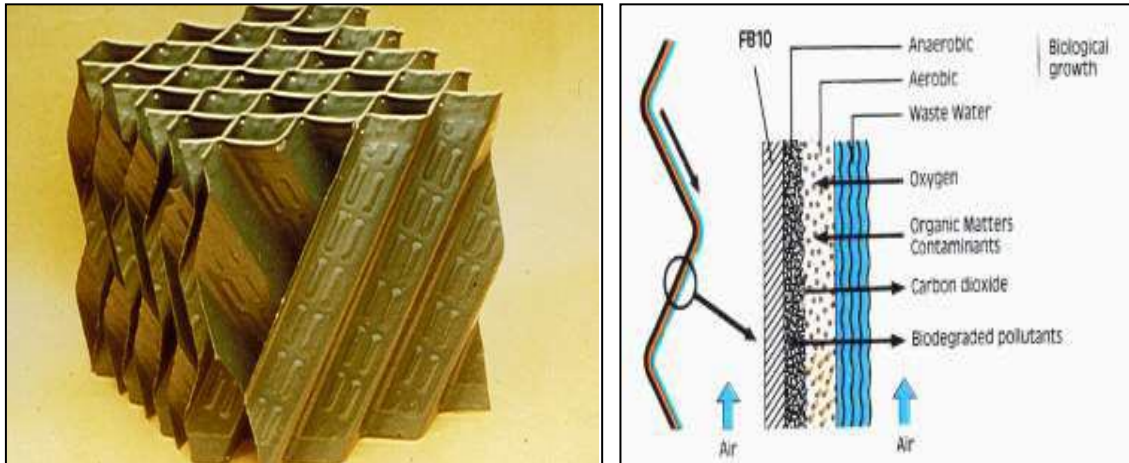


Figure 21: Packing in trickling filter - Biofilm growth on media

The trickling filter itself consists of highly permeable medium, which serves as host for micro-organisms to attach to and grow on, to form a biological film. The filter medium is manufactured from robust, weatherproof and UV-stabilised plastic material with self-supporting structure. Organic material in the wastewater is absorbed by micro-organisms growing as a biological film on the media. In the outer portion of the film, aerobic organisms degrade organic material, whereas anaerobic organisms exist deeper into the biological film, i.e. near the surface of the media.

5.5.2. TRICKLING FILTER TOWER

The trickling filter tower is stacked with a bed of the highly permeable medium to a height of 6m. Wastewater is sprayed over and percolates through the medium. A simple system of non-clogging, open nozzles is used to distribute the water evenly over the top of the media. The media will allow for carbonaceous material removal as well as nitrification to take place inside the trickling filter. The packing will have a high void ratio (>97%) to reduce the risk of clogging and to maximize ventilation throughout the filter. Efficient mixing and wetting are essential and media with a crossflow pattern for the even distribution of water throughout the filter bed will be provided.



Figure 22: Trickling Tower with Wetting (Spray Nozzles) on Top

The water, after percolating through the media, is collected in the trickling filter basin. Biological solids that have become detached from the packing media have to be removed before the effluent is disinfected and can be finally discharged. Removal of the biomass is achieved in a conventional, secondary settler/clarifier.

5.5.3. SECONDARY CLARIFIER

Treated effluent from the trickling filter is discharged into the settling tank, where the suspended solids settle out and clear water is drawn off via V-notch weirs that discharge into a peripheral channel at the top of the clarifier. The sludge is scraped by a rotating bridge to the center of the tank, where it is collected in a desludge hopper. A sludge scraper is fitted to the rotating bridge of the clarifier to scrape the sludge (bottom) into a central hopper, from where it is then periodically discharged into the humus tank. One secondary clarifier will be provided per train, thus with capacity of 1 500 m³/d ADWF.

5.5.4. SLUDGE HANDLING - HUMUS TANK

All sludge discharged from the primary and secondary clarifiers is collected in the humus tank. The sludge will be anaerobic due to microbial degradation/decay taking place in an oxygen deficient environment in this tank. Part of this sludge (the more dilute part) is continuously returned with a set of sludge return pumps (1 duty, 1 standby) to the inlet of the primary clarifier, where this return sludge also serves as seeding material for anaerobic microorganisms in the primary clarifier. The sludge return pumps will be mounted approximately half-way (down) in the sump, ensuring that only the more dilute sludge is returned to the primary settler, whereas the thicker sludge will settle to the bottom of the humus tank.

The thicker sludge that settles at the bottom of the humus tank will be discharged from time-to-time to the sludge drying beds (CT07) by a separate set of sludge pumps.

5.5.5. DISINFECTION – CHLORINE CONTACT TANK

It is a requirement by DWAF that all final effluent produced in sewage treatment plants **must** be disinfected properly, even if only discarded to the environment. The effluent will be disinfected utilizing chlorine gas. A chlorine gas dosing station will be supplied for each site/plant. This will consist of 2 off 68 kg chlorine gas cylinders (on hire by client),

each of which is fitted with a gas chlorinator. The dosing rate of the chlorinator can be manually adjusted to provide the necessary dosage for disinfecting the final effluent before discharge. An automatic switch-over unit will ensure that, when the cylinder in operation is empty, the system will switch over to a new, full bottle.

Water for the booster pump stream is obtained from filtered final water. The chlorinated stream discharges into the inlet to the chlorine contact tank, which is sized to provide at least 20 min contact time at peak flow for proper disinfection.

5.5.6.SLUDGE DISPOSAL – SLUDGE DRYING BEDS

20 off Sludge drying beds, each with a surface area of 10 m², will be supplied per 15 000 PE train. Sludge is periodically (ca once per week) removed from the humus tank and pumped to the drying beds. The operators will select which drying bed to fill by switching the isolating valves such that these pumps discharge only into the selected sludge drying bed(s). The sludge is then left to dry and can then be manually removed from the sludge drying beds and reused as compost, typically for gardening purposes.

5.5.7.FINAL WATER REUSE

The plant will be designed such that the final effluent that is produced will conform to the Namibian General Standard as per current Namibian legislation for final effluents (Act No. 54 of 1956) and will exceed European Standards (EC Directive 91/271/EHS) for plants of this size. New effluent quality standards have been drawn up and are currently being circulated by the Department of Water Affairs and Forestry (DWAF). These are expected to be legalized soon and the proposed design therefore already includes for adhering to the future Namibian General Standard for Effluents as well.

The final water produced by these plants will be excellent for reuse in gardens, parks and even selected agricultural produce. It is therefore proposed to discharge the final water as follows:

- At Oshakati West ponds, final water will be discharged into one of the existing ponds, to be used as a final water irrigation pond. In addition, a set of pumps will be provided to pump final water to the East ponds to be used for irrigation.
- At Oshakati East ponds, one of the existing ponds will be used to store the treated final water pumped from the new plant (located at the West ponds) so that the water can be used for irrigation in the nearby area, including the golf course.

5.5.8.RISING MAINS AND SEWER CONNECTION LINE

The pipelines connecting sewer treatment facilities will be constructed along the existing road reserves provided for the alignment and construction of municipal bulk services.

5.5.9.POWER SUPPLY, CONTROL AND MONITORING

Total, continuous power consumption for one train serving 15 000 people will be not more than 45 kW (absorbed power). However, it is recommended that a feeder that also caters for future extensions to both plants should be installed now already. This will require provision made for:

- Phase 1 (3 x 1 500 m³/d trains): 135 kW (absorbed), 380 V, 3-phase, continuous power to be drawn;
- Phase 2 (1 x 1 500 m³/d train): 45 kW (absorbed), 380 V, 3-phase, continuous power to be drawn;

The plant will be fitted with very basic control:

- Automatic duty/standby rotation every 12 h of all pumps sets;
- Two indication lights (running/trip) for every pump are required;
- An alarm signal light (similar to a break-down truck) on top of the control board will be provided. Latter will be activated if any pump trips and will be switched off when all signals are healthy again. Thus, an operator will be able to already see from a considerable distance from the plant, if any motor has tripped.

Data logging/monitoring will include:

- Raw water inflow;
- Sludge wastage;
- Final water discharge.

6. REUSE OF TREATED WATER

The proponent intends to use the treated water for the irrigation of:

- The town's parks and gardens;
- The golf course;
- The irrigation of crops/trees in a demarcated area to be set aside specifically for this purposes under supervision of Council's Public Health and Environmental Departments.

The new sewage treatment plants will require only a small fraction of the land currently used for the pond systems. These ponds can then be dried out and the land used or sold for residential or agricultural purposes.

The areas indented for irrigation of crops is located directly south of the Oshakati East Ponds in the proximity of the proposed new treatment plant. See below images of the proposed irrigation areas in relation to the ponds and plant position:

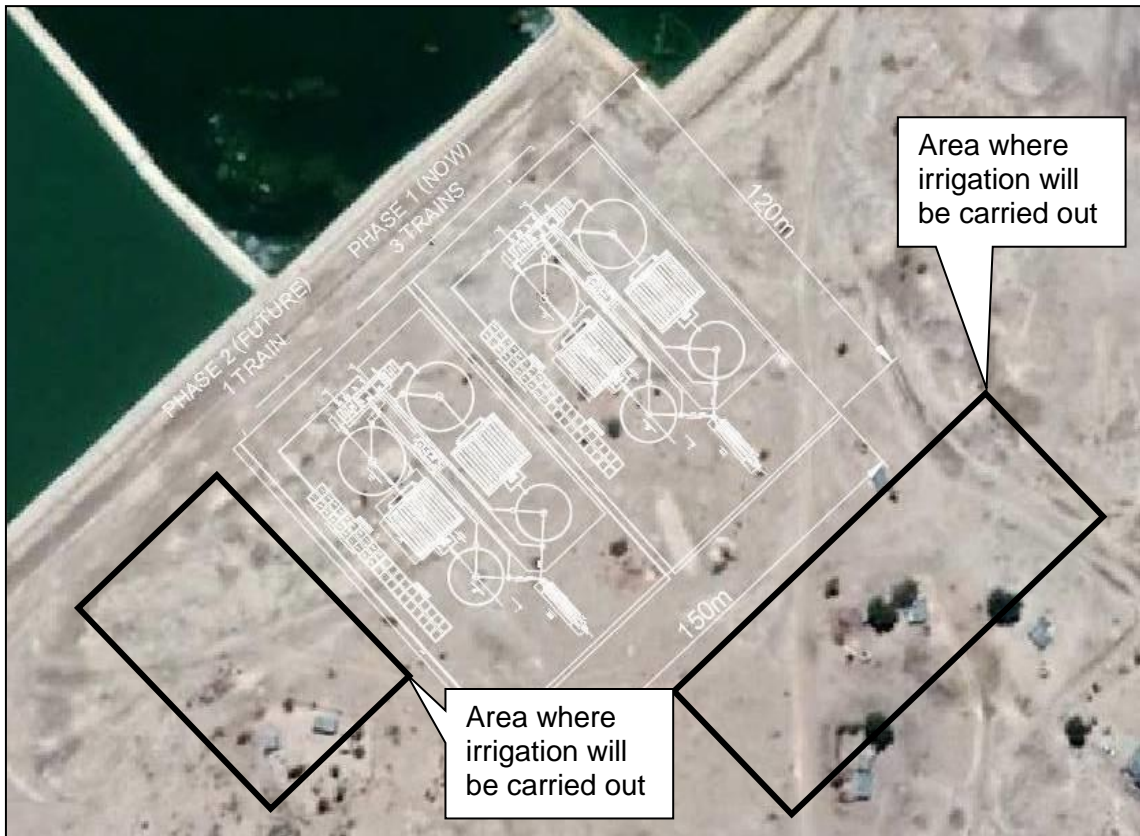


Figure 23: Proposed Oxidation Ponds

There are small residential dwellings on some of the proposed areas where the proposed irrigation will take place. Compensation will be given to the individuals making use of the land. The project was already discussed with the individuals and a relocation strategy will be arranged with them.

6.1. WATER QUALITY REQUIRMENTS FOR AGRICULTURE

The reuse of wastewater (greywater, reclaimed domestic effluent, industrial effluents) is guided by the guidelines set out in the Code of Practice (Volume 6, July 2011) of the of the Ministry of Agriculture, Water and Forestry as well as under the Water Resources Management Act (No. 24 of 2004).

Sewer treatment through oxidation ponds do not achieve a final water quality that conforms to the Namibian General Standard, nor is the final, treated effluent safe for reuse for irrigation purposes. However, wastewater is increasingly used for agricultural purposes in both developing and industrialized countries. This is due to increased water scarcity and degradation of freshwater resources caused by improper disposal of wastewater. Also, the value of nutrients contained in wastewater is now being recognized. Domestic effluent contains all nutrients required for agricultural applications and renders fertilizer addition obsolete. The increase in food demand resulting from population growth, results in increased irrigation water demand. Thus, the safe and efficient use of treated wastewater in agriculture is of environmental and economic importance, as it can help communities to grow more food while conserving natural water and nutrient/fertilizer resources.

The proposed use of the treated effluent for irrigation is thus permitted under the guidelines of the Code of Practice. On condition that the irrigation with treated wastewater emphasis must be placed on continuous monitoring and safe use thereof, especially where treated wastewater ultimately comes into direct contact with humans, or plants and animals consumed by humans, in order to guarantee public health and safety at all times. Wastewater irrigation, for example, can present a risk to public health if not carefully controlled and applied as stipulated in this guideline. However, wastewater reuse can be beneficial because it can prevent over-exploitation of natural water resources. Also, wastewater contains valuable nutrients and no fertilizer needs to be added when reusing treated, domestic effluent for agricultural purposes. Thus, the advantages and disadvantages of wastewater reuse must be carefully weighed up when determining areas of application for such reuse.

The Code of Practice sets out the various combinations of wastewater treatment and the suitability of the use of the treated water for different methods of irrigation (see *Table* below).

Table 4: Agricultural Reuse

Irrigation of	Primary and Secondary Ponds	Oxidation Pond with 40 day maturation pond	Primary, Secondary & Tertiary Treatment, not to General Standard	Primary, Secondary & Tertiary Treatment, to General Standard	Primary, Secondary & Tertiary Treatment*, to Special Standard
1. Vegetables and crops consumed raw by humans (3 excluded)	Not permissible	Not permissible	Not permissible	Not permissible	Any type of irrigation permissible
2. Vegetables and crops <u>not</u> consumed raw by humans	Not permissible	Not permissible	Not permissible	- Flood and drip irrigation permissible provided products are not directly exposed to spray - Effective draining and drying before harvesting; - Fallen produce unsuitable for human consumption	Any type of irrigation permissible
3. Fruit trees and vineyards for the cultivation of fruit which is consumed raw by humans	Not permissible	- Flood and drip irrigation permissible on merit provided fruits are not directly exposed to spray; - Effective draining and drying before harvesting - Fallen fruit is unsuitable for human consumption	- Flood and drip irrigation permissible on merit, provided fruits are not directly exposed to spray - Effective draining and drying before harvesting - Fallen fruit is unsuitable for human consumption	- Flood and drip irrigation permissible on merit provided fruits are not directly exposed to spray - Effective draining and drying before harvesting - Fallen fruit is unsuitable for human consumption	Any type of irrigation permissible
4. Cultivation of cut flowers	Not permissible	- Flood and drip irrigation permissible on merit provided flowers are not directly exposed to spray; - Effective draining and drying before harvesting essential	- Flood and drip irrigation permissible on merit provided flowers are not directly exposed to spray; - Effective draining and drying before harvesting essential	- Any type of irrigation permissible - Effective draining and drying before harvesting essential	Any type of irrigation permissible
5. Grazing for milk or meat producing animals	Not permissible	Not permissible	Not permissible	- Flood and drip irrigation permissible on merit; - Not Permissible as drinking water for animals - Effective draining and drying before consumption	- Any type of irrigation permissible; - Permissible as drinking water for animals.
6. - Crops not for grazing, but utilized as dry fodder; - Crops cultivated for seeds purpose only; - Tree plantations; - Nurseries (cut flower excluded, see 4)	Not permissible	- Any type of irrigation permissible on its merits - No over-irrigating or pool forming - No smell nuisance - Properly fenced (no public allowed) - No meat animals, milk producing animals or poultry permissible	- Any type of irrigation permissible on its merits - No over-irrigating or pool forming - No smell nuisance - Properly fenced (no public allowed) - No meat animals, milk producing animals or poultry permissible	Any type of irrigation permissible	Any type of irrigation permissible

* Sand and Granular Activated Carbon Filtration and Disinfection must form part of the Tertiary Treatment steps.

Table 5: Landscape Irrigation

Irrigation of	Primary and Secondary Ponds	Oxidation Ponds with 40 day maturation pond	Primary, Secondary & Tertiary Treatment, not to General Standard	Primary, Secondary & Tertiary Treatment, to General Standard	Primary, Secondary & Tertiary Treatment*, to Special Standard
1. Lawns at swimming pools, nursery schools, children's' playgrounds	Not permissible	Not permissible	Not permissible	Not permissible	- Any type of irrigation permissible; - No public allowed during irrigation, only allowed after effective draining/drying.
2. School grounds and public parks (children's' playground excluded, see 1).	Not permissible	- Only flood or drip, no spray irrigation permissible; - No over-irrigation and no pool forming allowed; - No public allowed during irrigation, only allowed after effective draining /drying.	- Only flood or drip, no spray irrigation permissible; - No over-irrigation and no pool forming allowed; - No public allowed during irrigation, only allowed after effective draining/drying.	- Any type of irrigation permissible; - No public allowed during irrigation, only allowed after effective draining/drying.	- Any type of irrigation permissible; - No public allowed during irrigation, only allowed after effective draining/ drying.
3. Parks - only for beautifying flowerbeds, traffic islands etc. (not recreation areas)	Not permissible	- Only flood or drip, no spray irrigation permissible; - No public allowed during irrigation.	- Only flood or drip, no spray irrigation permissible; - No public allowed during irrigation.	- Any type of irrigation permissible; - No public allowed during irrigation.	Any type of irrigation permissible.
4. Sports fields where limited contact is made with the surface (golf course, cricket and hockey fields)	Not permissible	- Only flood or drip, no spray irrigation permissible; - No over-irrigation and no pool forming allowed; - No players or public during irrigation; - Players and public allowed only after effective draining and drying.	- Only flood or drip, no spray irrigation permissible; - No over-irrigation and no pool forming allowed; - No players or public during irrigation; - Players and public allowed only after effective draining and drying.	- Any type of irrigation permissible - No over-irrigation and no pool forming allowed; - No players or public during irrigation.	- Any type of irrigation permissible; - No players or public during irrigation.
5. Sport fields where regular contact is made with the surface (athletic tracks, rugby and soccer fields)	Not permissible	- Only flood or drip, no spray irrigation permissible; - No over-irrigation and no pool forming allowed; - No players or public during irrigation; - Players and public allowed only after effective draining and drying.	- Only flood or drip, no spray irrigation permissible; - No over-irrigation and no pool forming allowed; - No players or public during irrigation; - Players and public allowed only after effective draining and drying.	- Any type of irrigation permissible - No over-irrigation and no pool forming allowed; - No players or public during irrigation; - Players and public allowed only after effective draining and drying.	- Any type of irrigation permissible; - No players or public during irrigation; - Players and public allowed only after effective draining and drying.

* Sand and Granular Activated Carbon Filtration and Disinfection must form part of the Tertiary Treatment steps.

From the *Tables* above (*Column 4*), wastewater treated to general standards may be used for various purposes as long as:

- The public is kept away during irrigation;
- Over irrigation and puddle or pool forming is avoided;
- Players or training is only allowed once the sports field is effectively drained and dried;
- Flood or drip irrigation is used provided that fruits are not directly exposed to spray;
- Effective drying of the ground is allowed before harvesting;
- Fallen fruit is not collected for consumption;

6.2. PRECAUTIONS FOR WASTEWATER REUSE

The Code of Practice (*Department of Water Affairs and Forestry, 2011*) lists the following aspects which need to be considered when installing and using wastewater reuse systems:

- Evidence shall be obtained that the type of soil, the size of the surface as well as the type of crop concerned are suitable for irrigation with the proposed quantity and quality of effluent to be reused;
- In order to prevent accidental cross-coupling of pipes, piping used for effluent shall be distinctly different from piping used for drinking water in respect of colour, construction and type of material. As a suitable color for piping to identify wastewater (for reuse), a purple color such as “jacaranda” should be used;

- Taps, valves and sprayers of the irrigation system shall be designed so that accidental drinking or washing with effluent water is prevented. Only authorized personnel shall be able to operate them;
- Clear and legible notices shall be provided at every water point where persons could possibly drink reclaimed effluent, indicating that it is potentially dangerous to drink the water;
- Wherever the expression “after effective draining and drying” is used in this guideline, the activity concerned shall only be performed once the irrigated area no longer contains evident effluent drops or pools;
- All possible precautions shall be taken to ensure that excessive irrigation is avoided and the irrigation area is protected against storm water runoff with suitable screening walls and contours to avoid contamination of surface or underground water with irrigation water, especially when the latter does not comply with the general standard;
- Spray irrigation shall only be permitted in cases where spray cannot be blown over to adjoining areas for which such irrigation is prohibited. The distance of an adjoining area and its use, as well as the quality of the effluent and prevailing winds shall be considered before spray irrigation is permitted;
- Necessary precautionary measures shall be taken to ensure that effluent is not used for drinking water or domestic purposes (*Department of Water Affairs and Forestry, 2011*).

7. OPERATION AND MAINTENANCE

Although the trickling filter technology as proposed for Oshakati is simple to operate, requires no seasonal adjustments and needs minimal maintenance, it is recommended that two semi-skilled persons are employed to oversee proper operation at the site and to do all necessary routine service and maintenance functions. Theoretically, only one person would suffice, but for health and safety reasons, a minimum of two people must be present at any industrial site. The project will result in at least 120 temporary jobs created during construction and 85 permanent jobs during agricultural processes (*Aquarius Consult CC, 2020*).

8. ENVIRONMENTAL, SAFETY AND HEALTH ASPECTS

The following aspects are especially important for the environmental analysis:

- Quantities and nature of chemicals used at the water treatment works. Emergency preparedness plans, safety equipment and emergency clean-up procedures need to be in place in case of a spillage. Chlorine gas that is used for disinfection is a particular concern, as this is a highly toxic gas and can have severe health and environmental impacts if leakages occur. The chlorination equipment including the chlorine cylinders will be contained within a separate building, away from any other chemicals. All relevant safety notices and safety equipment will be available at this building (*Aquarius Consult CC, 2020*).
- Waste material disposal. All waste produced by the plant, including waste sludge from the process, domestic waste and sewage needs to be disposed of or treated

in a suitable manner. The most suitable disposal or reuse of sludge should be considered. Recommended options include the use of dried sludge for gardening, local farmers or residents for soil fertilisation. Other disposal options include land application or disposal at land fill sites (*Aquarius Consult CC, 2020*).

- Safety. All open water structures that are on ground level will be fitted with hand railing to prevent the possibility of operators falling into these structures, especially during night shifts when visibility is poor (*Aquarius Consult CC, 2020*).
- Construction. The construction process for the sewage treatment plant will take the best part of 2 – 3 years. During this time, care must be taken to ensure minimal impact on the environment and to ensure that all construction works comply with the relevant Acts regarding health and safety (*Aquarius Consult CC, 2020*).

See Appendix for full details of the Design Report as presented by the engineers, Aquarius Consult CC.

9. BULK SERVICES AND INFRASTRUCTURE

A professional engineering firm (*Aquarius Consult CC*) was appointed by the proponent to design and supervise the installation of the treatment plant. All service designs will meet the requirements of the town council. The infrastructure will eventually be handed back to the town council to be managed and maintained by them. From the information obtained, the following bulk services are proposed:

9.1. ROADS AND ACCESS

The project site will be accessed through existing roads leading from the town. No new roads have to be constructed.

9.2. WATER SUPPLY

The project site will obtain water from the water reticulation system in the town. Water should be used sparingly in the construction and operational phase.

9.3. ELECTRICITY SUPPLY

The project site will obtain electricity from NORED's electrical reticulation system for Oshakati Town. The proponent will also install a silent backup generator to provide electricity in case of power failures on the local network.

9.4. SOLID WASTE DISPOSAL

The solid waste generated on the site will be collected by the proponent and be disposed of at an approved landfill site. Hazardous Waste which might be generated on the site will be dealt with in accordance with the required procedures for hazardous waste.

9.5. STORMWATER AND DRAINAGE MANAGEMENT

The design of the treatment plant will include provision for storm water infrastructure to accommodate storm water received from adjacent areas through natural surface drainage. Appropriate storm water infrastructure will be constructed to prevent any damage to the site or adjacent areas.

9.6. WASTEWATER/SEWER

Only household sewer will be generated on site from the toilet facilities for the staff and clients. This sewer will be connected to the sewerage system of the town.

10. TERMS OF REFERENCE

The proponent intends to construct and operate the sewerage treatment plant in Oshakati. To be able to implement the project an Environmental Impact Assessment and Environmental Clearance is required. For this environmental impact exercise, Green Earth Environmental Consultants followed the terms of reference as stipulated under the Environmental Management Act.

The aim of the environmental impact assessment was:

- To comply with Namibia's Environmental Management Act (2007) and its regulations (2012);
- To ascertain existing environmental conditions on the sites and to determine its environmental sensitivity;
- To inform I&APs and relevant authorities of the details of the proposed development and to provide them with an opportunity to raise issues and concerns;
- To assess the significance of issues and concerns raised;
- To compile a report detailing all identified issues and possible impacts, stipulating the way forward and identify specialist investigations required;
- To outline management guidelines in an Environmental Management Plan (EMP) to minimize and/or mitigate potentially negative impacts.

The tasks that were undertaken for the Environmental Impact Assessment included the evaluation of the following: climate, water (hydrology), vegetation, geology, soils, social, cultural heritage, groundwater, sedimentation, erosion, biodiversity, sense of place, socio-economic environment, health, safety and traffic.

The EIA and EMP from the assessment will be submitted to the Environmental Commissioner for consideration. Environmental Clearance will only be obtained (from the DEA) once the EIA and EMP has been examined and approved for the listed activity.

The public consultation process as per the guidelines of the Act has been followed. The methods that were used to assess the environmental issues and alternatives included the collection of data on the project site and area from the proponent, from the town council and identified stakeholders. Consequences of impacts were determined in five

categories: nature of project, expected duration of impact, geographical extent of the event, probability of occurring and the expected intensity.

All other permits, licenses or certificates that are further on required for the operation of the proposed project still needs to be applied for by the proponent.

11. APPROACH TO THE STUDY

The assessment included the following activities:

a) Desktop sensitivity assessment

Literature, legislation and guidance documents related to the natural environment and land use activities available on the site and area in general were reviewed to determine potential environmental issues and concerns.

b) Site assessment (site visit)

The project site and the immediate neighbourhood and surrounding area were assessed through several site visits by Green Earth Environmental Consultants. The environmental parameters were investigated on site to enable further understanding of the potential impacts on site.

c) Public participation

Notices were placed in local newspapers (New Era of 20 and 26 March 2020 and The Namibian of 19 and 26 March 2020) on two consecutive weeks inviting the public to participate and provide comments on the proposed project. Copies of the newspaper notices are attached to this report. The last date for comments and/or registration was 9 April 2020.

d) Scoping

Based on the desk top study, site visits and public participation, the environmental impacts were determined in five categories: nature of project, expected duration of impact, geographical extent of the event, probability of occurring and the expected intensity. The findings of the scoping have been incorporated in the environmental impact assessment report below.

e) Environmental Management Plan (EMP)

To minimize the impact on the environment, mitigation measures have been identified to be implemented during planning, construction and implementation. These measures have been included in the Environmental Management Plan to guide the planning, construction and operation of the development which can also be used by the relevant authorities to ensure that the project is planned, developed and operated with the minimum impact on the environment.

12. ASSUMPTIONS AND LIMITATIONS

It is assumed that the information provided by Aquarius Consult CC and Oshakati Town Council (the proponent) is accurate. No alternative sites were evaluated as the proposed site for the project that was chosen is already the property of Oshakati Town Council. The 'No-Go option' (meaning to do nothing) was also considered but decided against as the project will lead to the more efficient use of water and the site with no significant additional negative impacts on the prevailing environment. The site was visited several times and any happenings after this are not mentioned in this report. (The assessment was based on the prevailing environmental conditions and not on future happenings on the site.) However, it is assumed that there will be no significant changes to the proposed project, and the environment will not adversely be affected between the compilation of the assessment and the implementation of the proposed activities.

13. ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programs and policies deemed to have adverse impacts on the environment require an EIA according to Namibian legislation. The administrative, legal and policy requirements to be considered during the Environmental Assessment for the proposed construction and operation of the sewerage treatment plant in Oshakati are the following:

- The Namibian Constitution
- The Environmental Management Act (No. 7 of 2007)
- Other Laws, Acts, Regulations and Policies

THE NAMIBIAN CONSTITUTION

Article 95 of Namibia's constitution provides that:

“The State shall actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at the following:

Management of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future; in particular, the Government shall provide measures against the dumping or recycling of foreign nuclear and toxic waste on Namibian territory.” This article recommends that a relatively high level of environmental protection is called for in respect of pollution control and waste management.

Article 144 of the Namibian Constitution deals with environmental law and it states:

“Unless otherwise provided by this Constitution or Act of Parliament, the general rules of public international agreements binding upon Namibia under this Constitution shall form part of the law of Namibia”. This article incorporates international law, if it conforms to the Constitution, automatically as “law of the land”. These include international agreements, conventions, protocols, covenants, charters, statutes, acts, declarations,

concordats, exchanges of notes, agreed minutes, memoranda of understanding, and agreements (Ruppel & Ruppel-Schlichting, 2013). It is therefore important that the international agreements and conventions are considered (see section 4.9).

In considering these environmental rights the proponent, Oshakati Town Council, should consider the following in devising an action plan in response to these articles:

- Implement a “zero-harm” policy at Oshakati Town Council, which would guide decisions.
- Ensure that no management practice or decision result in the degradation of future natural resources.
- Take a decision on how this part of the Constitution will be implemented as part of Oshakati Town Council's ‘Code of Conduct’ and the Environmental Control System for employees, subcontractors and tenants.

ENVIRONMENTAL MANAGEMENT ACT (NO. 7 OF 2007)

The Environmental Impact Assessment Regulations (GN 30 in GG 4878 of 6 February 2012) of the Environmental Management Act (No. 7 of 2007) that came into effect in 2012 requires/recommends that an Environmental Impact Assessment and an Environmental Management Plan (EMP) be conducted for the following listed activities to obtain an Environmental Clearance Certificate:

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES

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

2.2 Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976.

2.3 The import, processing, use and recycling, temporary storage, transit or export of waste.

WATER RESOURCE DEVELOPMENTS

8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems.

HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

9.1 The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.

9.2 Any process or activity which requires a permit, license or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, license or authorisation or which requires a new permit, license or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

Cumulative impacts associated with the development must be included as well as public consultation. The Act further requires all major industries and developers to prepare waste management plans and present these to the local authorities for approval.

The Act, Regulations, Procedures and Guidelines have integrated the following sustainability principles. They need to be given due consideration, particularly to achieve proper waste management and pollution control.

Cradle to Grave Responsibility

This principle provides that those who handle or manufacture potentially harmful products must be liable for their safe production, use and disposal and that those who initiate potentially polluting activities must be liable for their commissioning, operation and decommissioning.

Precautionary Principle

If there is any doubt about the effects of a potentially polluting activity, a cautious approach must be adopted.

The Polluter Pays Principle

A person who generates waste or causes pollution must, in theory, pay the full costs of its treatment or of the harm, which it causes to the environment.

Public Participation and Access to Information

In the context of environmental management, citizens must have access to information and the right to participate in decisions making.

CONCLUSION AND IMPACT

The proposed construction and operation of the sewerage treatment plant in Oshakati has been assessed in terms of the Environmental Management Act and the Regulations (No. 7 of 2007). From the assessment, it can be concluded that the project is in line with what is happening in the immediate surroundings and that the negative impacts deriving from the project can be sufficiently mitigated by following the Environmental Management Plan.

OTHER LAWS, ACTS, REGULATIONS AND POLICIES

The laws, acts, regulations and policies listed below have also been considered during the Environmental Assessment:

Table 6: Laws, Acts, Regulations and Policies

Laws, Acts, Regulations & Policies consulted:	
Water Resources Management Act	The Water Resources Management Act (No 11 of 2013) stipulates conditions that ensure effluent that is produced to be of a certain standard. There should also be controls on the disposal of sewage, the purification of effluent, measures should be taken to ensure the prevention of surface and groundwater pollution and water resources should be used in a sustainable manner.
Nature Conservation Ordinance	The Nature Conservation Ordinance (No 4 of 1975) covers game parks and nature reserves, the hunting and protection of wild animals, problem animals, fish and indigenous plant species. The Ministry of Environment and Tourism (MET) administer it and provides for the establishment of the Nature Conservation Board.
Forestry Act	The Forestry Act (No 12 of 2001) specifies that there be a general protection of the receiving and surrounding environment. The protection of natural vegetation is of great importance, the Forestry Act especially stipulates that no living tree, bush, shrub or indigenous plants within 100m from any river, stream or watercourse, may be removed without the necessary license.
Soil Conservation Act	The Soil Conservation Act (No 76 of 1969) stipulates that the combating and preventing of soil erosion should take place; the soil should also be conserved, protected and improved, vegetation and water sources and resources should also be preserved and maintained. When proper mitigation measures are followed along the construction and implementation phase of the project, the natural characteristics of the property is expected to have a moderate to low impact on the environment.
Labour Act	The Labour Act (No 11 of 2007) states regulations to ensure the health, safety and welfare of employees and to protect employees from unfair labour practices. The Act also states that the employees should be provided with a working environment that is without risk to their health.
Local Authorities Act (No. 23 of 1992)	The purpose of the Local Authorities Act is to provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters.

CONCLUSION AND IMPACT

Green Earth Environmental Consultants believe the above administrative, legal and policy requirements which specifically guide and govern the project will be followed and complied with in the assessment of the activity. A flowchart indicating the entire EIA process is shown in the *Figure* below.

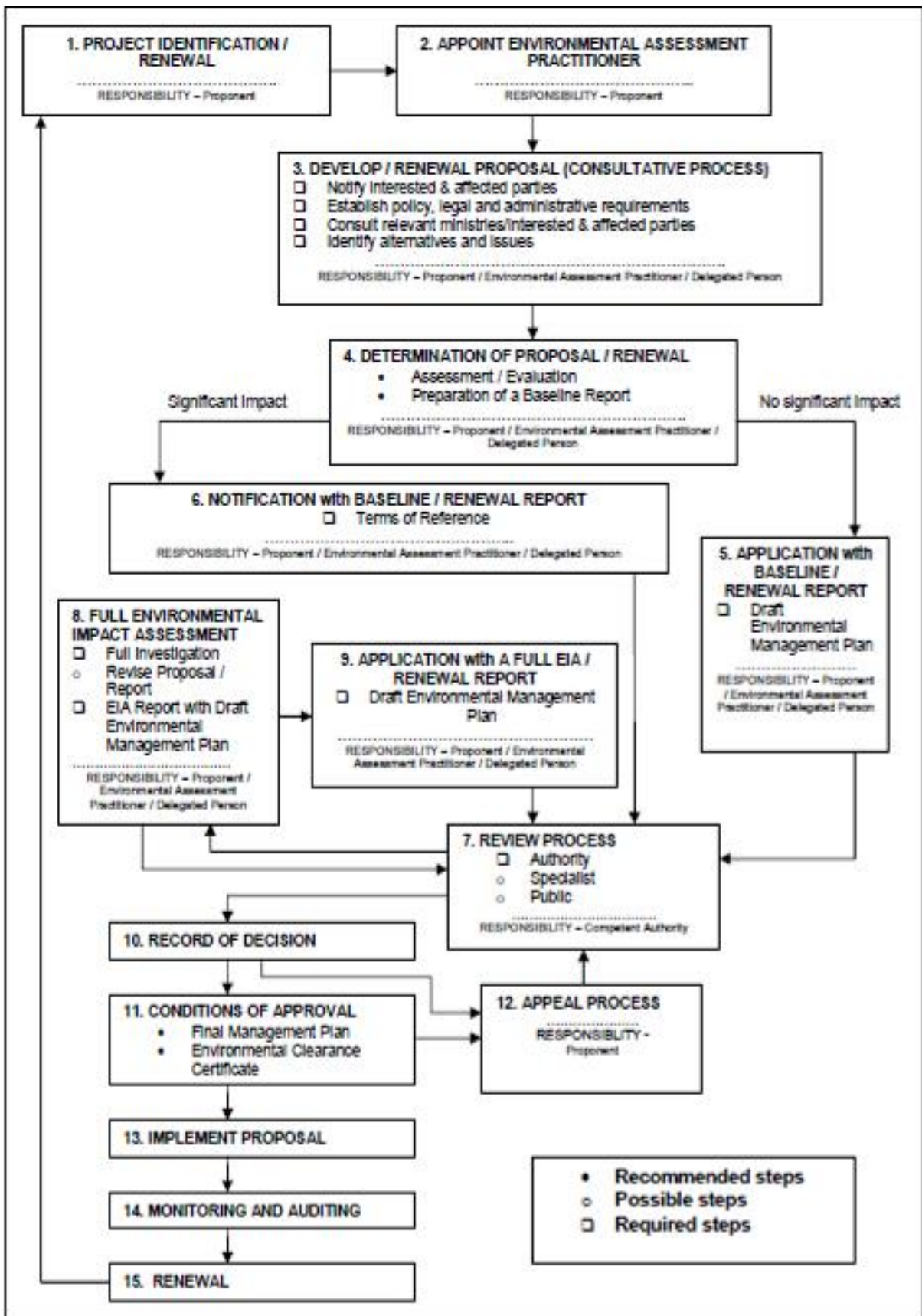


Figure 24: Flowchart of the Impact Process

14. AFFECTED RECEIVING ENVIRONMENT

14.1. CLIMATE

The area belongs to the tropical climate zone and receives high rainfalls during the rainy season (December to March). High humidity is most often experienced in this region. The project area is located in some of the wettest regions in Namibia with its high annual rainfall of ± 700 mm. Rainfall however can also be variable and drought years are common. The hottest months are September, October and November with temperatures of 30°C . The prevailing wind in the area is southeast and eastern winds. The prevailing wind direction is expected to prevent the spread of any nuisance namely noise and smell. Strong winds during certain times of the year may aggravate dust impacts during the construction phase.

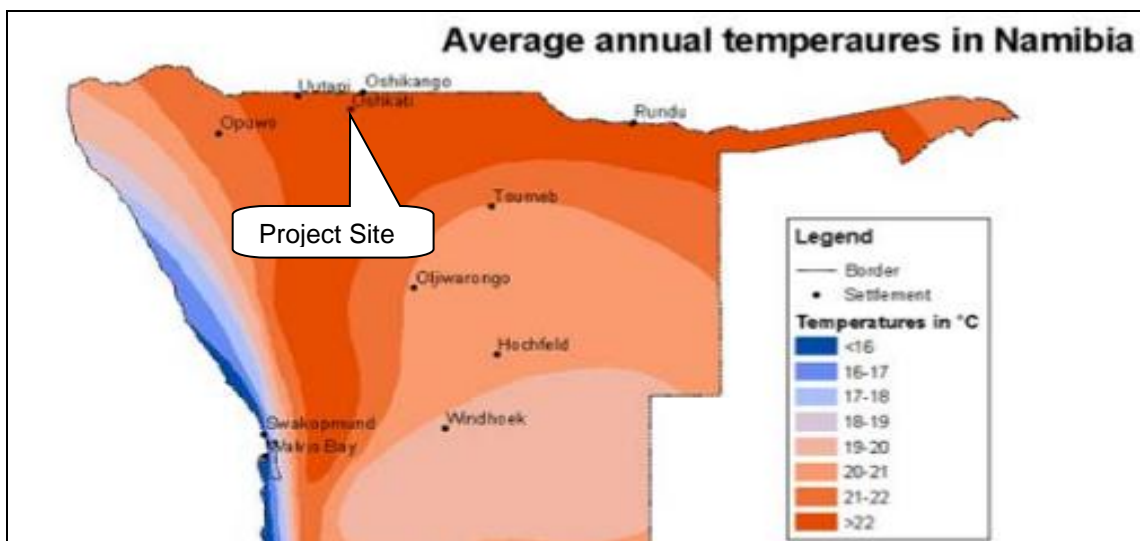


Figure 25: Average annual temperatures (Atlas of Namibia Project, 2002)

14.2. BIODIVERSITY AND VEGETATION

The area forms part of the Tree and Shrub Savannah Biome (specifically the Highland Savannah). The project site is showing evidence of human interference where vegetation was cleared on some areas of the site.

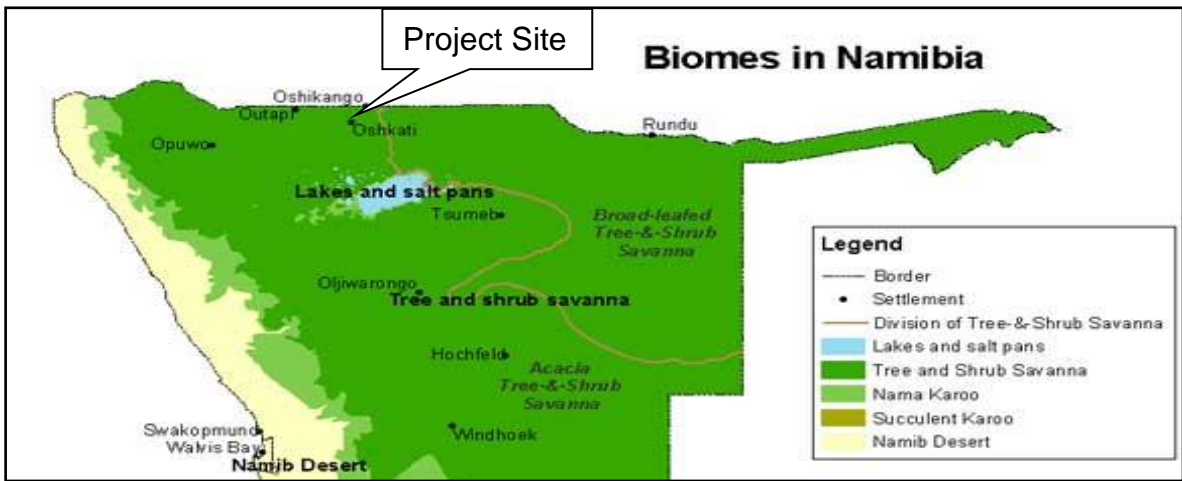


Figure 26: Biomes in Namibia (Atlas of Namibia, 2002)

See below photos of the project site's surroundings where vegetation is visible. The project site does not have vegetation of importance however where possible vegetation should be retained.

The natural characteristics of the project site namely the vegetation clearance and the destruction of habitats is expected to further on have a low impact on the environment before the mitigation measures are taken and after the mitigation measures are taken, the impact will be very low.



Figure 27: Vegetation close to project site

14.3. HYDROLOGICAL COMPONENT

The area where the project site is located has generally a low to average groundwater potential from a permeability and yield perspective (Grunert, 2003). However, groundwater is one of the important water sources and the protection thereof should be regarded as a high priority. The main uses of water in the area are for business, industrial and domestic purposes and agriculture and farming activities.

Although most of the surface water evaporates, runoff can be expected due to the impermeability of soils (Grunert, 2003). The storage and accumulation of substances, which might pollute river courses or basins because of surface water drainage, should be prevented. No potential pollutants should be channeled or directed towards any rivers.

From the hydrological assessment perspective, no major geological structures that will enhance groundwater recharge or flow are evident on the proposed project site and the development that will take place will not pose any long-term negative effects on the hydrological cycle (Grunert, 2003).

14.4. SOCIAL-ECONOMIC COMPONENT

The proposed project will have a positive impact on the socio-economic environment because additional employment will be created during construction and after construction. Most land uses around the area is characterised by open land, business and industrial activities and therefore the treatment plant will not have a negative impact on the environment. The infrastructure and services will be built with little disturbance to the environment and towards the individuals that are residing/working in the area. People residing in Oshakati will benefit from employment created during planning, construction and operation of the project. The construction impacts will be little if mitigated by the Environmental Management Plan. The town of Oshakati will also benefit from skills and technology transfer during construction and operations. The spending power of locals is likely to increase because of employment during the construction and operational phase.

14.5. CULTURAL HERITAGE

The proposed project site is not known to have any historical significance prior to or after Independence in 1990. The specific area does not have any National Monuments and the specific site has no record of any cultural or historical importance or on-site resemblance of any nature. No graveyard, artifacts or related article was found on the site.

14.6. SENSE OF PLACE

The project site is located on the outskirts of the town of Oshakati. The project site is however situated in reaching distance to bulk infrastructural networks consisting of roads and electricity. The proposed activities will not have a large/negative impact on the sense of place in the area. An untidy or badly managed site can detract from the

ecological well-being and individuality of the area. Unnecessary disturbance to the surroundings could be caused by poorly planned or poorly managed operational activities. The project site should be kept neat and clean where possible. Vegetation should not be removed or harmed if not necessary since it covers topsoil which prevents erosion. Noise and dust should be limited in the construction phase because of the neighbouring activities.

14.7. HEALTH

The safety, security and health of the labour force, employees and neighbours are of great importance, workers should be orientated with the maintenance of safety and health procedures and they should be provided with PPE (Proper Protective Equipment). A health and safety officer should be employed to manage, coordinate and monitor risk and hazard and report all health and safety related issues in the workplace. The introduction of external workers into the area is sometimes accompanied with criminal activities posing security risks for neighbours. However, the proponent will take certain measures to prevent any activity of this sort. The welfare and quality of life of the neighbours and workforce needs to be considered for the project to be a success on its environmental performance. Conversely, the process should not affect the overall health of persons related to the project including the neighbours.

15. GENERAL IMPACTS OF PROPOSED PROJECT

The following assessment methodology will be used to examine each impact identified, see *Table* below:

Table 7: Impact Evaluation Criterion (DEAT 2006)

Criteria	Rating (Severity)	
Impact Type	+VE	Positive
	O	No Impact
	-VE	Negative
Significance of impact being either	L	Low (Little or no impact)
	M	Medium (Manageable impacts)
	H	High (Adverse impact)

Probability:	Duration:
5 – Definite/don't know	5 - Permanent
4 – Highly probable	4 – Long-term (impact ceases)
3 – Medium probability	3 – Medium term (5 – 15 years)
2 – Low probability	2 – Short-term (0 – 5 years)

1 – Improbable	1 - Immediate
0 - None	
Scale:	Magnitude:
5 – International	10 – Very high/don't know
4 – National	8 - High
3 – Regional	6 - Moderate
2 – Local	4 - Low
1 – Site only	2 - Minor
	0 - None

15.1. IMPACTS DURING THE CONSTRUCTION ACTIVITY

15.1.1. WATER USAGE

Water is a scarce resource in Namibia and therefore water usage should be monitored and limited in order to prevent unnecessary wastage. The proposed project will make use of water in its construction phase and limited water will be used in the operational phase however it is not anticipated that it will entirely be water-based operations.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Ecology	-VE	2	2	6	4	M	M

15.1.2. ECOLOGICAL IMPACTS

The proposed project will be constructed in a semi disturbed natural area which has some vegetation cover. No wildlife has been observed in the area except for occasional smaller animals. Thus, impacts on fauna and flora are expected to be minimal. Disturbance of areas outside the designated working zone is not allowed.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Ecology	-VE	2	4	6	4	M	M

15.1.3. DUST POLLUTION AND AIR QUALITY

Dust generated during the transportation of building materials; construction and installation of bulk services, and problems thereof are expected to be low and site specific due to the sandy nature of the top soils. Dust is expected to be worse during the winter months when strong winds occur. Release of various particulates from the site during the construction phase and exhaust fumes from vehicles and machinery related to the construction of bulk services are also expected to take place. Dust is regarded as a nuisance as it reduces visibility, affects the human health and retards plant growth.

It is recommended that regular dust suppression be included in the construction activities, when dust becomes an issue. No unnecessary revving of engines or operation of vehicles is allowed. In general, the servicing of these extensions is envisaged to have minimal impacts on the surrounding air quality.

Impact evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Dust & Air Quality	-VE	2	2	6	3	M	M

15.1.4. NOISE IMPACT

An increase of ambient noise levels at the proposed site is expected due to the construction activities. Noise pollution due to heavy-duty equipment and machinery will be generated. It is not expected that the noise generated during construction will impact any third parties due to the distance of the neighbouring activities. Ensure all mufflers on vehicles are in full operational order; and any audio equipment should not be played at levels considered intrusive by others. The construction staff should be equipped with ear protection equipment.

Impact evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Noise	-VE	2	2	6	3	M	M

15.1.5. HEALTH, SAFETY AND SECURITY

The safety, security and health of the labour force, employees and general public are of great importance. Workers should be orientated with the maintenance of safety and health procedures and they should be provided with PPE (Proper Protective Equipment).

A health and safety officer should be employed to manage, coordinate and monitor risk and hazard and report all health and safety related issues in the workplace.

Safety issues could arise from the earthmoving equipment and tools that will be used on site during the construction phase. This increases the possibility of injuries and the contractor must ensure that all staff members are made aware of the potential risks of injuries on site. The presence of equipment lying around on site may also encourage criminal activities (theft).

Sensitize operators of earthmoving equipment and tools to switch off engines of vehicles or machinery not being used. The contractor is advised to ensure that the team is equipped with first aid kits and that they are available on site, at all times. Workers should be equipped with adequate personal protective gear and properly trained in first aid and safety awareness.

No open flames, smoking or any potential sources of ignition should be allowed at the project location. Signs such as 'NO SMOKING' must be prominently displayed in parts where inflammable materials are stored on the premises. Proper barricading and/or fencing around the site especially trenches for pipes and drains should be erected to avoid entrance of animals and/or unauthorized persons. Safety regulatory signs should be placed at strategic locations to ensure awareness. Adequate lighting within and around the construction locations should be erected, when visibility becomes an issue.

Impact evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Safety & Security	-VE	2	2	6	3	M	M

15.1.6. CONTAMINATION OF GROUNDWATER

Care must be taken to avoid contamination of soil and groundwater. Use drip trays when doing maintenance on machinery. Maintenance should be done on dedicated areas with linings or concrete flooring. The risk can be lowered further through proper training of staff. All spills must be cleaned up immediately. Excavations should be backfilled and sealed with appropriate material, if it is not to be used further.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Groundwater	-VE	3	2	6	3	M	M

15.1.7. SEDIMENTATION AND EROSION

The proposed construction activities will increase the number of impermeable surfaces and therefore decrease the amount of groundwater infiltration. Thus, the amount of storm water during rainfall events could increase. If proper storm water management measures are not implemented this will impact negatively on the water courses close to the site.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Erosion and Sedimentation	-VE	2	2	6	3	M	M

15.1.8. GENERATION OF WASTE

This can be in a form of rubble, cement bags, pipe and electrical wire cuttings. The waste should be gathered and stored in enclosed containers to prevent it from being blown away by the wind. Contaminated soil due to oil leakages, lubricants and grease from the construction equipment and machinery may also be generated during the construction phase.

The oil leakages, lubricants and grease must be addressed. Contaminated soil must be removed and disposed of at a hazardous waste landfill. The contractor must provide containers on-site, to store any hazardous waste produced. Regular inspection and housekeeping procedure monitoring should be maintained by the contractor.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Waste	-VE	2	2	6	3	M	M

15.1.9. CONTAMINATION OF SURFACE WATER

Contamination of surface water might occur through oil leakages, lubricants and grease from the equipment and machinery during the installation, construction and maintenance of bulk services at the site. Oil spills may form a film on water surfaces in the nearby low-lying areas causing physical damage to water-borne organisms.

Machinery should not be serviced at the construction site to avoid spills. All spills should be cleaned up as soon as possible. Hydrocarbon contaminated clothing or equipment should not be washed within 25m of any surface water body.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Surface water	-VE	2	4	6	2	M	M

15.1.10. TRAFFIC AND ROAD SAFETY

All drivers of delivery vehicles and construction machinery should have the necessary driver's licenses and documents to operate these machines. Speed limit warning signs must be erected to minimise accidents. Heavy-duty vehicles and machinery must be tagged with reflective signs or tapes to maximize visibility and avoid accidents.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Traffic	-VE	2	2	6	4	M	M

15.1.11. FIRES AND EXPLOSIONS

There should be sufficient water available for firefighting purposes. Ensure that all fire-fighting devices are in good working order and they are serviced. All personnel have to be trained about responsible fire protection measures and good housekeeping such as the removal of flammable materials on site. Regular inspections should be carried out to inspect and test firefighting equipment by the contractor.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Fires and Explosions	-VE	2	2	6	2	M	M

15.1.12. SENSE OF PLACE

The placement, design and construction of the proposed project should be as such as to have the least possible impact on the natural environment. The proposed activities will not have a large/negative impact on the sense of place in the area since it will be

constructed in a manner that will not affect the neighbouring erven/land and it will not be visually unpleasing.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Nuisance Pollution	-VE	2	2	6	3	M	M

15.2. IMPACTS DURING THE OPERATIONAL PHASE

15.2.1. ECOLOGICAL IMPACTS

Minimise the area of disturbance by restricting movement to the designated working areas during maintenance and drives.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Ecology Impacts	-VE	1	4	6	4	M	M

15.2.2. DUST POLLUTION AND AIR QUALITY

Vehicles transporting goods and staff will contribute to the release of hydrocarbon vapours, carbon monoxide and sulphur oxides into the air. Possible release of sewer odour, due to sewer system failure of maintenance might also occur. All maintenance of bulk services and infrastructure at the project site has to be designed to enable environmental protection.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Dust & Air Quality	-VE	2	2	6	3	M	M

15.2.3. CONTAMINATION OF GROUNDWATER

Oil and chemical spillages may have a health impact on groundwater users. Potential impact on the natural environment from possible polluted groundwater also exists. Spillages must be prevented to avoid groundwater contamination.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Groundwater contamination	-VE	2	3	6	3	M	M

15.2.4. GENERATION OF WASTE

Household waste from the activities and from the staff working at the site will be generated. This waste will be collected, sorted to be recycled and stored on site for transportation and disposal at an approved landfill site.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Waste Generation	-VE	1	2	6	3	M	M

15.2.5. FIRES AND EXPLOSIONS

Food will be prepared on gas fired stoves. There should be sufficient water available for firefighting purposes. Ensure that all fire-fighting devices are in good working order and they are serviced. All personnel have to be trained about responsible fire protection measures and good housekeeping such as the removal of flammable materials on site. Regular inspections should be carried out to inspect and test firefighting equipment by the contractor.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Fires and Explosions	-VE	2	2	6	2	M	M

15.2.6. HEALTH, SAFETY AND SECURITY

The safety, security and health of the labour force, employees and neighbours are of great importance, workers should be orientated with the maintenance of safety and health procedures and they should be provided with PPE (Proper Protective Equipment). Workers should be warned not to approach or chase any wild animals occurring on the site. No open flames, smoking or any potential sources of ignition should be allowed at

the project location. Signs such as ‘NO SMOKING’ must be prominently displayed in parts where inflammable materials are stored on the premises.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Safety & Security	-VE	1	2	6	3	M	M

15.3. CUMMULATIVE IMPACTS

These are impacts on the environment, which results from the incremental impacts of the construction and operation of the proposed project when added to other past, present, and reasonably foreseeable future actions regardless of what person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period. In relation to an activity, it means the impact of an activity that in it may not become significant when added to the existing and potential impacts resulting from similar or diverse activities or undertakings in the area.

Possible cumulative impacts associated with the project includes vegetation and animal disturbance, uncontrolled traffic and destruction of the natural environment. These impacts could become significant especially if it is not properly supervised and controlled. This could collectively impact on the environmental conditions in the area. Cumulative impacts could occur in both the operational and the construction phase.

Impact Evaluation

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Cumulative Impacts	-VE	3	4	6	3	M	M

16. INCOMPLETE OR UNAVAILABLE INFORMATION

The exact number of people that will be employed will depend on the type and scope of the activities and the number of individuals needed at each phase of the project. The Environmental Management Plan (EMP) will therefore include all the possible negative effects of the project in general that could be operated on the site in order to prevent any pollution or harmful impacts whether to neighbours or the environment.

17. ENVIRONMENTAL IMPACT ASSESSMENT EVALUATION

The Environmental Impact Assessment sets out potential positive and negative environmental impacts associated with the proposed project site.

All concerns and potential impacts raised during the public participation process and consultative meetings were evaluated. Predictions were made with respect to their magnitude and an assessment of their significance was made per the following criteria:

The Nature of the activity: The proposed construction and operation of the sewerage treatment plant in Oshakati is planned. The possible impacts that may occur are that water will be used in the construction and operational phases, waste water will be produced that must be handled, land will be used for the proposed activities, a sewage system will be constructed and operated and general construction activities will take place, namely the building of infrastructure.

The Probability of the impacts to occur: The probability of the above-named impacts to occur and have a negative or harmful impact on the environment and the community is small since the Environmental Management Plan will also guide these activities. Water will still be used, and wastewater produced, however guidelines will be set that will ensure the impact is minimum.

The Extent of area that the project will affect: The specific project will most likely only have a small impact on the proposed project site itself and not on the surrounding or neighbouring erven/land except for noise, traffic, electricity and dust and there may be a visual impact because of the size of the proposed project. Therefore, the extent that the project will have a negative impact on is not extensive and mostly site specific.

The Duration of the project: The duration of the project is uncertain because of the different land uses that will be included and because the project may be phased. Water will still be used, and waste produced on a continuous basis and the structures that were constructed will remain and may be visually unpleasing to surroundings.

The Intensity of the project: The intensity of the project is mostly limited to the site however for the above-named infrastrucutre/processes where the intensity of the project will be felt outside the borders of the project site.

18. CONCLUSION

In line with the Environmental Management Act (No 7 of 2007), *Green Earth Environmental Consultants* have been appointed to conduct an Environmental Impact Assessment for the proposed “listed activities” that will take place namely the proposed construction and operation of the sewerage treatment plant in Oshakati:

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES

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

2.2 Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976.

2.3 The import, processing, use and recycling, temporary storage, transit or export of waste.

WATER RESOURCE DEVELOPMENTS

8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems.

HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

9.1 The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.

9.2 Any process or activity which requires a permit, license or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, license or authorisation or which requires a new permit, license or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

The construction and operation of the sewerage treatment plant in Oshakati will not have a negative effect on the environment. It is believed that the proposed project will address the issues regarding the sewerage overflow in Oshakati and largely benefit the social and economic needs of the area.

Negative impacts that can be associated with construction on the site are most likely to include production of solid and liquid waste, dust emissions, atmospheric emissions, noise pollution, movement of soils, wastewater generation and the disruption of groundwater from the foundation or other structures. The negative environmental impacts that may be visible in the operational phase of the project include: increases in solid waste generation for example food and plastics, etc., increased stress on municipal waste disposal facilities, increase in water consumption and waste water generation, can result in an increase in traffic on the nearby roads and there can be an impact on the occupational health and safety of workers.

After assessing all information available on this project, *Green Earth Environmental Consultants* believe the proposed construction and operation of the sewerage treatment plant in Oshakati will not have a large negative impact on the environment.

19. RECOMMENDATION

It is therefore recommended that the Ministry of Environment and Tourism through the Environmental Commissioner support and approve the Environmental Clearance for the proposed construction and operation of the sewerage treatment plant in Oshakati and for the following listed activities:

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES

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

2.2 Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976.

2.3 *The import, processing, use and recycling, temporary storage, transit or export of waste.*

WATER RESOURCE DEVELOPMENTS

8.6 *Construction of industrial and domestic wastewater treatment plants and related pipeline systems.*

HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

9.1 *The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.*

9.2 *Any process or activity which requires a permit, license or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, license or authorisation or which requires a new permit, license or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.*

LIST OF REFERENCES

Commencement of the Environmental Management Act, 2012. *Ministry of Environment and Tourism*. Windhoek. Namibia, pp. 3 – 22.

Constitution of the Republic of Namibia, 1990. National Legislative Bodies. Namibia, pp. 6 – 63.

Environmental Management Act, 2007. *Ministry of Environment and Tourism*. Windhoek. Namibia, pp. 4 - 32.

Forestry Act, 2001. *Office of the Prime Minister*. Windhoek. Namibia, pp. 9 – 31.

Local Authorities Act (Act No. 23 of 1992) <http://faolex.fao.org/docs/pdf/nam82645.pdf>
Accessed 24/10/2016

Mannheimer, C. & Curtis, B. 2009. *Le Roux and Muller's Guide to the Trees & Shrubs of Namibia*. Windhoek: Macmillan Education Namibia, pp. 249 – 439.

Namibia Statistic Agency. <http://nsa.org.na/> Accessed 24/10/2016

Namibian Environmental Assessment Policy, 1995. *Ministry of Environment and Tourism*. Windhoek. Namibia, pp. 3 – 7.

National Planning Commission (2012) http://www.npc.gov.na/?wpfb_dl=37 Accessed 24/10/2016

Nature Conservation Ordinance, 1975. Windhoek. Namibia, pp. 4 – 47.

Seifart, T. 2018/2019. *Oshakati Town Council Sewage treatment Situation: Assessment and Conceptual Design Report*. Windhoek. Namibia, pp. 5 – 32.

Soil Conservation Act, 1969. *Office of the Prime Minister*. Windhoek. Namibia, pp. 1 – 14.

Water Resource Management Act, 2004. *Office of the Prime Minister*. Windhoek. Namibia, pp. 6 – 67.

APPENDIX A: CURRICULUM VITAE OF CHARLIE DU TOIT

1. NAME : Charlie du Toit
2. DATE OF BIRTH : 29 October 1960
3. NATIONALITY : Namibian
4. EDUCATION AND PROFESSIONAL TRAINING:

Institution:	Boland Agricultural High School, Paarl, Republic of South Africa
Date :from (month / year) :	January 1974
To (month / year) :	December 1978
Diploma obtained:	Grade 12
Institution:	University of Stellenbosch, RSA
Date :from (month / year) :	1979
To (month / year) :	1982
Certificate obtained:	BSc Agric Hons (Chemistry, Agronomy and Soil Science)
Institution:	University of Stellenbosch, RSA
Date :from (month / year) :	1985
To (month / year) :	1987
Degree obtained:	Hons B (B + A) in Business Administration and Management

5. PROFESSIONAL EXPERIENCE (most recent experience first):

EXPERIENCE (SELECTED RECORDS)		
Name of Project	Date	Client
EIA Omaruru Trade and Industrial Estate which includes a service station on a portion of the Remainder of Portion B and Portion 57 of Omaruru Town and Townlands No. 85	2015	NDC
EIA Kwando North Gateway Resort in the Babatwa Park	2015	Mufiljo Investment CC
EIA Farm Wanderdunen No. 23 Rezoning to Industrial	2014	Private owners and developers
EIA Service Station on Portion 52 of Farm Koichas No. 89, Mariental	2014	Private owners and developers
ERF 1581 Rundu, Regional Head Office of Ministry of Agriculture, Water and Forestry. EIA for closure of public	2013	NDC/Ministry of Agriculture, Water and Forestry

open space and rezoning of erf		
EIA Erf 376, Outjo development of Tourist Market and SME Center EIA Omugongo Trade and Industrial Estate EIA of for Industrial development on portion 51 - 52, Dobra	2013	NDC/Ministry of Trade and Industry Private Developers
EIA for industrial development on Portion 428 of Farm Brakwater No. 48 EIA for rezoning of Portion 176 of Farm Brakwater 48 to industrial EIA for rezoning to industrial and to use Portion 87 of Farm Brakwater 48 for a slaughterhouse	2012	Private owners and developers
Environmental Management Plan Taranga Island Lodge EIA Industrial development and use Portion 35 of Farm Dobra No. 49	2011	Private owners
Layout Planning and Subdivision for residential development of Portion 33 of Farm Nubaumis No. 37 Layout planning and subdivision for a residential development on Portions 89 & 90 of Farm Brakwater Application for Goreangab Waterfront Development on Erf 3188, Goreangab under Special Projects Policy of City of Windhoek	2010	Private owners and developers
Feasibility, layout planning and subdivision Portion 75 of Okahandja Town and Townlands Layout Planning and Subdivision of Oshakati Town and Townlands No. 880 EIA Portion 24 of Farm Brakwater No. 48 Layout Planning and Subdivision of Portion 24 of Farm Brakwater No. 48	2009	NDC NDC Private Developer
Layout Planning and Subdivision – new Dairy Production Unit, Farm Purple Gold 511, Seëis	2008	Private Developer
Layout Planning and Subdivision Farm Arcadia No. 134, Seëis	2008	Private Developer
Assisting in the Layout Planning and Formalization of Sukulu Wildlife Development, Farm Augeigas	2007	Private Developers
Layout Planning and Subdivision of various Brakwater Portions:	2006 - 2008	Private Owners and Developers

<p>Portion Re/38, Farm Brakwater No.48 Portion 44, Farm Brakwater No.48 Portion 46, Farm Brakwater No.48 Portion 48, Farm Brakwater No.48 Portion 51, Farm Brakwater No.48 Portion 52, Farm Brakwater No.48 Portion 55, Farm Brakwater No.48 Portion 57, Farm Brakwater No.48 Portion 59, Farm Brakwater No.48 Portion 62, Farm Brakwater No.48 Portion 77, Farm Brakwater No.48 Portion 83, Farm Brakwater No.48 Portion 114, Farm Brakwater No.48</p>		
<p>Layout Planning and Subdivision of various Nubaumis Portions:</p> <p>Portion 20/59, Farm Nubaumis No. 37 Portion 21, Farm Nubaumis No. 37 Portion 30, Farm Nubaumis No. 37 Portion 45/63, Farm Nubaumis No. 37</p>	2005 -2008	Private Owners and Developers
<p>Layout Planning and Subdivision of various Dobra Portions:</p> <p>Portion 12, Farm Dobra No. 49 Portion 17, Farm Dobra No. 49 Portion 18, Farm Dobra No. 49</p>	2005 -2008	Private Owners and Developers
<p>General Manager Commercial and Marketing – Reporting to the MD -Key responsibilities:</p> <p>Marketing - to analyse market trends and to ensure that customer expectations were met; Procurement – To establish, maintain, develop and optimise sound supplier relationships; Inventory management – to optimise the stockholding of the Group through the implementation of systems to manage slow moving and excess stock, the availability of stock and the product range; Logistics – to manage the inbound supply chain;</p>	2003 - 2005	Pupkewitz Megabuild

<p>Co-ordination with the operational, finance and admin and the human resources functions.</p>		
<p>General Manager Trade – Reporting to the CEO - Key Responsibilities</p> <p>Determination of Product range and mix; The selection of suppliers/vendors and transporters; The pricing strategy; The growth of turnover and the retention and improvement of margins; Inventory management; The simplification of processes and tasks at branch level; The reduction of shrinkage; The evaluation of Agra business units on positioning and performances; Feasibility studies on new investments.</p>	<p>1995 - 2003</p>	<p>Agra Cooperative Limited</p>
<p>Chief Agricultural Consultant</p> <p>Agricultural Specialist acting as project leader on various projects undertaken by the NDC/FNDC on own initiative or on behalf of the governmental or private institutions. The own NDC operations managed by myself include the Eersbegin Date project, the Naute Irrigation project, the Shitemo project, the Musese project, the Vungu-Vungu dairy, the Shadikongoro project and the Mahangu and Cotton Farmers' Support programs. Projects managed on an agency basis are the Etunda and Omega farmer settlement schemes. This operations include about 800 ha under irrigation and 3 000 ha under rain fed conditions. Crops like mahangu, groundnuts, cotton, wheat, dates, barley and vegetables are produced.</p>	<p>1989 - 1995</p>	<p>Namibia Development Corporation</p>

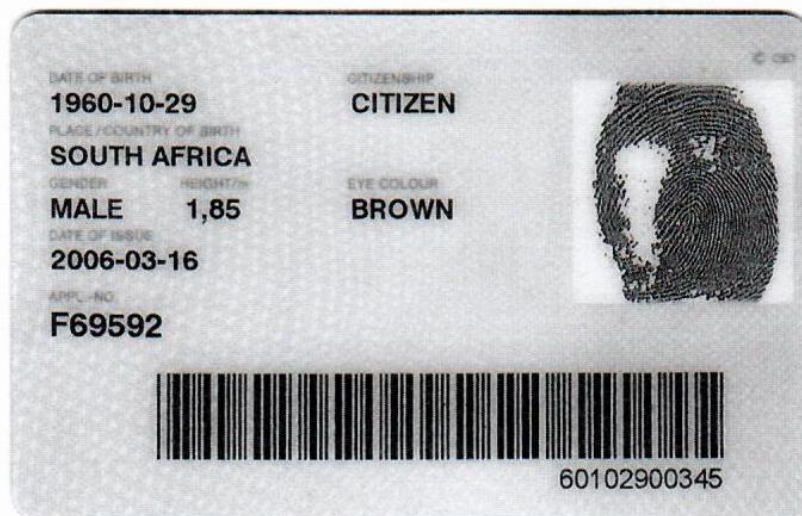
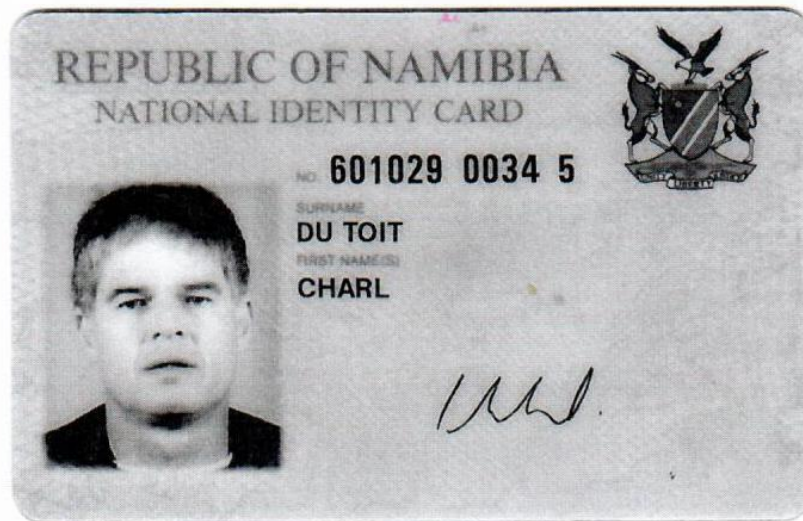
Agricultural Researcher with the Department of Agriculture acting as researcher and assistant other senior agricultural researcher on various assignments of the Department	1985 - 1988	Ministry of Agriculture
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I hereby declare that the information portrayed in this CV is accurate and true.



Charlie du Toit

APPENDIX B: CHARLIE DU TOIT IDENTIFICATION DOCUMENT



APPENDIX C: CURRICULUM VITAE OF CARIEN VAN DER WALT

1. **Proposed Position** : Environmental Consultant/Practitioner
 2. **Name** : Carien van der Walt
 3. **Date of Birth** : 06 August 1990
 4. **Nationality** : Namibian

5. **Education:**

Years	Institution	Degree/Diploma
2009 to 2011	University of Stellenbosch	B.A. (Degree) Environment and Development
2012 to 2013	University of South Africa	B.A. (Honours) Environmental Management

6. **Languages:**

Language	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent

7. **Employment History:**

Elmarie Du Toit Town Planning Consultants	2010/2011	Vacation Work
Green Earth Environmental Consultants	2011/2012	Permanent

8. **Work undertaken that best illustrates capability to handle the tasks assigned:**

Name of assignment or project:	Taranga Safari Lodge
Year:	2012
Location:	Rundu, Namibia
Client:	Mr Cobus Bruwer
Main project features:	Environmental Management Plan compilation
Status:	Clearance Certificate Obtained

Name of assignment or project:	The sand mining operations of Sand Worx CC Waterfront Development Project
Year:	2012
Location:	Windhoek, Namibia
Client:	Green Building Construction
Main project features:	Environmental Management Plan compilation
Status:	Clearance Certificate Obtained

Name of assignment or project:	Erf 35, Farm Brakwater No. 48
Year:	2012
Location:	Windhoek (Brakwater)

Client:	Ms CJ Maposa
Main project features:	Scoping Assessment for Rezoning to Industrial and Environmental Management Plan
Status:	Clearance Certificate Obtained

Name of assignment or project:	Erf 176, Farm Brakwater No. 48
Year:	2012
Location:	Windhoek (Brakwater)
Client:	Mr Andre van Staden
Main project features:	Scoping Assessment for Rezoning to Industrial and Environmental Management Plan
Status:	Clearance Certificate Obtained

Name of assignment or project:	Erf 428, Farm Brakwater No. 48
Year:	2012
Location:	Windhoek (Brakwater)
Client:	Mr D Barnard
Main project features:	Scoping Assessment for Rezoning to Industrial and Environmental Management Plan
Status:	Clearance Certificate Obtained

Name of assignment or project:	Erf 87, Farm Brakwater No. 48
Year:	2012
Location:	Windhoek (Brakwater)
Client:	Indraai Abattoir
Main project features:	Scoping Assessment for Rezoning to Industrial and Environmental Management Plan
Status:	Clearance Certificate Obtained

Name of assignment or project:	Areva Uranium Mine
Year:	2012
Location:	Swakopmund
Client:	Areva Uranium Mine
Main project features:	Scoping Assessment for Road Construction and Environmental Management Plan

Name of assignment or project:	Wispeco Namibia
Year:	2012
Location:	Windhoek (Northern Industrial Area)
Client:	Wispeco Namibia

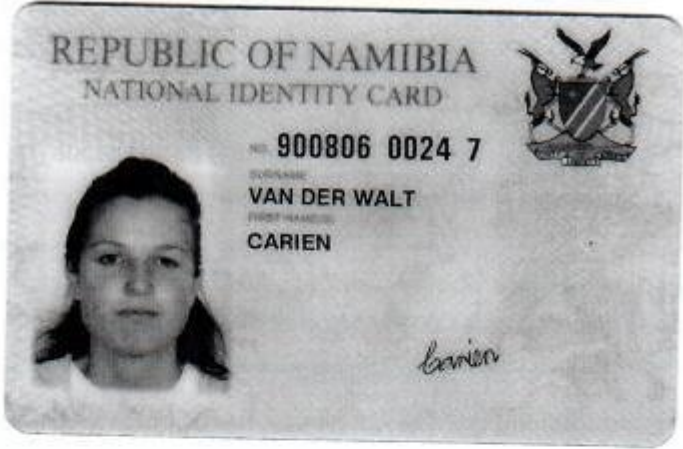
Main project features:	Environmental Auditing Report for site and Environmental Management Plan
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Name of assignment or project:	Tsumeb Industrial Development
Year:	2012
Location:	Tsumeb
Client:	Namibia Development Corporation
Main project features:	Scoping Assessment for Industrial Development and Environmental Management Plan
Status:	Clearance Certificate Obtained

I hereby declare that the information portrayed in this CV is accurate and true.

Carien van der Walt

APPENDIX D: CARIEN VAN DER WALT IDENTIFICATION DOCUMENT



APPENDIX E: NEWSPAPER NOTICES

THE NAMIBIAN
Housing & Property
• For Sale •

CHERYL 3 bedrooms, 3 bathrooms, 1 garage, luxury tile standing stone, only R23 million, value-added, call for more info or visit www.1234.com
 For Sale By Owner: "General Residential" R21 000,000, call for more info, call on 081 272 231

2003 TOYOTA HILUX 2.74X4 SINGLE CAB OVERALL EXCELLENT CONDITION BULLBAR/TOWBAR/ROLLBAR/INTERIOR EXCELLENT FULL HOUSE/OIL AIRCON BEST BUY @ R11 999 999
 Call: 081 418 4743
VIEW IN WINDHOEK

Opposite - Extension 4. Toilets, 2 bedrooms, kitchen, lounge, 2nd floor, bathroom, kitchen, lounge, R25 500 000
 or visit www.1234.com
Opposite - Extension 4. Toilets, 2 bedrooms, kitchen, lounge, 2nd floor, bathroom, kitchen, lounge, R25 500 000

Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Housing & Property
• For Sale •

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Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Motoring
• Vehicles for Sale •

2003 TOYOTA HILUX 2.74X4 SINGLE CAB OVERALL EXCELLENT CONDITION BULLBAR/TOWBAR/ROLLBAR/INTERIOR EXCELLENT FULL HOUSE/OIL AIRCON BEST BUY @ R11 999 999
 Call: 081 418 4743
VIEW IN WINDHOEK

2003 TOYOTA HILUX 2.74X4 SINGLE CAB OVERALL EXCELLENT CONDITION BULLBAR/TOWBAR/ROLLBAR/INTERIOR EXCELLENT FULL HOUSE/OIL AIRCON BEST BUY @ R11 999 999
 Call: 081 418 4743
VIEW IN WINDHOEK

2003 TOYOTA HILUX 2.74X4 SINGLE CAB OVERALL EXCELLENT CONDITION BULLBAR/TOWBAR/ROLLBAR/INTERIOR EXCELLENT FULL HOUSE/OIL AIRCON BEST BUY @ R11 999 999
 Call: 081 418 4743
VIEW IN WINDHOEK

Notices
• Legal •

In the High Court of Namibia Case No. 12 of 2020
 In the matter between **STANDARD BANK NAMIBIA LIMITED** Plaintiff and **ANGUSTIA TERBER** Defendant
NOTICE OF SALE IN EXECUTION
 Pursuant to a judgment granted by the Honorable Court, the following goods will be sold by public auction on the 21st day of June 2020 at 10:00 AM at Windhoek Court House, Windhoek, Namibia:

In the High Court of Namibia Case No. 13 of 2020
 In the matter between **STANDARD BANK NAMIBIA LIMITED** Plaintiff and **ANGUSTIA TERBER** Defendant
NOTICE OF SALE IN EXECUTION
 Pursuant to a judgment granted by the Honorable Court, the following goods will be sold by public auction on the 21st day of June 2020 at 10:00 AM at Windhoek Court House, Windhoek, Namibia:

Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
 Call: 081 272 231

Housing & Property
• For Sale •

Waterfront - 3 bedrooms house with 900 sqm of land, close to school, shopping, R18 500 000
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Notices
• Legal •

Call for Public Participation/Comments
 Environmental Impact Assessment Report for the proposed construction of a new sewerage treatment plant in Oshana Region. The proposed plant will be located at the site of the existing plant and is situated on a local by-law of the site is displayed on the Town Planning Notice Board, Council Offices, Sam Nujoma Road, Oshana Region.

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GREEN EARTH Environmental Consultants
 Avoiding crowded places is one of the ways to fight the Coronavirus. Because the health and safety of our clients is paramount, we encourage you to contact us by telephone or email for your queries instead of visiting our branches. However, our branches remain open should you find it absolutely necessary to see us in person.

Email namibia.client@sanlam.com.na	Outapi 065 250 624
Gobabis Tel: 062 562 374	Rundu Tel: 066 256 253
Katima Mulilo Tel: 066 253 484	Swakopmund Tel: 064 412 300
Katutura Tel: 061 294 7566	Tsambesi Tel: 067 221 021
Keetmanshop Tel: 063 223210	Walvisbay Tel: 064 215 300 / 064 200 550
Mariental Tel: 063 242 447	Windhoek Tel: 061 294 7352
ONDANGWA Tel: 065 240 075 / 065 240 230	Grootfontein Tel: 067 240 120
Oshana Tel: 065 224 306 / 065 224 697	
Otiwarongo Tel: 067 303 955 / 067 303 682	

Sanlam
 Construction 2020

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Tel: (061) 2080800

Fax (061) 220584

Email: Lmeroro@nepc.com.na

Notice Legal Notice

CHANGE OF SURNAME
THE ALIENS ACT, 1937
NOTICE OF INTENTION
OF CHANGE OF SURNAME

I (1) IMMANUEL TCHOCHA reading at ONE NATION, KATUTURA WINDOHOEK and carrying on business employed as (2) UNEMPLOYED intend applying to the Minister of Home Affairs for authority under section 9 of the Aliens Act, 1937, to assume the surname NAMES PAUL MANUEL DOMINGOS for the reasons that (3) IMMANUEL IS MY NAME AND NOT SURNAME, THE NAME TCHOCHA IS MY NICKNAME, DOMINGOS IS MY SECOND NAME, I previously bore the name(s) (4) IMMANUEL TCHOCHA I intend also applying for authority to change the surname of my wife and minor children (5) N/A. Any person who objects to my assumption of the said surname of PAUL MANUEL DOMINGOS should as soon as my lodge teacher objection, in writing, with a statement of teacher reasons therefor, with the magistrate of WINDOHOEK 93-03-2620

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE CONSTRUCTION AND OPERATION OF A NEW FUEL RETAIL FACILITY IN RUNDU, KAWANGO EAST REGION

Notice is hereby given to all interested and affected parties (IAAPs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No. 101 2007) and Environmental Impact Assessment Regulations (2012) for the following proposed activity:

Project Name: Construction of proposed J.N. Van Dyk TIA PUMPA Paradise Service Station
Project Location: ERF 1296, EXT 4, RUNDU
Development Area size: 7478m²

Project Description: The proposed project development will support the erection of a new fuel retail facility which includes forecourt, steel canopy and underground fuel storage tanks as well as a Convenience shop for service station users.

Proponent: Rundu Service Centre One Stop
Consultant: Conservor Investment Co. was appointed by Rundu Service Centre to carry out an Environmental Impact Assessment and design an Impact Management Plan in respect to the above-mentioned project. Therefore notice is hereby given to all IAAPs to air out their views regarding the project; to request a copy of Background Information Document (BID) you can please request before deadline of submission of comments or Attend a public meeting to be held on site.

Deadline for submission of comments: 20/04/20
OR Alternatively attend a public meeting to be held on 04/04/20 on site at 10:00 HRS
Contact: Paulus 0814807482/ 9817 637974
E-Mail: paulus2007@yahoo.co.uk



Notice Legal Notice

CALL FOR PUBLIC PARTICIPATION/ COMMENTS

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A NEW SEWERAGE TREATMENT PLANT IN OSHAKAT, OSHANA REGION

Green Earth Environmental Consultants have been appointed to attend to and complete an Environmental Impact Assessment and Environmental Management Plan (EMP) in order to obtain an Environmental Clearance Certificate as per the requirements of the Environmental Management Act (No. 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 in GG 4878 of 6 February 2012) for the proposed construction and operation of a new sewerage treatment plant in Oshakat.

Name of proponent: Oshakat Town Council
Project location and description: It is the intention of Oshakat Town Council to construct and operate a new sewerage treatment plant in Oshakat, Oshana Region. The proposed plant will be located at the sites of the existing West and East ponds. A locality plan of the site is displayed on the Town Planning Notice Board, Council Offices, Sam Nujoma Road, Oshakat or is available at the office of Green Earth Environmental Consultants at Bridgeway Office, No. 4 Dr. Kwame Nkrumah Avenue, Klein Windhoek.

Interested and affected parties are hereby invited to register in terms of the assessment process to give input, comments and opinions regarding the proposed project. A public meeting will be held only if there is enough public interest. Only IAAPs that registered will be notified of the possible public meeting to be held.

The last date for comments and/or registration is 9 April 2020. Contact details for registration and further information:

Green Earth Environmental Consultants
Contact Persons: Charlie Du Toit/Carjan van der Walt
Tel: 0811273145
E-mail: carjen@greenearthnamibia.com

Notice Legal Notice

NOTICE
OTJIWARONGO TOWN PLANNING SCHEME

Take notice that WSTRPC Town Planning Consultants on behalf of the owner, intends to apply to the Otjiwarongo Municipal Council for:

- The Amendment of the Town Planning Scheme area to include the Remainder of the Consolidated Farm Goodhope No. 298 into the Otjiwarongo Town Planning Scheme Area, and
- Zoning of Portions and Erven created with the approval by Nampab of the subdivision of Portions of the Remainder of the Consolidated Farm Goodhope No. 290, including Otjiwarongo Extensions 17 and 18.

The Remainder of the Consolidated Farm Goodhope No. 298 is 3 681.5 hectares in extent. The Remainder of Goodhope is bordered by the C3 road leading to Kalkfeld/Omaruru on the Northern side, Extensions 5 and 7 of the Farm Goodhope on the North Eastern side of the development.

Provision was made for the following: "Rural Residential (84 Portions)", "Agricultural Estate (61 Portions)", "Undetermined (6 Portions)" as well as "Hospitality (1 Portion)". Additionally two townships were created namely Otjiwarongo Extension 17 and 18.

Extension 17

Land use	Number of Erven
Residential	302
Res II	2
Institutional	1
Gen Business	10
POS	2
Street	2
Total Erven	320

Extension 18

Land use	Number of Erven
Residential	66
Res II	1
Institutional	6
Gen Business	1
POS	1
Street	2
Total Erven	74

Further take notice that the plan of the proposed rezoning lies for inspection on the Town Planning Notice Board at the Otjiwarongo Municipal Head Office, 2 Kretz Street.

Any person objecting to the proposed use of the Farm as set out above, may lodge such objection, together with grounds thereof, with the Municipality and with the applicant in writing within 14 days of the last publication of this notice. The final date for objections is 9 April 2020

APPLICANT:
WSTRPC
P.O. Box 31761
Windhoek
wstrpc@gmail.com

Notice Legal Notice

REPUBLIC OF NAMIBIA
MINISTRY OF TRADE & INDUSTRY
LIQUOR ACT, 1986 NOTICE OF APPLICATION TO A COMMITTEE IN TERMS OF THE LIQUOR ACT, 1986 (Regulations 14, 26 & 33)

Notice is given that an application in terms of the Liquor Act, 1986, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: OSHIKOTO

- Name and postal address of applicant
RAINA M. KIKFI
P.O. BOX 30177, ONAKALI-SOUTH
- Name of business or proposed business to which applicant relates
GWINGWI SHEEBEN
- Address/location of premises to which application relates
OSHAKAHONDWA
- Nature and details of application
SHEEBEN LIQUOR LICENCE
- Clerk of the court with whom application will be lodged
ONDANGWA
- Date on which application will be lodged
31 MARCH 2020

Date of meeting of Committee at which application will be heard: 13 MAY 2020

Any objection or written submission in terms of section 28 of the Act in relation to the applicant must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the meeting of the Committee at which the application will be heard.

REPUBLIC OF NAMIBIA
MINISTRY OF TRADE & INDUSTRY
LIQUOR ACT, 1986 NOTICE OF APPLICATION TO A COMMITTEE IN TERMS OF THE LIQUOR ACT, 1986 (Regulations 14, 26 & 33)

Notice is given that an application in terms of the Liquor Act, 1986, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: OSHIKOTO

- Name and postal address of applicant
PANDEN DAVID MENE
P.O. BOX 1980, OUMUTHYA
- Name of business or proposed business to which applicant relates
KING NEHALE PRIVATE BAR
- Address/location of premises to which application relates
ERF 53, MAIN ROAD, O PROPPER EXTENSION, OUMUTHYA
- Nature and details of application
SHEEBEN LIQUOR LICENCE
- Clerk of the court with whom application will be lodged
TUSSEMEN
- Date on which application will be lodged
11 MARCH 2020

Date of meeting of Committee at which application will be heard: 13 MAY 2020

Any objection or written submission in terms of section 28 of the Act in relation to the applicant must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the meeting of the Committee at which the application will be heard.

REPUBLIC OF NAMIBIA
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Notice is given that an application in terms of the Liquor Act, 1986, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: OSHIKOTO

- Name and postal address of applicant
NUKULU HOSEA M
P.O. BOX 349 ARANHUIS
- Name of business or proposed business to which applicant relates
SHILOHONG SHEEBEN
- Address/location of premises to which application relates
OTIJAWE VILLAGE
- Nature and details of application
SHEEBEN LIQUOR LICENCE
- Clerk of the court with whom application will be lodged
OPOWO
- Date on which application will be lodged
13 MARCH 2020

Date of meeting of Committee at which application will be heard: 08 APRIL 2020

Any objection or written submission in terms of section 28 of the Act in relation to the applicant must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the meeting of the Committee at which the application will be heard.

Notice Legal Notice

REPUBLIC OF NAMIBIA
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Notice is given that an application in terms of the Liquor Act, 1986, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: OTJOKONDWA

- Name and postal address of applicant
ELIANE JAHS
- Name of business or proposed business to which applicant relates
ELLA'S DRAAI ENTERTAINMENT
- Address/location of premises to which application relates
ERF 121, KOFES
- Nature and details of application
TRANSFER TO LIQUOR LICENCE (B.39)
- Clerk of the court with whom application will be lodged
KETEMANOP LIQUOR BOARD SECRETARY
- Date on which application will be lodged
11 MARCH 2020

Date of meeting of Committee at which application will be heard: 11 MARCH 2020

Any objection or written submission in terms of section 28 of the Act in relation to the applicant must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the meeting of the Committee at which the application will be heard.

REPUBLIC OF NAMIBIA
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Notice is given that an application in terms of the Liquor Act, 1986, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: ZAMBIEZI

- Name and postal address of applicant
SHEENA ROSEMAN
P.O. BOX 866 NEWZE
- Name of business or proposed business to which applicant relates
MUNGUMAM SHEEBEN
- Address/location of premises to which application relates
KABBE AREA, LIANYI VILLAGE
- Nature and details of application
SHEEBEN LIQUOR LICENCE
- Clerk of the court with whom application will be lodged
KATIMA BARSTRATY COURT
- Date on which application will be lodged
11 MARCH 2020

Date of meeting of Committee at which application will be heard: 08 MAY 2020

Any objection or written submission in terms of section 28 of the Act in relation to the applicant must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the meeting of the Committee at which the application will be heard.

REPUBLIC OF NAMIBIA
MINISTRY OF TRADE & INDUSTRY
LIQUOR ACT, 1986 NOTICE OF APPLICATION TO A COMMITTEE IN TERMS OF THE LIQUOR ACT, 1986 (Regulations 14, 26 & 33)

Notice is given that an application in terms of the Liquor Act, 1986, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: OSHIKOTO

- Name and postal address of applicant
TOMMY RAMBAHU
P.O. BOX 23552, WINDHOEK
- Name of business or proposed business to which applicant relates
KANEONGCO BAR
- Address/location of premises to which application relates
OKAMBONG, ONYANYA
- Nature and details of application
SHEEBEN LIQUOR LICENCE
- Clerk of the court with whom application will be lodged
ONDANGWA
- Date on which application will be lodged
31 MARCH 2020

Date of meeting of Committee at which application will be heard: 13 MAY 2020

Any objection or written submission in terms of section 28 of the Act in relation to the applicant must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the meeting of the Committee at which the application will be heard.

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VACANCIES
2 X Civil Engineers

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- Qualifications and Experience;**
- Bachelor's Degree in civil engineering
 - Minimum 6 years appropriate experience
 - A valid code B driving licence
 - Willing to work remotely
 - Fluent in English
 - Problem solving skills

- Duties and Responsibilities;**
- Undertaking technical and feasibility studies including site investigations
 - Using a range of computer software for developing detailed designs
 - Undertaking complex calculations
 - Liaising with clients and a variety of professionals including architects and sub-contractors
 - Compiling job specs and supervising tendering procedures
 - Resolving design and development problems
 - Managing budgets and project resources
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 - Ensuring projects run smoothly and structures are completed within budget and on time
 - Mentoring growing engineers and technicians

Suitably qualified candidates should submit their CV with supporting documents on cover letter via email to jarnesandyoung@yahoo.com or on before 25th March 2020. ONLY shortlisted candidates will be contacted

REPUBLIC OF NAMIBIA MINISTRY OF TRADE & INDUSTRY LIQUOR ACT, 1986 NOTICE OF APPLICATION TO A COMMITTEE IN TERMS OF THE LIQUOR ACT, 1986 (Regulations 14, 26 & 33)

Notice is given that an application in terms of the Liquor Act, 1986, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: ZAMBIEZI

- Name and postal address of applicant
MWAPALA MUNDA MILDREO
P.O. BOX 504 NEWZE
- Name of business or proposed business to which applicant relates
MANWENO SHEEBEN
- Address/location of premises to which application relates
SANGWALI VILLAGE/ KATIMA MULULO
- Nature and details of application
SHEEBEN LIQUOR LICENCE
- Clerk of the court with whom application will be lodged
KATIMA MULULO
- Date on which application will be lodged
18-31 MARCH 2020

Date of meeting of Committee at which application will be heard: 15 MAY 2020

Any objection or written submission in terms of section 28 of the Act in relation to the applicant must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the meeting of the Committee at which the application will be heard

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Chomby	081 208000
Walvis Bay	081 204 900
Keetmanshoop	081 204 300
Swakopmund	081 300 888

ICDL logo and text.

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 Night: 18:00-08:00
 Phone: (061) 2080800
 Fax: (061) 220584
 Email: lmeroro@nepc.com.na

Terms and Conditions Apply.

Legal Notices

AGREEMENT OF TRANSFER
 I, the undersigned, hereby agree to transfer to the undersigned, the business and goodwill of the business known as "NORTH STAR" (hereinafter referred to as "BUSINESS") situated at 100/101 St. James Street, Windhoek, Namibia, together with the fixtures, fittings and other assets of the business, and the name "NORTH STAR" and the logo of the business, to the undersigned, on the terms and conditions set out in the attached schedule to this agreement.

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CALL FOR PUBLIC PARTICIPATION/ COMMENTS

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE CLOSURE OF A PORTION OF ONE A, CHASBERGVALE PUBLIC OPEN SPACE

Green Earth Environmental Consultants have been appointed to conduct an Environmental Impact Assessment and Environmental Management Plan (EIMP) in order to obtain an Environmental Clearance Certificate for the proposed closure of a portion of One A, Chasbergvale Public Open Space.

Project location and description: The One A, Chasbergvale Public Open Space has been subdivided into two (2) sections, 01 and 02. Section 01, 01-001, is 2.00 hectares and 02, 02-001, is 1.50 hectares. Section 02 is situated to the east of Section 01 and is bounded by the Orange River to the north and the Orange River to the south.

Interested and affected parties are hereby invited to register in terms of the assessment process to give input, comments and opinions regarding the proposed project. A public meeting will be held only if there is enough public interest. Only MAPs that registered will be notified of the possible public meeting to be held.

CALL FOR PUBLIC PARTICIPATION/ COMMENTS

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A NEW SEWAGE TREATMENT PLANT IN OSHANAATI, OKAVANGO REGION

Green Earth Environmental Consultants have been appointed to assist in an Environmental Impact Assessment and Environmental Management Plan (EIMP) in order to obtain an Environmental Clearance Certificate for the proposed construction and operation of a new sewage treatment plant in Oshanaati, Okavango Region.

Project location and description: It is the intention of Oshanaati Town Council to construct and operate a new sewage treatment plant in Oshanaati, Okavango Region. The proposed plant will be located at the site of the existing West and East ponds. A locality plan of the site is displayed on the Town Planning Rules Board, Council Office, Otjozha, Okavango Region, and is available at the offices of Green Earth Environmental Consultants at Belgonia Office, No. 4 De Koning Potens Avenue, Main Windhoek.

The last date for comments and/or registrations is 9 April 2020. Contact details for registration and further information:
 Green Earth Environmental Consultants
 Contact Person: Charles Du Toit/Caren van der Wal
 Tel: 061 2080800
 E-mail: charlie@greenearthnepc.com and caren@greenearthnepc.com

NOTICE

OUTSTANDING TOWN PLANNING SCHEMES

Take notice that 5072/2017 Town Planning Schemes are listed for review, namely: 1. The Amendment of the Town Planning Scheme to include the Remaster of the Consolidated Farm Goodhope No. 296 into the Oshanaati Town Planning Scheme Area, and 2. Zoning of Portbos, and areas situated with the approval by Municipality of the Subdivision of the Consolidated Farm Goodhope No. 296, involving Oshanaati Extension 17 and 18.

Extension 17

Applicant	Number of plots
Residential	06
Commercial	01
Industrial	01
Public	01
Other	00
Total	09

Extension 18

Applicant	Number of plots
Residential	01
Commercial	01
Industrial	01
Public	01
Other	00
Total	04

Further take notice that the plan of the proposed rezoning is for inspection at the Town Planning Rules Board at the Oshanaati Municipal Council Office, P.O. Box 49060, Windhoek, Okavango Region, from Monday, 9 April 2020.

ENVIRONMENTAL IMPACT ASSESSMENT NOTICE TO ALL INTERESTED AND AFFECTED PARTIES

Notice is hereby given to all interested and affected parties (I & A Parties) that an application will be made to the Environmental Management Authority (EMA) in terms of the Environmental Management Act (Act No. 107 of 2007) and Environmental Impact Assessment Act (Act No. 25 of 2012) for the following related activity:

Project Location:
 Windhoek, Okavango Region

Project Description: The proposed development will include the following activities:
 - Extension of a residential development of 120 units, comprising of 120 residential units, on the site of the existing development.

FOR Classifieds
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REZONING NOTICE

REZONING NOTICE

This notice that Agniveus Planning Consultants (Pty) Ltd, Registered Practitioner (No. 1587) of the Oshanaati Town Council is:

- Resolving of Erf 1572 (Consolidated from 258 and 259) Oshanaati Extension 8 from "Single Residential" to "General Residential" with a density of 1:150.

Further take notice that the plan of the site for inspection at the Town Planning Rules Board of the Oshanaati Town Council, Main Road, Oshanaati, Okavango Region, is available at the offices of Agniveus Planning Consultants, P.O. Box 49060, Windhoek, Okavango Region, from Monday, 9 April 2020.

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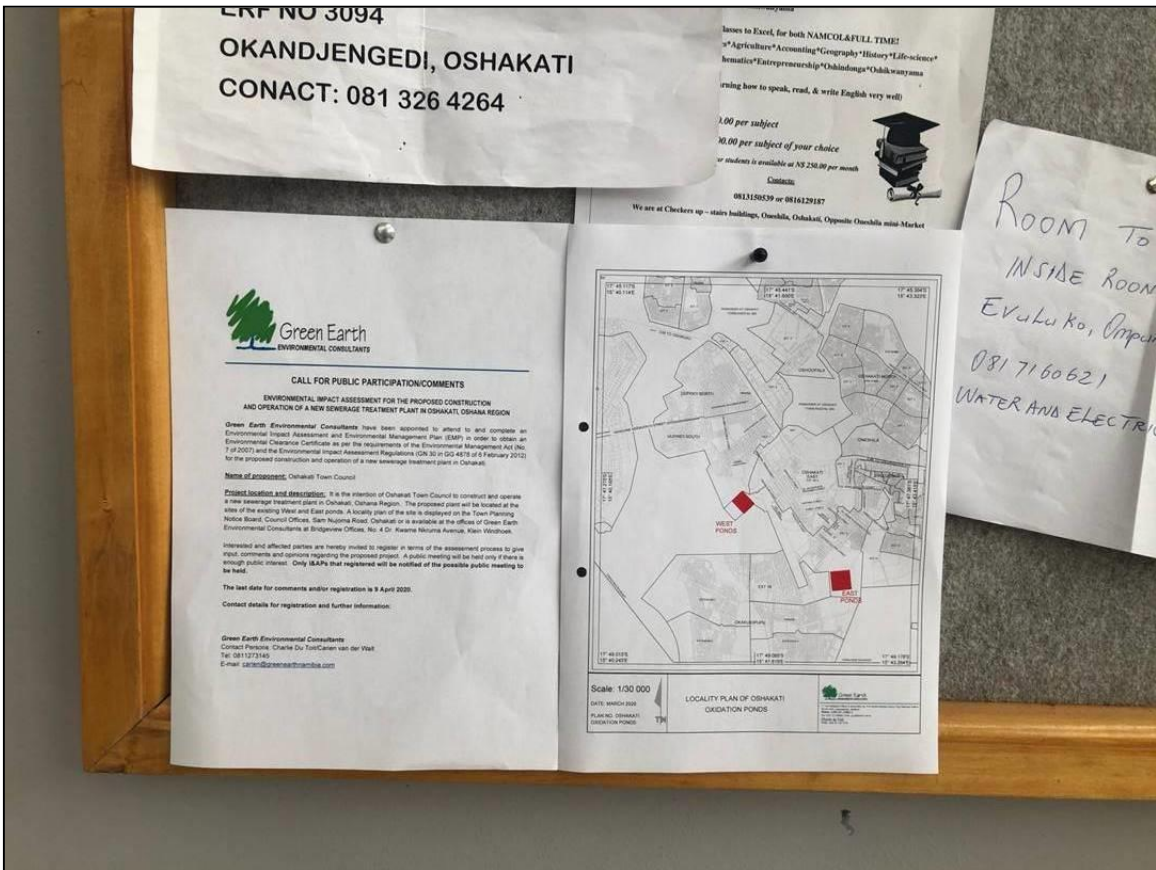
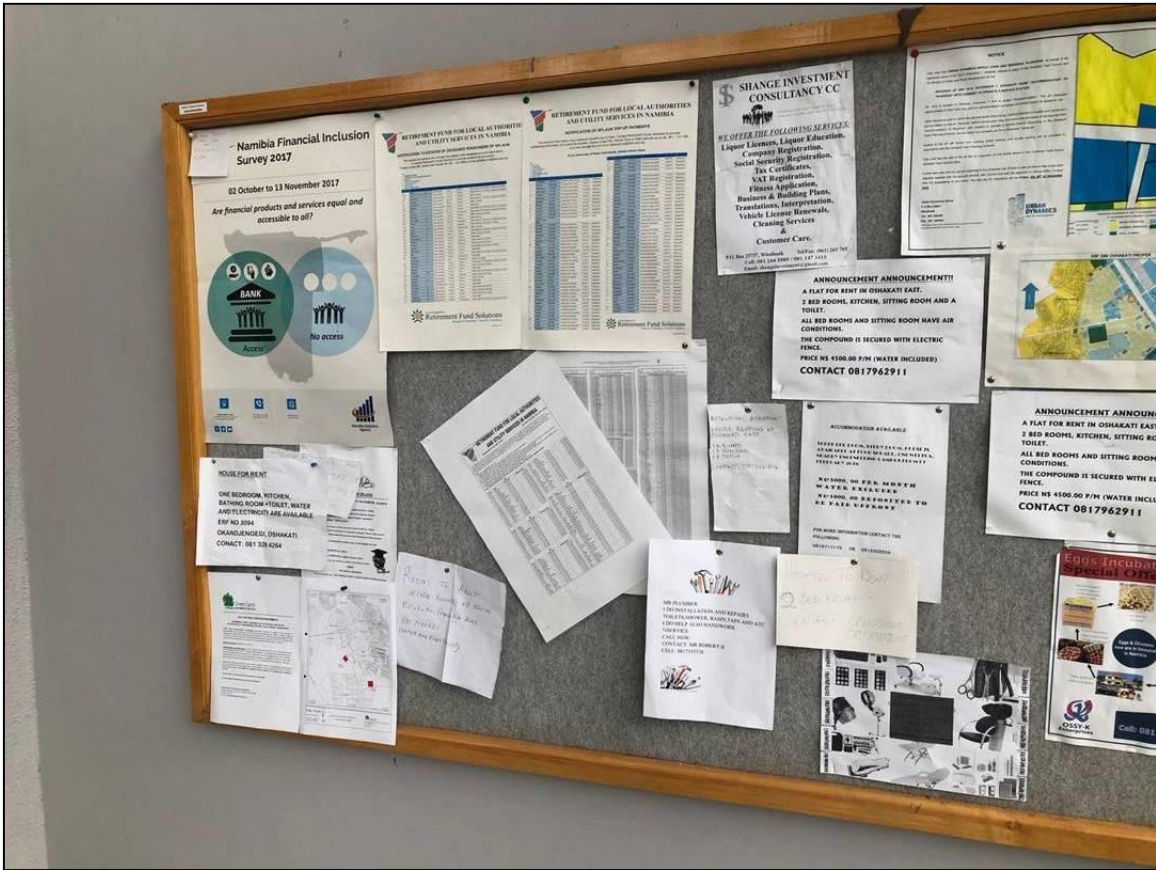
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APPENDIX F: NOTICE ON SITE





APPENDIX G: NOTICE ON NOTICE BOARD



APPENDIX H: DESIGN REPORT

APPENDIX I: ENVIRONMENTAL MANAGEMENT PLAN