Comprehensive Environmental Management Plan (EMP) & Closure (Discontinuance) Plan for the Existing ELCIN Cemetery in Omuthiya, Oshikoto Region

Document Type: **Draft EMP**

ECC Application No.: **APP-001003**

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January 2023

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
BNR	Biological Nutrient Removal
DEAF	Department of Environmental Affairs and Forestry
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
EIA	Environmental Impact Assessment
EHO	Environmental Health Officer
ELCIN	Evangelical Lutheran Church in Namibia
EMA	Environmental Management Act
EMP	Environmental Management Plan
MEFT	Ministry of Environment, Forestry and Tourism
OMTC	Omuthiya Town Council
PPE	Personal Protective Equipment
SHE Officer	Safety, Health & Environmental Officer

1 INTRODUCTION

1.1 Project Background and Locality

Omuthiya Town Council (hereinafter referred to as *OMTC* or the *Proponent*) is responsible for the planning and management of the establishment of sufficient grave spaces and the maintenance thereof within the Town. The OMTC currently has an existing and operational cemetery belonging to the local Evangelical Lutheran Church in Namibia (ELCIN) branch. The cemetery is on the north-western side (at the ELCIN Omuthiya branch) of the Town near the B1 road to Ondangwa, and within the Townlands as per the coordinates in Table 1-1 and map shown in Figure 1-1. Therefore, the cemetery is operated according to the Town Council's procedures.

Table 1-1: The corner coordinates of the Omuthiya ELCIN Church cemetery

Point/Feature	GPS Coordinates	Elevation (meters above sea level (masl))
A (cemetery gate)	18°21'05.06"S 16°34'12.7"E	1093
B	18°21'08.6"S 16°34'09.4"E	1095
C	18°21'09.3"S 16°34'07.4"E	1095
D	18°21'08.3"S 16°34'06.2"E	1095
E	18°21'06.0"S 16°34'06.3"E	1096
F	18°21'04.0"S 16°34'04.0"E	1096
G	18°21'03.7"S 16°34'03.9"E	1096
H	18°21'01.7"S 16°34'05.7"E	1098
I	18°21'00.6"S 16°34'05.6"E	1097
J	18°21'59.5"S 16°34'06.1"E	1097

Following the Free Training of Environmental Health Officers (EHO) and representatives by Excel Dynamic Solutions (Pty) Ltd (EDS) from 12 local authorities in November 2021, EDS had requested the Town Council to share with EDS some of their existing facilities or planned projects that are listed activities in the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 EIA Regulations requiring Environmental Clearance Certificates (ECCs).

EDS then offered to assist the Omuthiya Town Council with one project of their choice (existing) to obtain an ECC at no cost to the Proponent. Therefore, to ensure compliance with the environmental legal requirements, OMTC chose the existing cemetery in the Town.

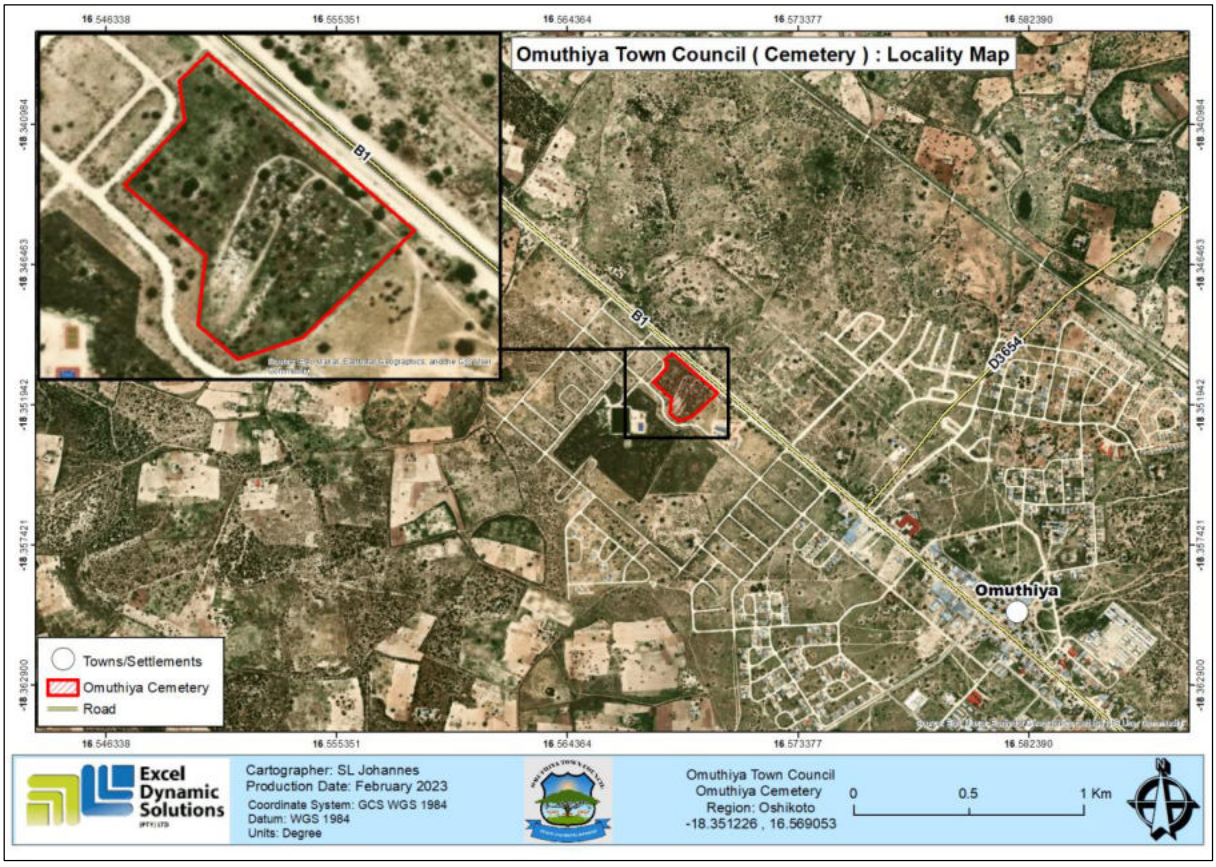

Figure 1-1: Locality map of the ELCIN Cemetery in Omuthiya

1.2 The Need for Environmental Clearance Certificate (ECC)

The Environmental Management Act (Act No. 7 of 2007) (EMA) and its 2012 EIA Regulations lists activities that need an Environmental Clearance Certificate (ECC). Cemetery facilities are one of the listed activities that requires an EIA study and or for existing facilities, an Environmental Management Plan (EMP) should be developed. The relevant listed activities to the Town's cemetery are as follows:

''11. OTHER ACTIVITIES

- *Listed Activity 11.2 Construction of cemeteries, camping, leisure and recreation sites."*

Although, the cemetery was commissioned in the early 2000s (around 2006 or 2007), right before/after the promulgation of the Environmental Management Act No. 7 of 2007. The site has been in operation, but has never been environmentally cleared. This could be attributed to the fact that like other similar local authorities' waste management facilities in Namibia, have been established years ago before or early on after the promulgation of the Environmental Management Act (EMA) No. of 7 of 2007 and its EIA regulations in 2012.

To ensure that the site obtains full compliance with the environmental legislation and ensure environmental protection, an environmental clearance certificate must be issued by the Environmental Commissioner at the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF). In other words, the ECC Application accompanied by the Draft Environmental Management Plan (EMP) will be submitted and evaluated by the Environmental Commissioner for consideration of the site ECC.

1.3 The Need for Environmental Management & Closure Plan

Regulation 8(j) of the EIA Regulations (2012) requires that a draft Environmental Management Plan (EMP) shall be included as part of the Environmental Assessment (EA) scoping report (please note that since the site is already in operation, there was no EA conducted nor scoping report for it). A '**Management Plan**' is defined as:

> *"…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored."*

It is important to note that an EMP is a statutory document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and can be amended to adapt to address project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of this document is, therefore, to guide environmental management throughout the site upgrade, operational (and maintenance), and closure/discontinuance phases:

- **Planning (for Site upgrading) phase** - This is the stage during which the Proponent prepare all the administrative and technical requirements needed for the actual cemetery site upgrading works on the ground. This planning will include the procurement of services such site upgrading contractor.

- **Site upgrading -** This is the phase where during which the Proponent is revamping the new cemetery through an appointed contractor. This will entail the earthworks for the erection of a better cemetery wall/fence, and installation of necessary services, infrastructures, and structures.
- **Continued Operations and Maintenance (Upkeep):** the cemetery will continue operating (burials are done) but on an improved level and maintenance is done by the Proponent.
- **Closure (Discontinuance)** – This is the stage at which the cemetery reaches capacity, and the Town Council ceases to allow burials from taking place onsite (due to lack of space). The cemetery will be closed off and no further burial will take place. The Town Council will need to look for another site, while ensuring that the closed site is still taken care off.

This EMP has been prepared for the management of potential impacts associated with its operations and maintenance. The Town Council will be required to start operating the cemetery in accordance with the management measures provided in the EMP and adhere to the ECC conditions set by the Environmental Commissioner

The description of the project activities is briefly provided under the next heading (Chapter 2).

2 THE DESCRIPTION OF PROJECT ACTIVITIES

This EMP was developed based on the site visit and assessment, consulted literature, information provided by the Proponent. The site visit was conducted on the 06th of July 2022. The activities currently undertaken onsite are presented under the following sections.

The cemetery establishment date is unknown but the early graves therein date back to 2006 (before the Town Proclamation) and 2007 (when the Town got proclaimed in October 2007 and the Omuthiya Town Council established in September 2008).

The remaining life span of the cemetery (capacity) would be 10 years without Covid-19. However, with Covid-19, the remaining years of the cemetery is 5 years. The average depth of the graves is usually 1.5m. However, with Covid-19 burials, the graves depth regulations stipulated 2.2m.

2.1.1 Resources, Services and Infrastructure

There is a need to put lights, water, waste management containers, and ablution facilities at the cemetery. Currently the mourners and grave diggers as well as service providers such as undertakers use the church toilet which located a bit far from the cemetery.

The required resources and services are provided by the Town Council as presented below:

- Human Resources: The cemetery currently have no employees, apart from the Town Council' staff that do some maintenance works. The cemetery operations mainly entail the digging of graves by people hired by the bereaved families.
- Equipment and Vehicles: The vehicles involved in the operations include small trucks and pickup trucks and other small to medium sized vehicles to transport people, services and goods required for burials.
- Water supply: The Town gets its water supply from NamWater's Calueque water supply scheme. The Town Council will then supply the cemetery by connecting it to the line.
- Power supply: The site does not use electricity. The Town is powered by NORED's power grid. The site infrastructure such as the ELCIN church is connected to the Town Council's electricity connection line. The electricity is supplied to the Town by NORED.
- Site accessibility: The site is accessible from the B1 road turn off via a single track access road.

- Site Security: The cemetery site is fenced off with mesh wire but there are visible signs of fence vandalism – Figure 2-1.

Figure 2-1: The fencing around the cemetery with vandalism signs

- Health and Safety: There are no committed site personnel, but this will be improved as part of the cemetery upgrading works. The site personnel will be equipped with appropriate protective gear, i.e., Personal Protective Equipment (PPE). A first aid kit will also be availed onsite and administering training provided to the personnel.
- Potential Accidental Fire Outbreaks: There is currently no fire extinguishers onsite. However, as part of the site upgrading, one fire extinguisher will be availed onsite and basic firefighting and response training provided to site personnel.
- Solid waste: The site will be equipped with waste bins for domestic waste for site personnel and visitors. The waste will be disposed of at the Town' solid waste site.
- Hazardous waste: all the fuels and lubricants produced onsite during site upgrading will be properly handled and stored in containers for disposal at the nearest hazardous waste management facility.
- Human waste (sewage): the site currently has no ablution facilities (toilets and washroom), therefore, these will be considered for implementation as part of the site upgrade.

2.2 The Challenges and Improvements for the Cemetery Operations

The following challenges are experienced by the Town Council and these are as follows:

- Vandalism: the cemetery fence is visibly vandalized at the gate, north-western corner, and south-eastern side. It is suspected that some community members cut the fence on the south-eastern side and north-western side to pass through the cemetery when going to and from town instead of using the long route around the cemetery.
- The lack of basic services at the cemetery: there is a need to put lights, water, waste management containers, and ablution facilities at the cemetery. Currently the mourners, grave diggers and service providers such as undertakers use the church toilet which is located a bit far from the cemetery.

2.3 Opportunities for the Omuthiya Town Council

The following recommendations and opportunities have been identified to maximize the cemetery's existence.

- The grave diggers at the cemetery bring their own water (for grave wall construction and drinking). The Town Council is considering offering the water services to grave diggers by incorporating it into the cemetery services and charge a certain fee for it.
- Gates and Access control: although already fenced off with a lockable gate, there is a need for maximum site control, a guardhouse at the entrance to facilitate access control of vehicles and the public. There must be at least a guard on daily basis to control access and provide direction to vehicles and mourners to the appropriate cemetery units. The gate guard should also inspect the loads inside certain vehicles if deemed necessary. The gate guard must also inspect the fence to avoid vandalism and other properties present with the cemetery, such as the tombstones and others.
- Signage, Rules and Restrictions: information notice board which displays information to the users regarding the various operations and hours, details of operators, contact numbers, etc. should be placed at the entrance of the site

The summary of legal requirements that govern the project activities are provided under the next chapter.

3 LEGAL FRAMEWORK: APPROVALS, LICENSES AND OR PERMITS

The project and its associated activities are governed by certain legislative and legal requirements that are necessary to consider and outlined herein. This is done in terms of institutional (local) and national perspective. Therefore, the summary of these relevant legal requirements and these that require permitting and licensing for certain project activities are presented under Table 3-1.

Table 3-1: The legal requirements and permits and licenses applicable to the project activities

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this Project
Environmental Management Act EMA (No 7 of 2007): Regulated under the Ministry of Environment, Forestry and Tourism (MEFT) Environmental Impact Assessment (EIA) Regulations Government Notice 28-30 (Government Gazette 4878) of February 2012: Regulated under the MEFT	The Act and its 2012 EIA Regulations aims to ensure that the potential impacts of the development on the environment are carefully considered. The Act aims at promoting sustainable management of the environment and use of natural resources. The Environmental Management Act (EMA) is broad; it regulates land use development through environmental clearance certification and/or Environmental Impact Assessments. The Act provides for the clearance certification for ‘’***11.2 Construction of cemeteries, camping, leisure and recreation sites.’’*** *9.2 Any process or activity which requires a permit, license or other form of authorization, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, license, or authorization or which requires a new permit license or authorization in terms of a law governing the generation or release of emissions, pollution, effluent, or waste*" which is relevant to the Project.	The EMA should inform and guide this EMP development and its implementation for: -ECC Amendment/Transfer and Renewal: Should the Proponent consider amending/Transferring the Project activities - The ECC needs to be renewed every 3 years (at least 3 months prior to its expiry date). The applications as deem necessary should be made with the Department of Environmental Affairs and Forestry (DEAF) as follows: **Office of the Environmental Commissioner:** **Mr. Timoteus Mufeti** **Tel: 061 284 2701**

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this Project
	For new projects, the Act requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). Regardless to the site, mitigation measures should be developed for implementation during operations.	
	Details requirements for public consultation within a given environmental assessment process (Government Notice No. 30 Section 21). The details the requirements for what should be included in an Environmental Scoping Report (Government Notice No. 30 S8) and an EIA Report (Government Notice No. 30 Section 15).	The Project is already in its operational phase. However, if necessary and required, constant consultations and engagements with the interested and affected parties (stakeholders) should be continued. In case of grievances raised by some members of the public, this should be addressed and resolved amicably.
Pollution Control and Waste Management Bill: Regulated under the MEFT	The bill aims to "prevent and regulate the discharge of pollutants to the air, water and land" Of particular reference to the Project is: Section 21 "(1) Subject to sub-section (4) and section 22, no person shall cause or permit the discharge of pollutants or waste into any water or watercourse." Section 55 "(1) No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment."	The Proponent and their workers/contractors should continue with the good waste management work (directly or indirectly) to ensure that the waste does not cause environmental threat and degradation. **No permit or license required.**
Soil Conservation Act (No 76 of 1969): Regulated under the Ministry of Agriculture, Water and Land Reform (MAWLR)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP. This is mainly aimed at soil disturbance through unnecessary creation of new tracks and pollution from project related activities.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this Project
The National Heritage Act (No. 27 of 2004): Regulated under the Ministry of Education, Arts and Culture through National Heritage Council (NHC) of Namibia The National Monuments Act (No. 28 of 1969): Regulated under the NHC	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish an NHC; to establish a National Heritage Register; and to provide for incidental matters. This impact is likely during site preparation for the maintenance of the cemetery when there is a potential of inadvertent unearthing and damage of heritage resources such as old and unmarked graves, for instance. The Act extends the protection of archaeological and historical sites to private and communal land and defines permit procedures regarding activities at such sites.	Should heritage resources (e.g., artefacts, human remains/bones in the subsurface etc.) are discovered at some point on and /or around the site, these should be reported to the National Heritage Council of Namibia for relocation. **Contact: Mrs. Erica Ndalikokule (Director)** **Or Ms. Agnes Shiningayamwe (Regional Heritage Officer)** **Tel: 061 301 903**
Public Health Act (No. 36 of 1919): Regulated under the Ministry of Health and Social Services	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments. This includes the provision of health and safety measures, wearing of Personal Protective Equipment (PPE), Health & Safety Trainings, etc. This safety and health of the Town's community. **No permit or license required.**
Health and Safety Regulations GN 156/1997 (Government Gazette 1617): Regulated under the Ministry of Health and Social Services	Details various requirements regarding health and safety of labourers.	
Public and Environmental Health Act No. 1 of 2015: Regulated under the Ministry of Health and Social Services	To provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this Project
Road Traffic and Transport Act, No. 22 of 1999: Regulated under the Ministry of Works and Transport (Roads Authority of Namibia)	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.	The Proponent should consider applying for a formal access road permit to the site. This permit is to be applied from Roads Authority. **Contact: Mr Eugene de Paauw (Roads Authority – Specialist Road Legislation)** **Tel.: 061 284 7027**
Water Act 54 of 1956: Regulated under the Ministry of Agriculture, Water and Land Reform	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: -Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). -Provides for control and protection of groundwater (S66 (1), (d (ii)). -Liability of clean-up costs after closure/abandonment of an activity (S3 (l)).	The protection (both quality and quantity/abstraction) of water resources should be a priority.
Water Resources Management Act (No 11 of 2013): Regulated under the Ministry of Agriculture, Water and Land Reform	Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
Atmospheric Pollution Prevention Ordinance (1976): Regulated under the Ministry of Health and Social Services	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this Project
Hazardous Substance Ordinance, No. 14 of 1974: Regulated under the Ministry of Health and Social Services	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not harm or compromise the site environment
Local Authorities Act No. 23 of 1992: Regulated under the Ministry of Urban and Rural Development	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. This includes the management of waste.	The Omuthiya Town Council is the responsible Local Authority of the area, and the project Proponent. Regardless, they should ensure that the Site activities follow the Act and its Regulations, as relevant to the project.
Labour Act (No. 6 of 1992): Regulated under the Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)	MLIERC is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry ensures effective implementation of the Labour Act No. 6 of 1992, specifically its Regulations, No. 156 Labour Act, 1992: Regulations relating to the health and safety of employees at work	The Proponent should ensure that the Site operations, and maintenance works, do not compromise the safety and welfare of workers. **No permit or license required.**

The cemetery site is located in a specific biophysical and social environment. Understanding the existing environment would aid in identifying the sensitive or potentially affected features and how these can be protected from the site operations and implementation of mitigation or management measures. Therefore, the relevant features of this environment are presented under the next chapter.

4 ENVIRONMENTAL BASELINE: BIOPHYSICAL AND SOCIAL

The baseline current) environmental conditions of the site and surroundings are presented under the subheadings below. The information has been sourced from consulted literature (relevant books, reports, and websites) and observations made onsite by EDS Consultants in July 2022.

4.1 Climatic Conditions

4.1.1 Rainfall

The Oshikoto Region is described as a semi-arid savannah with a rainfall average ranging from 400-500mm per annual. The climate is classified as a local steppe clima with a subtropical thorn woodland. The summer season of the Region is hot with a maximum temperature between 32 °C and 38 °C during the hottest months and coldest winter temperatures are around 10°C to 16 °C (Mendelsohn et al., 2002). In this region, December is known as the hottest month of the year, while July is known as the coldest month of the year in the region. The mean evaporation figure for the region lies from 3,000 mm to 3,200mm per annum.

The Omuthiya Towns receives an average annual rainfall of less than 134mm. According to the 13-year period of rainfall data on the World Weather Online website (2022), Omuthiya area received the highest rainfall of 389mm in November 2011 as shown in Figure 4-1.

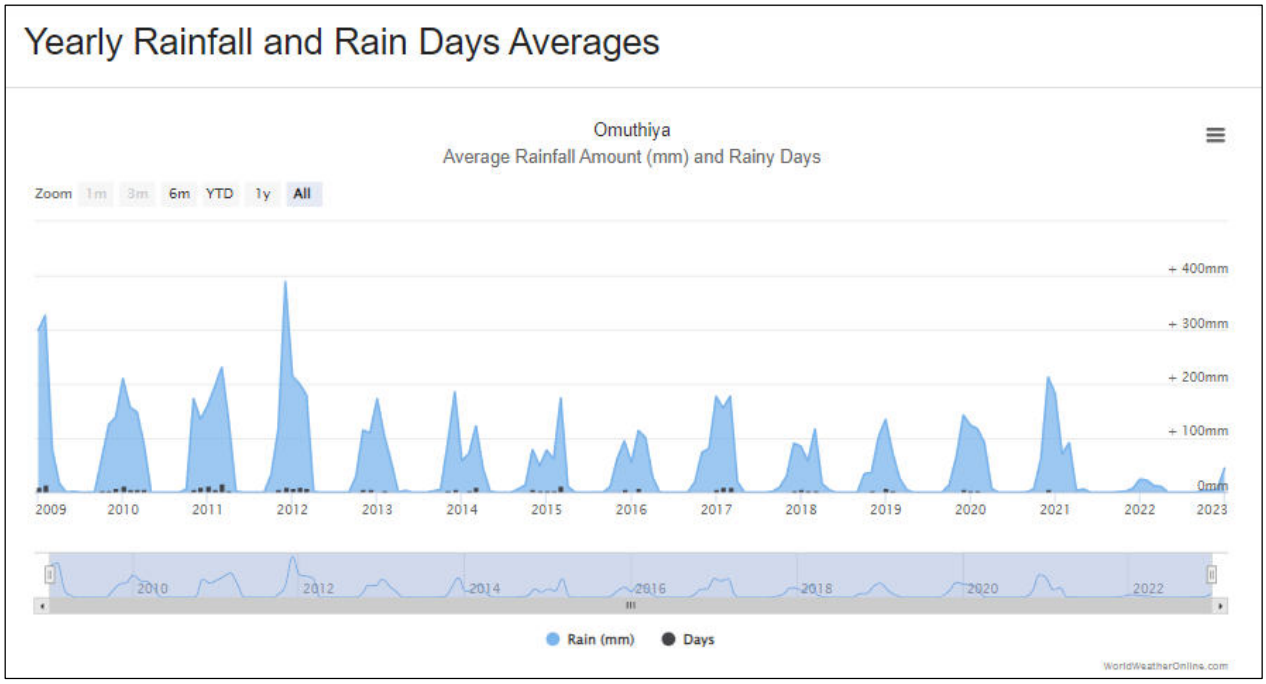

Figure 4-1: The average rainfall and rainy days for Omuthiya (World Weather online, 2022)

The highest average rainfall for the area is 134mm in January, followed by 124mm in December as shown in the chart in Figure 4-2.

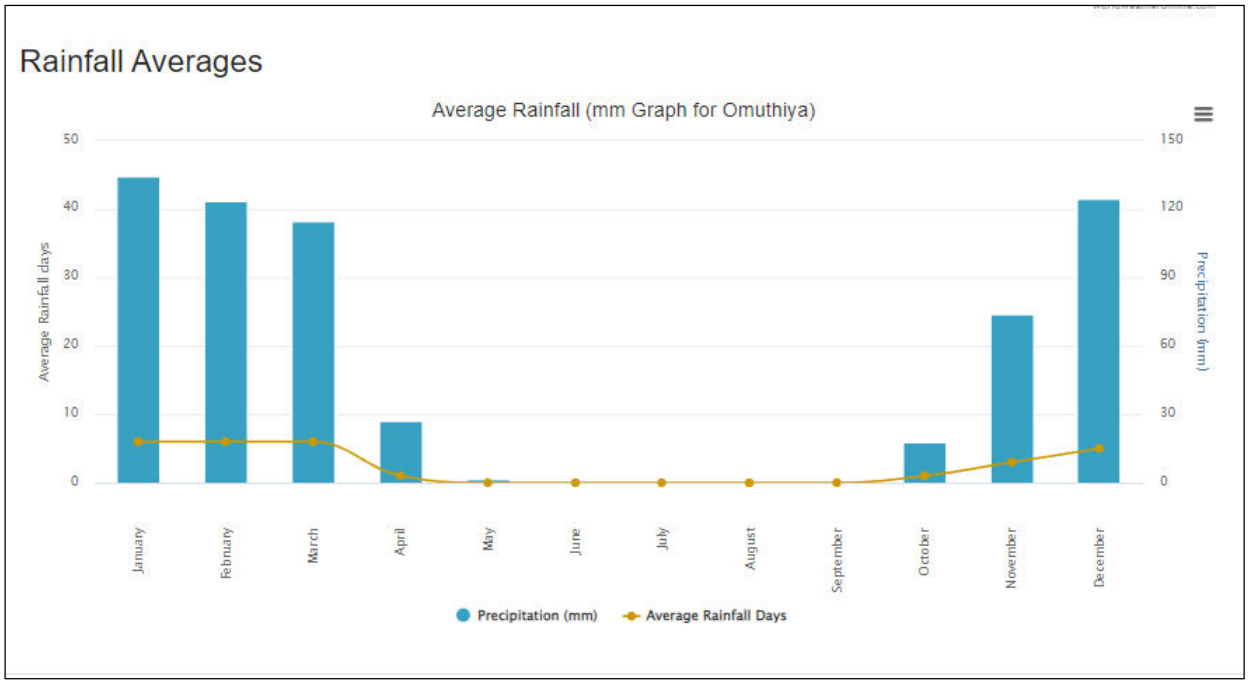

Figure 4-2: The monthly average rainfall for Omuthiya (World Weather online, 2022)

4.1.2 Temperature

Mendelsohn et al, (2002) indicated that the Omuthiya area has annual temperature of less than 16°C, minimum temperatures ranging between 4 and 6°C and maximum temperatures within the range of 34 to 36°C. According to World Weather Online (2022), the minimum and maximum temperatures for Omuthiya area are 10°C (in July), and 40°C (in October), respectively (Figure 4-3).

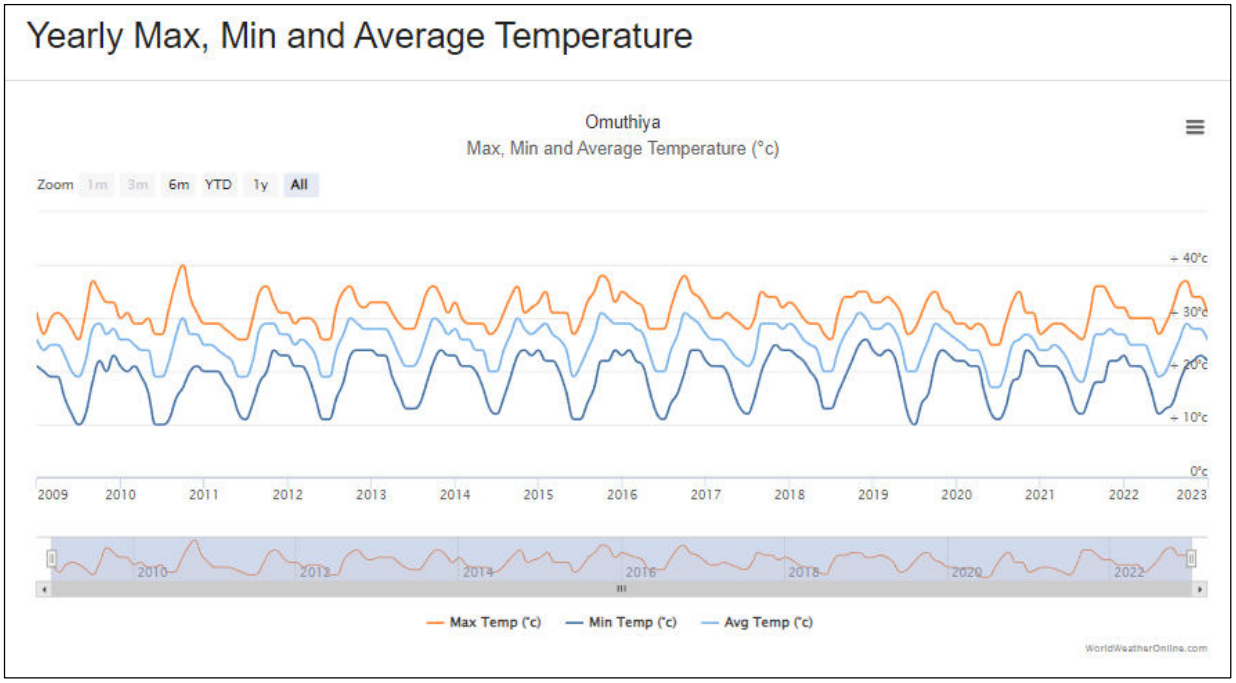

Figure 4-3: The maximum, minimum and average temperature for Omuthiya (World Weather online, 2022)

The monthly average high and low temperatures are 36°C and 11°C, respectively (

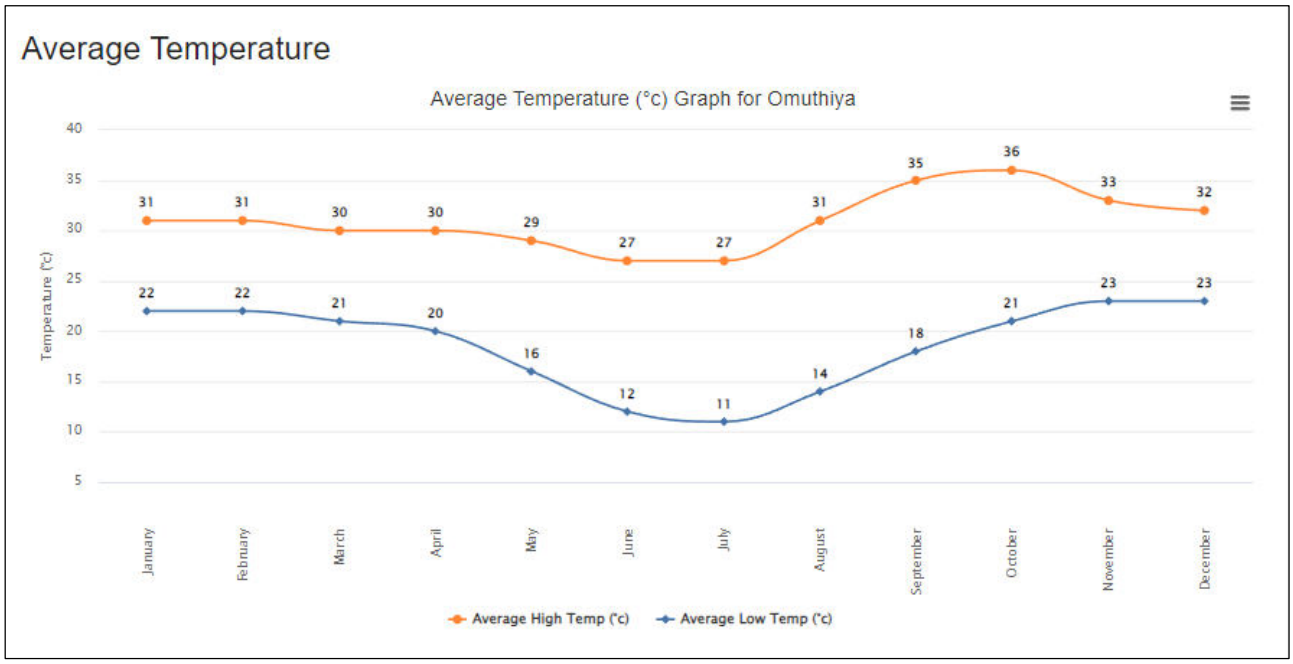

Figure 4-4).

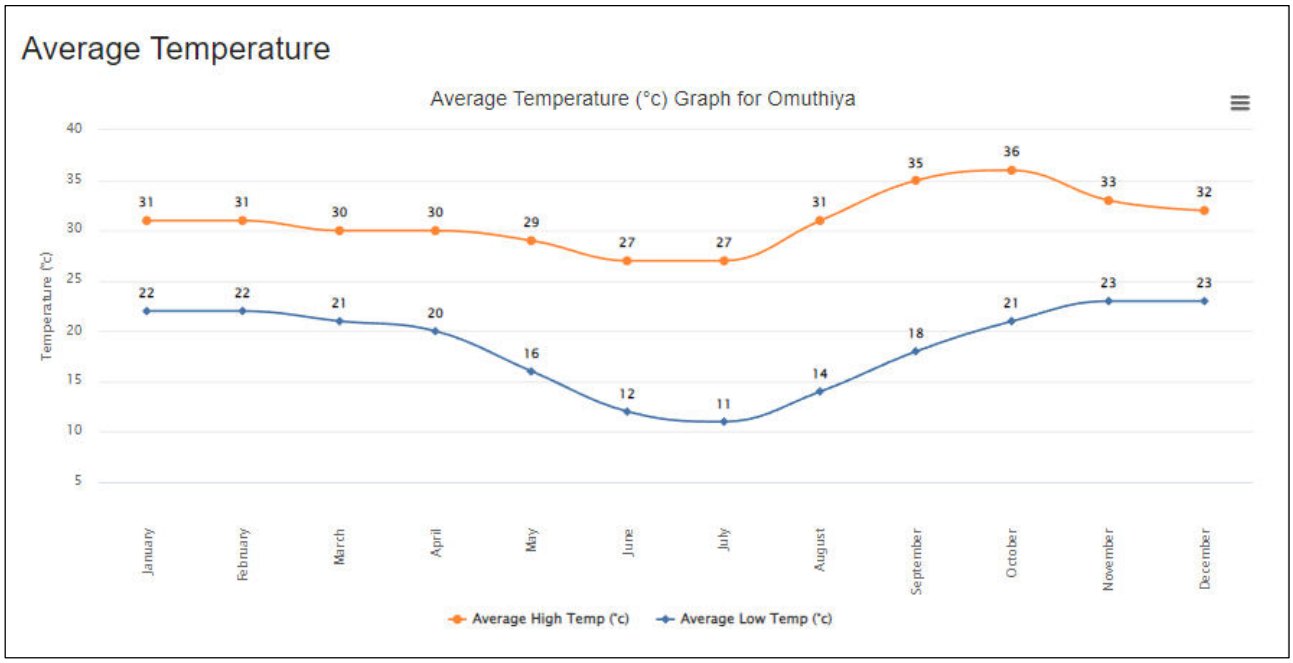

Figure 4-4: The monthly average temperature for Omuthiya (World Weather online, 2022)

4.2 Landscape

The landscape of the Omuthiya Town and surroundings is characterized by the Kalahari sediments, hence Kalahari Sandveld. This landscape is found in much of the northern and eastern Namibia dominated by Savanna woodlands growing on sands deposited by wind over the last 70-63 million years ago. The landscape is particularly flat, although the sands have been molded into dunes in some areas. Altitudes are highest in the central and western areas, from where the whole landscape slopes gently down to lower ground in the east and south (Mendelsohn et al., 2002).

4.3 Geology and Soils

The geology of the northern parts of Namibia is characterized by the unconsolidated to semi-consolidated sands, calcrete and gravel sediments of the Quaternary and Tertiary age of the Kalahari Group. The site area falls within the Cuvelai landscape, the Cuvelai lies on silt, clay, limestone, and sandstone sediments. The area is distinguished by a myriad of drainage channels known as oshanas, these oshanas direct water to the Etosha Pan. They often fill with water during the wet season and cut into the underlying sediments.

The geological map created for the site area (Figure 4-5) indicates that the cemetery site is underlain by red mudstone, siltstone, sandstone and conglomerate. On the surface, the site is overlain by the unconsolidated Kalahari sediments (sands).

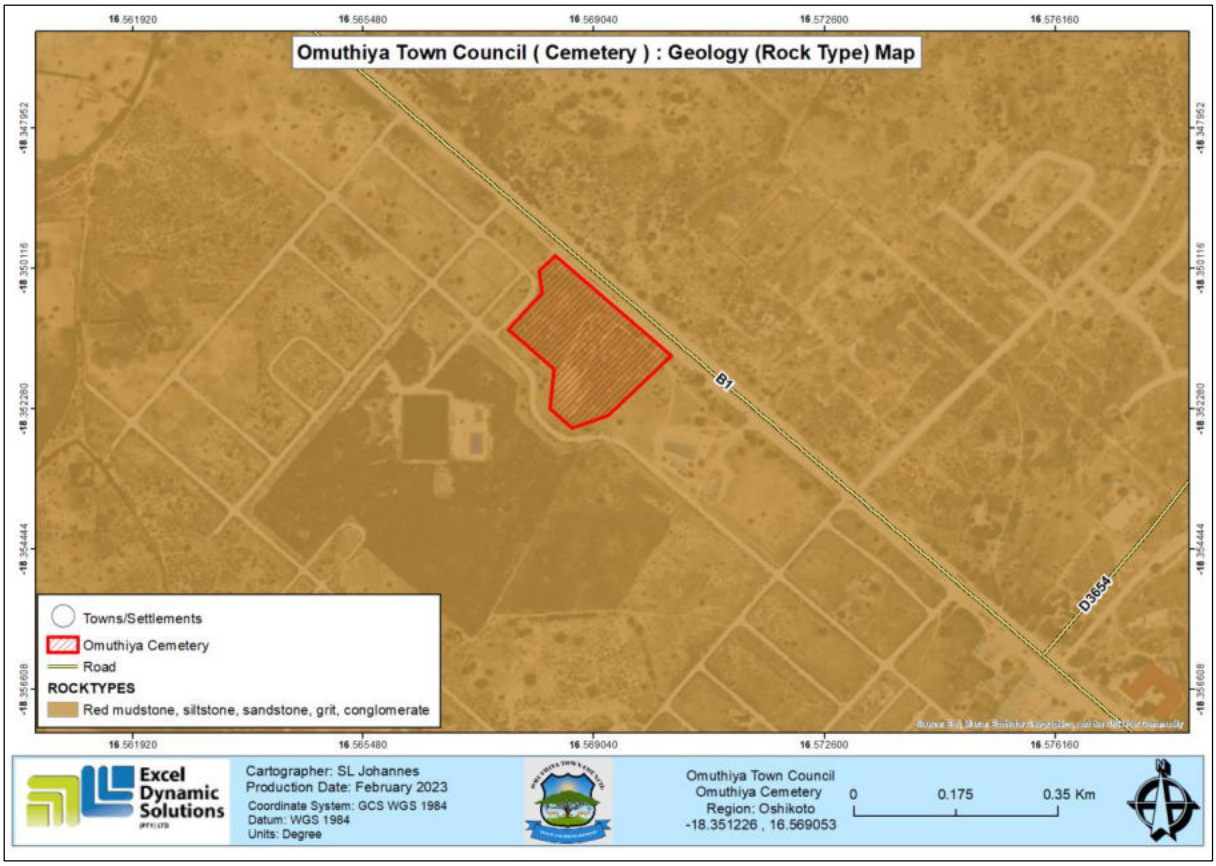

Figure 4-5: The geology of the site and Omuthiya Town

The project site and its surrounding are overlain by cambic arenosols as shown in Figure 4-6. According to Mendelsohn *et al*., (2002), the Cambic soils are these that are characterized by changes in colour, structure, and consistency, whereas Eutric soils are fertile with high base saturation. Cambisols are soils that were formed quite recently in geological time, mainly from medium-and fine-textured parent material deposited during sporadic flooding. Arenosols are formed from wind-blown sand and usually extend to a depth of at least 1m, with sand generally making up more than 70% of the soils and the rest of the soil particles consisting of clay and silt (Mendelsohn et al., 2002).

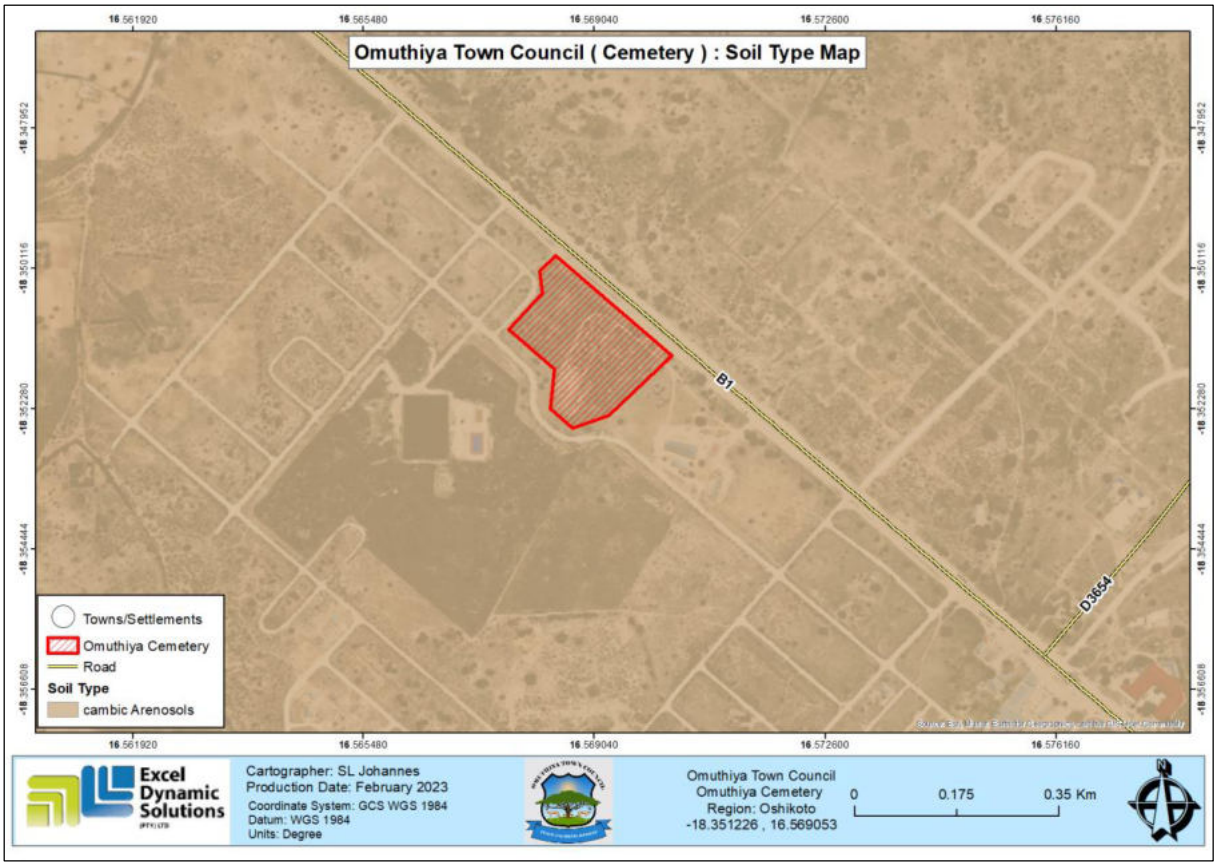

Figure 4-6: The dominant soil on and around the site

The site area is dominated by light brown sandy loamy soils covered by sparingly distributed grass.

4.4 Hydrology and Hydrogeology

There is not much water on the surface in Namibia, as the little rain that falls either evaporates, seeps into the ground or is rapidly drained by ephemeral rivers that dominate natural surface water systems inside the country. The only perennial water systems (rivers) that can hold surface water are extremely varied, ranging from great rivers that define the country's borders, to a host of smaller rivers and channels that flow at varying frequencies (Mendelsohn et al., 2002). The nearest perennial river to Omuthiya is the Kunene River at the borders of Namibia and Angola. This River is 344km long with a catchment of 107,000 km^2 and annual average water volume of 5,100 million m^3. The site is located within the Cuvelai catchment of the Etosha (Etosha-N River) Pan, an ephemeral river draining in a southern direction into the Etosha Pan. The local drainage

in the area is poorly developed and runoff usually collects in shallow drainage channels and depressions (*oshanas*, pans and *omurambas*).

The project area and the Oshikoto Region at large falls under the Cuvelai Groundwater Basin (Christelis and Struckmeier, 2011). Groundwater flow is mostly through primary porosity in the Kalahari cover, but flow along secondary structures known as fractures. The flow can also be influenced by the presence of other geological structures underlying formations such as contact rock unit zones. The Cuvelai-Etosha Basin (Unit 1 and 2), including Ohangwena Aquifer System (Unit 2) is a three-layered system dominated by unconsolidated sand with some sandstones, with an average aquifer thickness of 220 m. It has a high primary porosity and an average transmissivity value of 220 m²/day (Christelis *et al*., 2018).

Groundwater in the project site area is moderate and hosted in porous aquifers as shown in Figure 4-7.

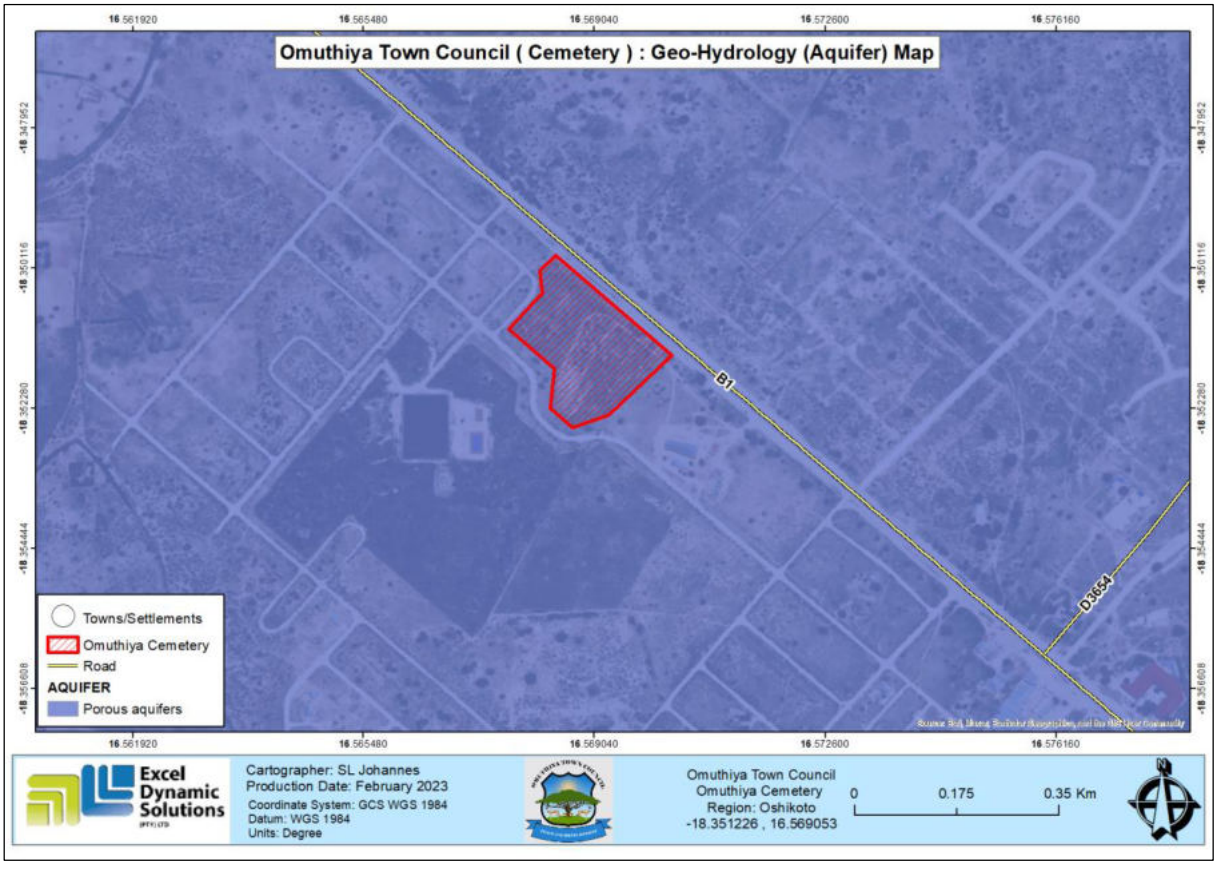

Figure 4-7: The hydrogeological map of the site and surroundings (in Omuthiya)

The groundwater flow in the project area can be expected to flow in a south-eastern direction towards the Etosha Pan. According to Christelis and Struckmeier (2011), the groundwater flow towards Etosha Pan is due to the structure of the Basin and its deepest point, i.e., the base level of the groundwater flow system. However, in terms of local drainage patterns, these may vary due to local groundwater abstraction in the area. The average piezometric level of the Cuvelai Basin is 30m below ground level, and the aquifer is mostly confined, but in some parts is unconfined. The typical borehole depth is 100 to 250m, and the mean annual recharge is 35 million cubic meters (Mm^3) (Christelis et al., 2018).

4.5 Fauna

Given the fact that Omuthiya is in a rural and communal set up, there are domestic animals on and around the cemetery. The observed and known animals along the roads, and in proximity of the site are sheep, cattle and goats. Other animals include cattle and donkeys.

In terms of wildlife, there were no known or observed wildlife around the project site.

4.6 Flora

The vegetation in the Oshikoto Region varies greatly from the north to the south and from the east to the west. The site area is medium vegetated by shrubs and trees. The site area is medium vegetated by shrubs and trees. The observed vegetation comprises of camelthorn (*Acacia (Vachellia) erioloba* and *reficiens*) and bitterbush or wild sage (*Pechuel-loeschea leubnitziae*). The photos of some of the vegetation observed onsite are shown in Figure 4-8.

Figure 4-8: The vegetation observed on and around the cemetery

4.7 Social and Economy

4.7.1 Demography

Based on 2011 Namibia Population and Housing Census, the population of the Oshikoto Region was 181,973 (94,907 females and 87,066 males) (Namibia Statistics Agency (NSA), 2014). The NSA also indicated that 13% of the population in the Region lived in urban areas and 87% in rural areas. The cemetery site falls within the Omuthiyagwiipundi (Omuthiya) Constituency which in 2011 had a population of population of 26,183 (13,611 females and 12,572 males).

4.7.2 Economic Activities

The main sources of household income for the Omuthiya Constituency's by 20211 farming contributing 39%, wages & salaries 24%, cash remittance 6%, business (non-farming) accounting

for 9% and pension at 17% (NSA, 2014). The main economic activities in and around Omuthiya Town include agriculture, the main economic activity with tourism becoming increasingly important with direct access from the Etosha National Park via the King Nehale Gate (Omuthiya Town Council, 2019). The Town has attracted a number of businesses and investors. These include a lot of small-medium enterprises as well as bigger and highly established companies.

4.7.3 Services and Infrastructure

The Omuthiya is well-equipped with services and infrastructure to keep the Town running smoothly. Some of the services and infrastructure are summarized below:

- Water supply: The Town gets its water supply from NamWater's Calueque water supply scheme.
- Power supply: The Town is powered by northern regional electricity distributor (NORED)'s power grid.
- Roads and Railways: The Town of Omuthiya is connected to other major towns by B1 road and there are well-maintained street roads in the Town. The gravel roads connect the Town to nearby villages and settlements. The railway line also crosses the town, resulting in ribbon type urban settlement along the road.
- Health Care: in the Town, there is one hospital (Omuthiya District Hospital), Omuthiya Primary Health Care Clinic, Onakazizi Clinic and Northland Private Clinic.
- Education: There are private, primary and combined schools in the Town.
- Other services: there are 3 banking institutions (Standard Bank, First National Bank and Bank Windhoek). There are also small, medium and large-scale supermarket providing services to the Town's residents and travelers alike.

4.7.4 Surrounding Land Uses

The site is bordered to the immediate east by the ELCIN Church and further the Omuthiya Town, to the north is the B1 road and homesteads to the south (immediate to the gravel road from Omuthiya Town to the western side of the Town). To the western side, there is a proposed Town extension with some streetlights erected already. Some of the services and neighbouring land uses around the cemetery are shown in Figure 4-9.

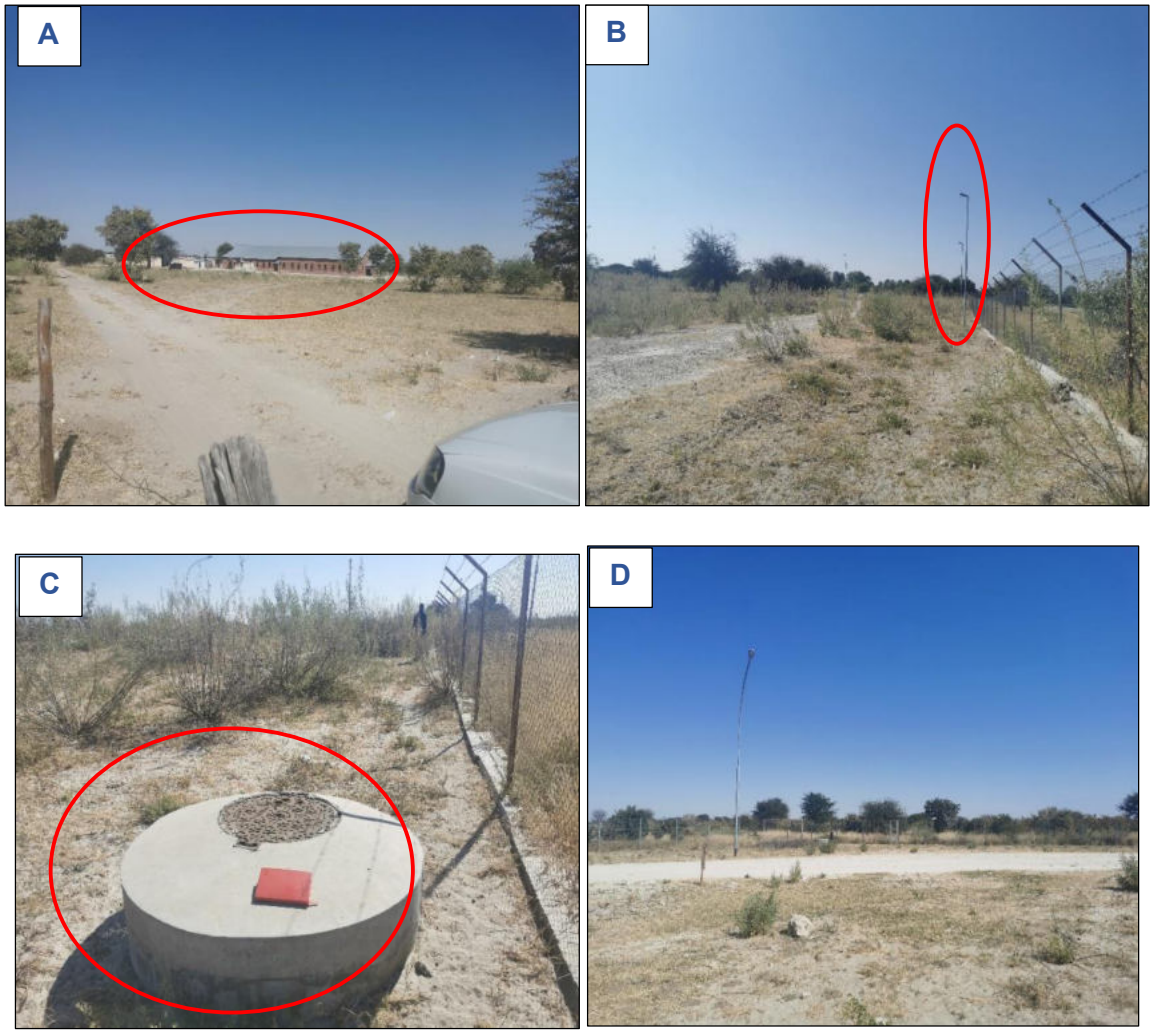

Figure 4-9: A- Omuthiya ELCIN Church, B – Street light poles at the new extension southwest of the site, C- Manhole (Sewage drain) and D – gravel road and homestead fence

4.7.5 Archaeology and Heritage Resources

During site visit, there was no observed heritage or archaeological site (the graves are not older than 50 years to be considered heritage sites). Although, there was no physical evidence onsite, the absence of surface findings does not mean an absence of subsurface resources that may be unintentionally unearthed during site maintenance and grave digging.

For the successful implementation of this EMP, the roles and responsibilities need to be assigned to different parties at the Omuthiya Town Council (and contractors). Although the OMTC holds overall responsibility of implementing the EMP, individual parties operating under the Town Council holds the responsibility of implementing specific measures (as entirely individually or collectively), therefore, the EMP roles and responsibilities are provided under the next chapter.

5 EMP IMPLEMENTATION: ROLES & RESPONSIBILITIES

The OMTC, as the project Proponent has the overall responsible for the implementation of the EMP and the associated Closure Plan. The roles and responsibilities of all delegates/parties involved in the effective implementation of this EMP are set in Table 5-1.

Table 5-1: The list of responsible parties and their roles in implementing the EMP & Closure Plan

Role (Person and or Institution)	Responsibilities
The Proponent (Omuthiya Town Council)	-Managing the implementation of this EMP and updating and maintaining it when necessary. -Management and monitoring of individuals and/ or equipment on-site in terms of compliance with this EMP and issuing fines for contravening EMP provisions.
Safety, Health & Environmental (SHE) Officer / Environmental Health Officer (EHO)	-Conducting site inspections of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP). -Advising the Proponent on the removal of person(s) and/or equipment not complying with the provisions of this EMP. -Undertaking an annual review of the EMP and recommending additions and/or changes to this document.
Site Manager / Operator	-Collaborate with the SHE Officer to ensure the implementation of the EMP, especially on the technical aspects regarding the site upgrading/maintenance and operations. -Collaborate with the SHE Officer / EHO to ensure the implementation of the EMP, especially on the technical aspects regarding the cemetery upgrading and maintenance works.
Upgrading/Maintenance Contractor	-Collaborate with the SHE Officer and Site Manager to ensure the implementation of the EMP, especially on the technical aspects regarding the upgrading/maintenance works. -Ensure that their works onsite comply with the EMP components and requirements relevant to their works.

6 ENVIRONMENTAL MANAGEMENT AND MITIGATION MEASURES

6.1 Identification of Key Impacts

The key potential impacts associated with the cemetery operations and maintenance thereof are as follows:

Positive impacts

-Social: gathering of families to give their loved ones a respectful and dignified burial process in a comfortable place.

-Employment: creation of jobs to the locals (temporary work for the site upgrading phase, and permanent / contractual work for cemetery operation & maintenance and security).

-Controlled pollution and improved management of cemeteries in the Town by using the drafted EMP for the cemetery.

Potential Negative impacts

-Impact on water resources (groundwater pollution).

-Physical land (soil) disturbance.

Potential Negative impacts (Continued)

-Archaeological resources impact through the inadvertent unearthing of archaeological sites.

-Occupational & public Health and safety: improper handling of site materials and equipment may cause health and safety risks and operational

-Vehicular traffic safety

-Environmental pollution (waste generation).

-Visual impact.

The impacts will be mitigated by the implementation of measures provided under the next section.

6.2 Environmental Management and Mitigation Measures for the Cemetery

The management actions provided under this section are aimed at avoiding the above-listed potential negative impacts, where possible. Where it is impossible to avoid the impacts, mitigation measures are provided to reduce the impacts' significance. The measures are recommended for the planning (Table 6-1), site upgrading & operational phase (Table 6-2) and decommissioning / discontinuance (Table 7-1).

Table 6-1: The Environmental management and mitigation measures for the Planning of the Cemetery Upgrading

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Planning Phase					
Cemetery wall design	Utilization of unsuitable materials such as precast	-The cemetery wall should be constructed with bricks or to ensure that the graves are protected from theft and vandalism. -The cemetery site wall should be constructed with steel pole to ensure that the site is protected from vandalism and unauthorized access – please refer to an example of a better and strong/vandalism & theft resistance wall of Oshakati Town Council site - Appendix B. -The materials for the wall should be well designed, heights and thickness wise.	-The cemetery wall materials are bricks and not precast. -The wall is higher than the walls on the existing cemeteries	-Proponent	Pre-site upgrading
Site infrastructures and services	Lack of necessary infrastructure	-The cemetery upgrade design should include the lighting of the cemetery, security control gate, water supply, ablution facilities, parking areas, and aesthetic trees for the site -Appropriate signage such as ‘’No unauthorized entry’’ and ‘’Site Name’’ should be drawn for pasting onsite.	-All the infrastructures and services are included in the cemetery layout	-Proponent (Planning)	During this phase and before site upgrade
Employment opportunities	Unfair practices of labour recruitment an opportunity leads to conflicts	-Local should be given preference for works (skilled, semi and unskilled) at the cemetery -Equal opportunities should be given to women and men.	-There is a fair recruitment process -Locals are given preference for the work	-Proponent (Human Resources Department)	When deemed necessary during operations

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Goods and services procurement	Conflicts from procurement of goods and service by outsiders over local business	-The procurement of works for site upgrade works should follow a fair and transparent process. -Procurement should be open only to local and Namibian companies with strong local participation. -The business opportunities such as site cleaning services and maintenance should be given to local companies	-Goods and services are procured from Omuthiya -Local businesses are considered for procurement opportunities	-Proponent (Procurement Department)	When deemed necessary throughout the project -Contractor to be appointed before works

Table 6-2: The Environmental management and mitigation measures for the Cemetery Upgrading, continued Operational & Maintenance

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Upgrading and Operational & Maintenance Phase					
EMP implementation and training	Lack of EMP awareness and implications thereof	-EMP trainings should be provided to all project personnel. -All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. The site should be inspected, and a compliance audit done throughout the project activities, monthly. -Implement EMP non-compliance penalty system onsite.	-Compliance monitoring conducted bi-annually and should be recorded. -The ECC is renewed every 3 years -Bi-annual reports -Records of EMP training conducted.	-SHE Officer / EHO	Throughout the project cycle
Water and power supply	Lack of basic services and infrastructure	-A water (tap) and power supply lines should be installed onsite.	-The site is equipped with sufficient facilities and services	-Site Manager	During site upgrading

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-The ablution facilities comprising toilets (minimum 2 toilets for women and 2 toilets for men) should be installed at the cemetery.			
Soils	Physical soil / land disturbance and loss of topsoil during site upgrade	-The topsoil that was stripped from certain site areas to enable project works should returned to its initial position, should be returned. -Site soils should not be disturbed, if not needed or related to the actual upgrading works. -All site upgrading trenches and pits should be backfilled, and areas rehabilitated. -Use techniques to minimise compaction of soil, such as restricting access during wet conditions, and using protective boarding and low ground pressure machinery.	-No stockpiled soils after completion of works -No new erosion gullies.	-SHE Officer / EHO	Throughout the project cycle
Site Fire outbreaks	Accidental fire outbreaks risks	-Warning signs of ''NO SMOKING'' and ''NO THROWING USED CIGARETTES' should be clearly written (in English and *Oshiwambo*) and pasted at cemetery entrance. -The site should be equipped with at least two fire extinguishers at the security gate and should be serviced accordingly. The personnel should be trained on how to use these. -No open fires to be created onsite. -The contact details of fire services should be readily and visibly displayed at the entrance office/security control. -All personnel must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials (e.g., rubbish, dry vegetation, and hydrocarbon-soaked soil) onsite.	-No open fires by site personnel and visitors -Fire extinguishers are readily available and up to date with service	-Proponent -SHE Officer / EHO -Site Manager	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Site safety and security	Compromising site security and safety	-The site fencing should be upgraded to a high brick structured wall or steel pole wall to ensure the security of the cemetery and protect the site from theft and vandalism. -A modern security gate and security control point should be installed at the site entrance. -The site should be equipped with 24-hour security surveillance in case of opportunistic activities such as theft and vandalism.	-The site wall and security measures are in place	-Proponent: Site Manager -Site Upgrading Contractor	During site upgrading stage
Occupational and community health and safety	Project related injuries and other health and safety related issues on personnel and locals	-Project personnel and contractors should be inducted provided on the health & safety measures, including the risks of mishandling equipment, materials on site and health and safety risk associated with their respective jobs. -The contact details of ambulance and other extensive health care services should be readily and visibly displayed onsite (at the gate). -A fully furnished first aid kit should always be onsite and train 2 or 3 site personnel on administering first aid. -Personnel should be properly equipped with appropriate personal protective equipment (PPE) where necessary and depending on the job undertaken onsite. -The heavy vehicle, equipment and machinery should be properly secured to prevent any harm or injury to the Proponent's personnel. -An emergency preparedness plan should be compiled, and all personnel appropriately trained.	-Comprehensive health and safety plan for all project activities compiled. -Occupational Health and Safety Personnel -Health and Safety Trainings -Fully equipped first aid kit onsite -Trained workers to administer first aid	-Proponent -SHE Officer / EHO -Site Upgrading Contractor	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-Personnel should not be allowed to drink alcohol prior to and during working hours nor allowed on site when under the influence of alcohol (leading to health & safety risks).			
Water Resources Use	Over-utilization of water resources	-Water reuse/recycling methods should be implemented as far as practicable. -if there will be water storage tanks onsite, these should be inspected daily to ensure that there is no leakage, resulting in water loss. -Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and become accountable	-No water leakages from site water storage tanks -Water is recycled where possible	-SHE Officer / EHO -Site Upgrading Contractor	Throughout the project life cycle
Soils and water resources	Soils and water resources pollution	-Spill control preventive measures should be in place on site to management soil pollution. This entails basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training for all personnel. -Personnel should be sensitized on the impacts of soil pollution. -Project machines and equipment should be equipped with drip trays to contain possible oil spills. -The soil composition should be prepared with recycled materials if necessary (crushed materials). -Polluted soil should be removed immediately and put in the designated hazardous waste storage containers for later disposal. -Refuelling of vehicles should be done offsite (at filling stations in Town).	-No complaints of pollutants on the soils due to project activities -No visible oil spills on the ground or pollution spots. -Sufficient waste containers provided onsite -Non-permeable material to cover the ground surface at areas where hydrocarbons and potential pollutants are	-SHE Officer / EHO	Throughout the project life cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility. -Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area offsite.	utilized during site upgrading.		
Biodiversity	Loss Fauna and Flora	-Avoid the killing or disturbing of all kinds of animals, birds and reptiles encountered onsite. -Avoid harvesting or cutting down of local vegetation. -Environmental awareness on the importance of biodiversity preservation should be provided to workers.	-No killing or disturbance of faunal biodiversity	-SHE Officer / EHO -Site Manager	Throughout the project cycle
Road use and safety	Increase in vehicular traffic flow	-The transportation of materials to and from site should be limited to twice a week only. -Ensure that the access roads are frequently maintained and have sufficient road signs. -Vehicles drivers should be in possession of valid and appropriate driving licenses and adhere to the road safety rules. -Drivers should drive 40km/hour and be on the lookout for people on roadsides, especially children. -Vehicle's drivers should not be allowed to operate vehicles while under the influence of alcohol. -The deliveries and collection to and from site should be done during weekdays between the hours of 8am & 5pm.	-No complaints from members of the public regarding vehicular traffic issues related to the project activities. -All vehicle drivers are appropriately licensed and possession of valid driving licenses.	-Proponent -SHE Officer / EHO -Site Manager -Site Upgrading Contractor	Throughout the project life cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Archaeology and heritage	Accidental disturbance of archaeological or heritage objects	-Identification of unmarked graves or any archaeological significant resources onsite should not be disturbed but are to be reported to the project Town Council who then informs the National Heritage Council for relocation. -On-site personnel must be sensitized to exercise and recognize "Chance Finds Heritage" –Appendix A. -Adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered while conducting site works. -When the removal of topsoil and subsoil on the site for site works, the site should be monitored for subsurface archaeological materials by Environmental personnel.	-Preservation of all artefacts and objects that are discovered on and around the project site during earthworks	-Site Manager -SHE Officer / EHO -Site Upgrading Contractor	As and when required, i.e., and during site works
Littering and waste management (general waste and sanitation)	Environmental Pollution	-Project personnel should be sensitized to dispose of waste in a responsible manner and not to litter. -Ensure that there are no wastes left onsite. -All domestic and general operational waste produced daily should be contained onsite until such that time it is removed by the waste removal staff / contractor. -No waste may be buried or burned on site. -Maintain separate waste bins for different wastes waste should be in separate waste bins.	-No visible litter within and around the Project area owing to the Project -Provision of sufficient waste storage containers -Waste management awareness	-Site Manager -SHE Officer / EHO -Site Upgrading Contractor	Throughout the project cycle
	Wastewater (sewage)	-Ensure that there are sufficient toilets (portable) for the upgrading and flushing toilets for the operational phase. -Sewage and wastewater generated onsite during site upgrade should be properly contained for transportation to the Town's sewage treatment facility	-Adequate toilet and basic ablution facilities on site.	-Site Manager -SHE Officer / EHO	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-Open defecation on /around the site is strictly prohibited.			
Air Quality	Dust generation, fumes (poor air quality)	-Vehicles should only be driven at the recommended site speed to avoid dust generation onsite and surroundings. -The heavy vehicles and fumes generating equipment (during site upgrade and maintenance) should not be left idling when not in use. -Avoid heavy trenching onsite during windy times of the day during site upgrade.	-No complaints from the public about vehicle emissions and dust generation. -Visible efforts to curb dust	-Site Manager -SHE Officer / EHO -Site Upgrading Contractor	Throughout the project cycle
Noise	Nuisance	-Noise from project related vehicles and equipment should be at acceptable levels. -The project activities should not be carried out during the night or before 08h00 in the morning (until 17h00) and should be carried out during weekdays only. -Working hours for site upgrading works should be restricted to between 08h00 and 17h00 to avoid noise generated by equipment and the movement of vehicles before or after hours. -Site upgrading workers and contractors should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.	-No complaints from local communities such as neighbours about excessive noise from site -Noise protective equipment for workers	-Site Upgrading Contractor -Site Manager -SHE Officer / EHO	Throughout the project cycle
Visual	Visual nuisance due to the cemetery presence	-Consider using vegetation along the cemetery wall/fence to give the site a unique and beautiful look (aesthetics). -All the available options to improve the aesthetic of the site should be considered so that it blends in with the surrounding area or at least enhance it for a better appeal to the community.	-The site is vegetated to beautify the cemetery	-Proponent -Site Manager	During upgrade and ongoing (during maintenance)

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-The aesthetic trees should be taken care of by watering and trimming them when necessary.			

7 CLOSURE PLAN FOR THE CEMETERY IN THE FUTURE

According to[1] (Myslinska *et al* (2021), the decommissioning of cemeteries seems to be an issue that arouses moral opposition among many. Due to constantly expanding cities, the topic of decommissioning or re-using cemetery space arises often, and changes to the functions of cemetery sites occur regardless of the moral assessment of this practice.

It should be noted that decommissioning a cemetery does not imply removing the buried bodies, but this is a cessation of burying bodies in the cemetery once capacity has been reached, i.e., there is no space for new graves. Therefore, decommissioning (closure) in this case would mean discontinuance to bury bodies and maintaining the cemetery despite no new burials are made. This is because the cemetery will continue to hold memories of families who have their deceased family members or loved ones resting in the cemetery. Cemeteries are also heritage sites for generations to come, as they would be keen to know where some of their great-great grandparents (ancestors) were raised to rest. Table 7-1 below contains few measures to be taken by the Omuthiya Town Council when closing the cemetery, once they reach capacity (discontinuing operations on the cemetery).

Table 7-1: The Management measures for the Closure (Discontinuance) of the Cemetery

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Closure (Discontinuance) Phase				
Cemetery Wall/Fencing and associated infrastructure	-The site fencing should be maintained to ensure the security of the cemetery and protect the site from theft and vandalism. -The water supply line, and lightings should remain operational after cemetery closure. -The cemetery wall (fence) should stay intact and should be maintained.	-The cemetery is looked after as it was during the operational phase	-Proponent	Upon cessation of site operations

[1] Myslinska, A.; Szczepanski, J.; Dłubakowski, W. The Impact of Decommissioning Cemeteries on the Urban Ecosystem. Sustainability 2021, 13, 9303. https://doi.org/10.3390/ su13169303

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-The security control should remain onsite to ensure that the inactive cemetery is not vandalised or there is no theft of cemetery infrastructures and grave accessories.			
Graves and cemetery access	-The graves should remain intact and undisturbed, as the families will continue to visit their loved ones' final resting places (graves) in the cemetery. -The grave markings should be maintained by informing the next of kin of the need to revamp their loved ones' graves. -Access to the cemetery for visits and grave cleaning/revamping by family members or loved ones should be strictly done from 08am to 5pm only. No visitations or grave maintenance after 5pm. -No unauthorized gatherings within the cemetery premises.	-The community adheres to the measures provided -No cemetery entrance by the public after 5pm	-Proponent	Upon cessation of site operations
Infrastructure and structures: Decommissioning of services and infrastructures	-Dismantling of structures such as offices and materials that are no longer required upon cemetery closure. These, if still in usable condition can be utilized for other purposes in the Town. If cannot be reused, the materials should be taken to the Town Council dumpsite. -All the waste generated from leading to the last days on site should be transported to the Town Council dumpsite. -Transport all equipment to offsite storage facilities.	-Structures are used for other purposes in the Town -Waste transported to an approved dumpsite	-Proponent -SHE Officer / EHO	At the end of the site operations

8 ENVIRONMENTAL MONITORING

To ensure that the implementation of recommended environmental management and mitigation measures is working and produces the desired results (to minimize and or eliminate adverse impacts), implementation of measures will need to be monitored and reported on. Monitoring is crucial as it helps with early identification of new adverse impacts that would arise during project operations/implementation and timely development of mitigation measures for implementation.

The Bi-annual environmental monitoring reports should be compiled by the Proponent's availed resources (EHO or SHE Officer) and submitted to the DEAF for archiving on a bi-annual basis as required by the conditions to be attached to the ECC. The reports should be audited annually by an Independent Environmental Consultant and prior to applying for an ECC renewal.

9 LIST OF REFERENCES

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APPENDIX A: CHANCE FINDS PROCEDURE (AFTER KINAHAN, 2020)

Areas of proposed project are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development work. The procedure set out here covers the reporting and management of such finds.

Scope: The "*chance finds*" procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The "chance finds" procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): "*a person who discovers any archaeological …. object ……must as soon as practicable report the discovery to the Council*". The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.
Manager/Supervisor must report the finding to the following competent authorities:

- National Heritage Council of Namibia (Head Office: +264 61 244 375 / Technical Office +264 61 301 903)
- National Museum (+264 61 276 800),
- National Forensic Laboratory (+264 61 240 461).

Archaeological material must NOT be touched. Tempering with the materials is an offence under the heritage act and punishable upon conviction by the law.

Responsibility:

Operator:	To exercise due caution if archaeological remains are found
Foreman:	To secure site and advise management timeously
Superintendent:	To determine safe working boundary and request inspection
Archaeologist:	To inspect, identify, advise management, and recover remains

Procedure:

Action by person identifying archaeological or heritage material:

a) If operating machinery or equipment stop work

b) Identify the site with flag tape

c) Determine GPS position if possible

d) Report findings to foreman

Action by foreman

a) Report findings, site location and actions taken to superintendent

b) Cease any works in immediate vicinity

Action by superintendent

a) Visit site and determine whether work can proceed without damage to findings

b) Determine and mark exclusion boundary

c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by Archaeologist

a) Inspect site and confirm addition to project GIS

b) Advise NHC and request written permission to remove findings from work area

c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

a) Actions as above

b) Field inspection by archaeologist to confirm that remains are human

c) Advise and liaise with NHC and Police

d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.

APPENDIX B: EXAMPLE OF THE RECOMMENDED SITE WALL (AS PER OSHAKATI TOWN COUNCIL (TC)'S SOLID WASTE DUMPSITE FENCING/WALL)

Oshakati TC solid waste dumping site entrance and eastern side wall