



**URBAN
DYNAMICS**
town and regional planners

AUGUST 2023
REPORT NUMBER: APP-0001644

ENVIRONMENTAL SCOPING ASSESSMENT

PROPOSED TOWNSHIP ESTABLISHMENT ON PORTION A OF THE REMAINDER OF FARM OKAHAO TOWNLANDS EXTENSION NO. 1213 (TO BE KNOWN AS KASHENDA EXTENSION 3)



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PLANNING AND SCOPING REPORT FOR THE ESTABLISHMENT OF A TOWNSHIPS AT OKAHAO PREPARED BY

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GENERAL LOCATION DESCRIPTION OF THE DEVELOPMENT AREA:

DESCRIPTOR:	LOCATION SPECIFICS:
NATURE OF ACTIVITIES:	Construction of public roads, infrastructure through township establishments.
REGION:	Omusati Region
LOCAL AUTHORITY:	Okahao Town Council
FALL WITHIN:	Within the Remainder of Farm Okahao Townlands Extension No. 1213
NEAREST TOWNS / CITY:	Okahao
SIZE OF PTN. A	119 441 km ²
LAND USE:	Undetermined
STRUCTURES:	No Structures
HISTORICAL RESOURCES:	No Historical Resources
CEMETERY:	No Cemetery
FLOODLINES:	Floodlines
ENVIRONMENTAL SIGNIFICANT ASPECTS:	<ul style="list-style-type: none"> ➤ Potential Removal of Protected Trees ➤ Potential Flooding
LATTITUDE:	-17.54014S
LONGITUDE:	15.02542E

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ABBREVIATION:	DESCRIPTION:
am	ANTE MERIDIEM / BEFORE MIDDAY
Av	AVENUE
BID	BACKGROUND INFORMATION DOCUMENT
DEM	DIGITAL ELAVATION MODEL
ER	EMPLOYERS REPRESENTATIVE
EA	ENVIRONMENTAL ASSESSMENT
EC	ENVIRONMENTAL COMMISSIONER
ECO	ENVIRONMENTAL CONTROL OFFICER
EMP	ENVIRONMENTAL MANAGEMENT PLAN
Etc.	ET CETERA / OTHER SIMILAR THINGS
e.g.	EXEMPLI GRATIA
FRMP	FLOOD RISK MANAGEMENT PLAN
HIV	HUMAN IMMUNODEFICIENCY VIRUS
i.e.	ID EST. / IN OTHER WORDS
I&APs	INTERESTED AND AFFECTED PARTIES
NBD	THE NAMIBIA BIODIVERSITY DATABASE
NHC	NAMIBIAN HEALTH CARE
NORED	NORTHERN REGIONAL ELECTRICITY DISTRIBUTOR
pm	POST MERIDIEM / AFTER MIDDAY
SME	SMALL-AND-MEDIUM-SIZED ENTERPRISE
TRRP	TREE REMOVAL AND REPLACEMENT PLAN
TB	TUBERCULOSIS
URPB	URBAN AND REGIONAL PLANNING BOARD
WMP	WASTE MANAGEMENT PLAN
UNIT SYMBOL:	UNIT DESCRIPTION:
0°	DEGREES CELSIUS
E	EAST
ha	HECTARES
Km	KILOMETRE
m	METER
mm	MILLIMETRE
S	SOUTH
m ²	SQUARE METERS
%	PERCENTAGE

The demand for employment often surpasses the available job opportunities within Namibia, resulting in high unemployment rates and the emergence of informal settlements. These settlements often lack basic services and amenities, further exacerbating the living conditions of ultra-low-income residents. To address these challenges and promote sustainable urban development, initiatives are being undertaken to provide secure housing and proper infrastructure for these vulnerable populations.

DWN recognizes the pressing need to address these challenges and improve the lives of ultra-low-income residents. The organisation's goal is to provide security of tenure, access to quality housing, and essential services to communities within Namibia. To achieve this, DWN has embarked on a project to establish one new township at Okahao in partnership with the town council.

As a result, DWN appointed Urban Dynamics Africa to plan and obtain Environmental Clearance to establish the new township on Portion A of the Remainder of Farm Okahao Townlands Extension No. 1213.

For the purpose of obtaining approval from the Ministry of Urban and Rural Development through the Urban and Regional Planning Board, an Environmental Clearance Certificate must first be obtained from the Ministry of Environment, Forestry and Tourism.

3 PURPOSE OF THE REPORT

In terms of the Environmental Management Act (Act, 7 of 2007), Regulations, township establishment is not listed. Although Section 27 of the Act lists land use and transformation of an area within which activities may be listed, the honourable Minister chose not to list township establishment as one such activity.

However, Urban Dynamics acknowledges that township establishment may, in some cases, have unacceptable environmental impacts. Impacts are generally limited since it is mainly done to extend existing urban areas by way of laying out new erven on townlands already earmarked for urban development. To ensure that there are no unacceptable or unmitigated environmental and social impacts, Urban Dynamics provides the Environmental Commissioner (EC) with a baseline report, which will enable him to screen the project and determine whether a clearance certificate can be issued, or a full assessment is required. Find attached a copy of the meeting minutes with the Environmental Commissioner wherein this modus operandi was agreed upon (**Appendix "D"**).

4 NATURE OF THE ACTIVITY

The purpose of the application is to obtain approval from the Ministry of Environment, Forestry and Tourism in terms of the Environmental Management Act (Act 7 of 2007),

Section 10.1(a), 10.1(b), and 10.2(a), for environmental clearance for the construction of bulk water pipelines, the construction of public roads, and

Section 8.8, 8.10 and 8.11 of the Act, for construction and activities in watercourses within flood lines, the reclamation of land from below or above the high-water and the alteration of natural wetlands.

This report documents the baseline information necessary to enable the EC to screen this project and issue an Environmental Clearance Certificate in **Section 33 of the Environmental Management Act (Act 7 of 2007)**. It deals with the nature of the project, identifies the potential impacts that may be expected and the mitigation measures that will be implemented to deal with them.

5 LEGISLATION

The following table provides the legislative framework against which the application should be assessed:

THEME	LEGISLATION	PROVISION	PROJECT IMPLICATIONS
	The Constitution of the Republic of Namibia First Amendment Act 34 of 1998	<ul style="list-style-type: none"> ❖ Article 16 (1) guarantees all persons the right to acquire, own and dispose of property as an individual or in association with others. ❖ Article 95 (i) The state shall actively promote and maintain the welfare of the people by adopting, inter-alia, policies aimed at managing the ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all. 	<p>The project makes provision for freehold title ownership.</p> <p>The project should protect the ecological integrity of the area's ecosystems and social environment.</p>
Environmental	Environmental Management Act 7 of 2007	<ul style="list-style-type: none"> ❖ Section 27 requires that projects with significant environmental impacts are subject to an environmental assessment process. ❖ Section 2(b-c)) requires adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project. ❖ Section 10(1), construction of (b) public roads and Section 10.2 route determination of roads and design of associate physical infrastructure (a) public road whereby the Minister of Environment, Forestry and Tourism or in a manner prescribed by the Minister. ❖ - Details principles which are to guide all EIAs 	This Act and its regulations should inform and guide this EIA process to ensure that Environmental Clearance is obtained.
	EIA Regulations GN	<ul style="list-style-type: none"> ❖ Section 21 details the requirement for public consultation within a given environmental 	

	57/2007 (GG 3812)	<p>assessment process.</p> <ul style="list-style-type: none"> ❖ Prescribes the procedures to be followed for authorisation of the project (i.e. Environmental clearance certificate). 	
Forestry	Forestry Act 12 of 2001	<ul style="list-style-type: none"> ❖ Section 22(1) states that tree species and any vegetation within 100m of a Watercourse may not be removed without a permit. ❖ Provision for the protection of various plant species. 	<p>Plant species protected under Annexure A of the Regulations should be protected through planning the layout and construction of services.</p> <p>A Tree Management Plan should be compiled on the site to identify protected species before construction comments.</p> <p>Permits should be obtained from the Ministry of Environment, Forestry, and Tourism (Department of Forestry) to remove any protected species that are unable to be protected.</p>
	Forest Regulations GN 170/ 2015 (GG 5801)	<ul style="list-style-type: none"> ❖ Section 13.2 states that no protected species should be removed unless special permission is granted. The plant or species declared protected species are listed in Annexure A of the Regulations. 	
Water	Water Act No. 54 of 1956	<ul style="list-style-type: none"> ❖ Section 23(1) deals with the prohibition of pollution of underground and surface water bodies. 	<p>Necessary steps should be in place to prevent the pollution of water resources during the construction phase of the project.</p>

Health and Safety	Labour Act 11 of 2007	<ul style="list-style-type: none"> ❖ Chapter 2 details the fundamental rights and protections of employees ❖ Chapter 3 deals with the basic conditions of employment. 	Employment opportunities presented by the development and compliance with labour law are essential.
	Public and Environmental Health Act of 2015 (GG 5740)	<ul style="list-style-type: none"> ❖ This Act provides a framework for Namibia's structured, uniform public and environmental health system. It covers notification, prevention and control of diseases and sexually transmitted infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. 	Development contractors must comply with these legal requirements of the Act. by preventing activities that can impact the health and safety of the public and employees.
Atmospheric Pollution	Atmospheric Pollution Prevention Ordinance No 45 of 1965	<ul style="list-style-type: none"> ❖ Part II - control of noxious or offensive gases, ❖ Part III - atmospheric pollution by smoke, ❖ Part IV - dust control, and ❖ Part V - air pollution by fumes emitted by vehicles. 	The development should consider the provisions outlined in the Act. The proponent should apply for an Air Emissions permit from the Ministry of Health and Social Services (if needed).
Archaeology	National Heritage Act 27 of 2004	<ul style="list-style-type: none"> ❖ Section 48(1) states that " A person may apply to the (Heritage) Council for a permit to carry out works or activities concerning a protected place protected object" 	When archaeological material (e.g., graves) is discovered, the National Heritage Council should be informed immediately.
	Burial Place Ordinance 27 of 1966	<ul style="list-style-type: none"> ❖ The Ordinance prohibits the desecration or disturbance of graves and regulates matters relating to the removal or disposal of dead bodies. 	The Ordinance regulates the exhumation of graves.

Soil	Soil Conservation Act 76 of 1969	<ul style="list-style-type: none"> ❖ The Act regulates combating and preventing soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources. 	Measures should be in place to ensure that soil erosion and pollution are avoided during the construction and operational phases.
Land Use	The Urban and Regional Planning Act 7 of 2018	<ul style="list-style-type: none"> ❖ The Act regulates the establishment of townships, amendment of layout, subdivisions and consolidation, and land rezoning. 	The proposed township and layout should be approved by the Ministry of Urban and Rural Development in accordance with the Act.
	Okahao Zoning Scheme	<ul style="list-style-type: none"> ❖ The Okahao Zoning Scheme provides for various land use and activities allowed within the Okahao Town Council's jurisdiction. 	The development should be in accordance with the Okahao Zoning Scheme.
Services and Infrastructure	Road Ordinance 17 of 1979	<ul style="list-style-type: none"> ❖ Section 3(1) the width of proclaimed roads and roads receive boundaries. ❖ Section 27(1) the control of traffic during construction activities on the trunk and main roads. ❖ Section 37(1) infringement and obstructions on and interference with proclaimed roads. ❖ Section 38 distances from proclaimed roads at which fences are erected. 	The proponent should ensure that the construction of public roads and infrastructure through township development and the operational phase do not affect major nearby roads.

6 METHODOLOGY

The following section discusses the methodology used by Urban Dynamics Africa (UDA) in assessing the site in terms of its strengths, weaknesses, opportunities and threats, and then formulate a planning approach to prepare a layout that harnesses the strengths, accommodates the weaknesses, utilise the opportunities and avoid the threats identified. These also include the natural and social environment within which the project is set.

6.1 SITE INFORMATION AND TOPOGRAPHY

Urban Dynamics undertook site visits in 2022 to identify the existing structures, infrastructure, topography, land uses, and how the settlement is currently functioning.

6.2 NATURAL RECEIVING ENVIRONMENT

The Urban Dynamics team conducted an environmental screening for the affected area in August 2022. The team used orthophoto analysis, a site visit, literature surveys and extensive regional experience.

Data sources used include:

- Atlas of Namibia (Atlas of Namibia Team, 2022);
- Atlas of Namibia (Mendelsohn et. al, 2002);
- Flood Evaluation and Inundation Mapping for the Intergrading Spatial Development Framework for Okahao (Lithon, 2016);
- Redbook for Human Settlement Making (Council Scientific and Industrial Research (CSIR)); and
- The Draft Okahao Structure Plan (SPC, 2017).

6.3 PUBLIC CONSULTATION

Figure 2: Public Consultation



Urban Dynamics launched a public consultation campaign to ensure that any person interested in the project will have an opportunity to register as a stakeholder. Newspaper notices were placed in two separate newspapers simultaneously for two successive weeks. The advertisements which were placed are attached as **Appendix "C.1"**. Representatives of Urban Dynamics, the Okahao Town Council, and the Development Workshop of Namibia (DWN) held a community meeting on 18 July 2023, at Okahao Fire Station Hall.

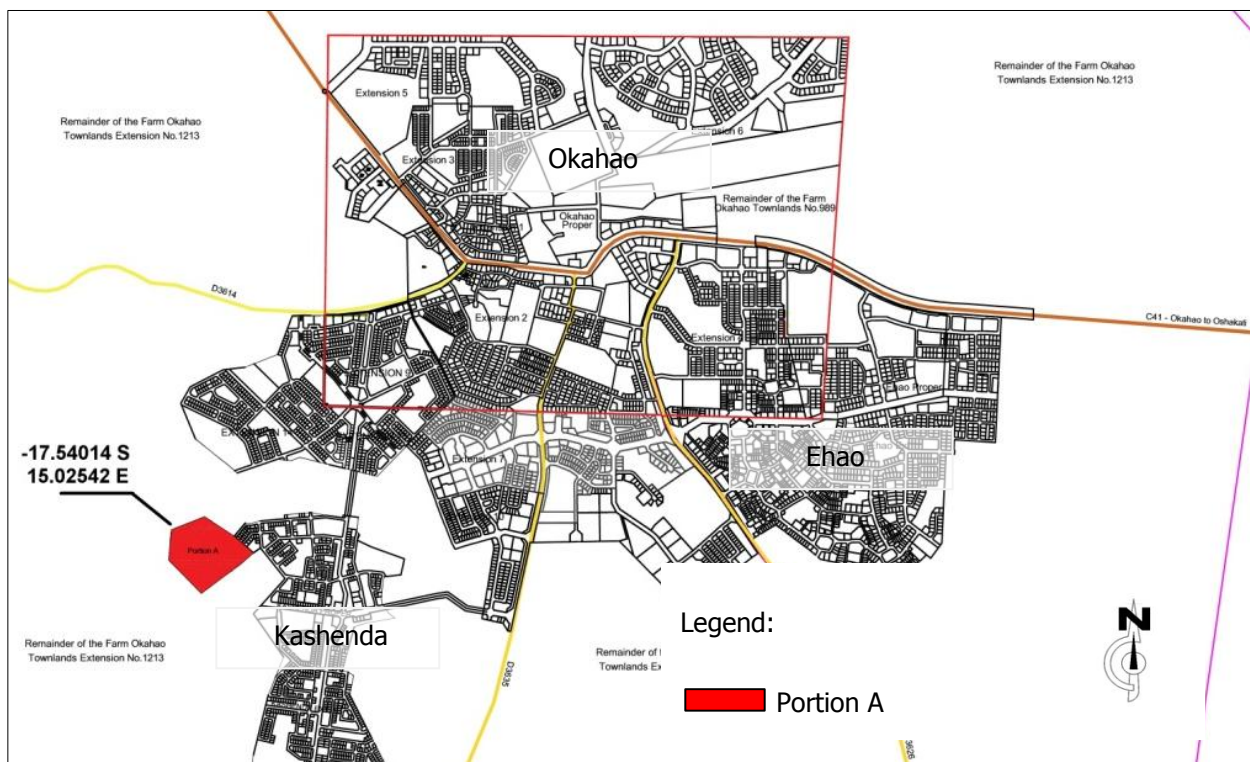
7 DESCRIPTION OF THE SITE

This section provides a description of the proposed project site relative to the surrounding urban areas, existing use and settlement, services and other infrastructure, topography, and other site features.

7.1 LOCATION OF THE SITES

The proposed development is located on Portions A of the Remainder of Farm Okahao Townlands Extension No. 1213. The project falls within the Omusati Region under Registration Division A. The portion is southwest of Okahao, west of the D3635 at -17.54014S, 15.02542E. A locality plan is attached as **Appendix "B"**.

Figure 3: Locality of the Project Area



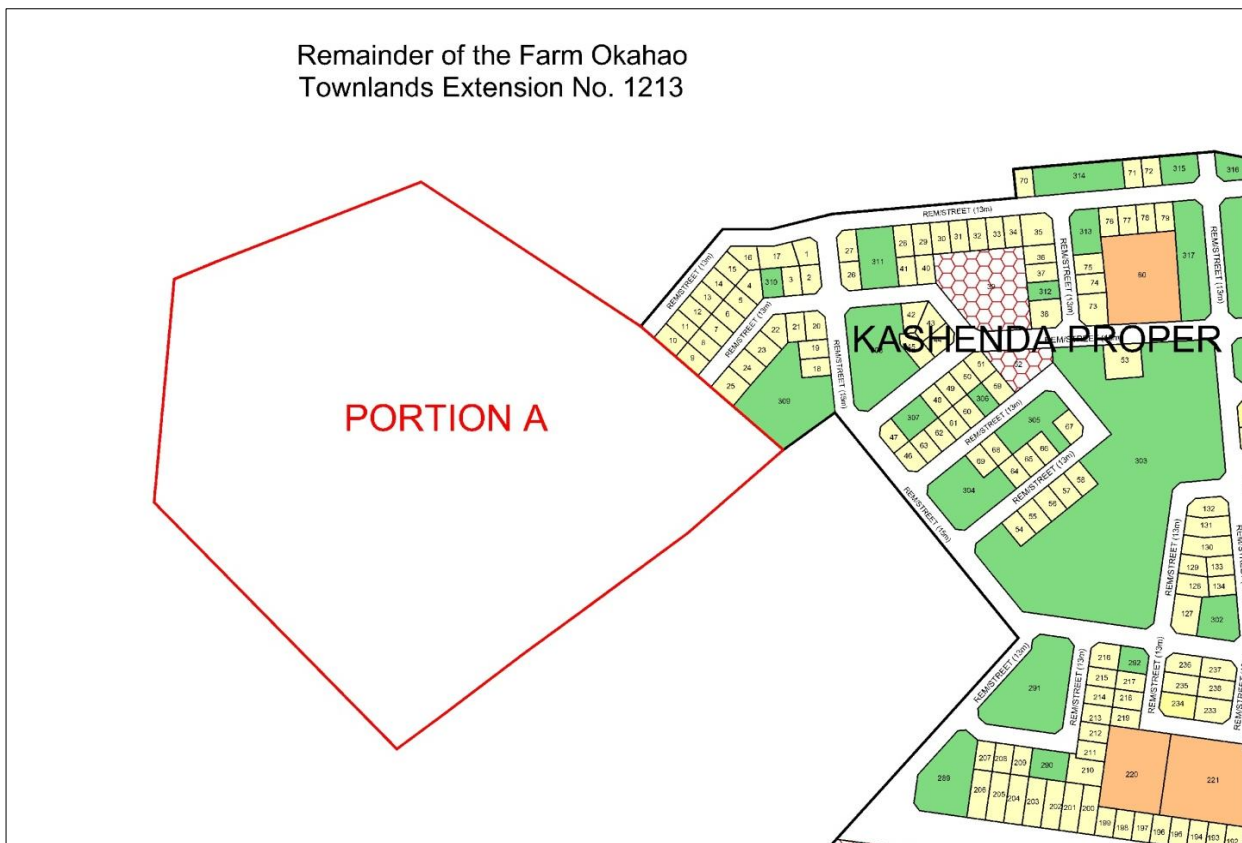
7.2 OWNERSHIP, SIZE AND SHAPE OF THE PORTION

The Okahao Town Council is the registered owner of the portion. The proposed development portion zoning is “Undetermined”. The project site measures approximately 119 441 km² in extent. **Figure 4** illustrates the shape of the portions, and **Table 1** provides the portion’s size and current zoning.

Table 1: Portion Size

Portion Name	Portion size (ha)	Zoning
Portion A	11.9	Undetermined

Figure 4: The Portion Shape



LEGEND:

- SINGLE RESIDENTIAL
- GENERAL RESIDENTIAL
- INSTITUTIONAL
- PUBLIC OPEN SPACE
- PORTION BOUNDARY
- EXTENSION BOUNDARY



7.3 LAND USE ACTIVITIES

As indicated in **Figure 5**, the site is currently vacant and has no infrastructure. The area is fenced of and is used for animal gracing.

Figure 5: Land Use Activities



7.4 UTILITY SERVICES AND ACCESS

7.4.1 Water Connection:

NamWater supplies bulk water to the Okahao Town Council’s bulk water network. The development site is to be connected with the town’s water-reticulated network, which supplies water to formal residents and businesses.

7.4.2 Electrical Supply:

The development site is to be supplied from Okahao’s reticulated network through the nearby power network.

7.4.3 Sewerage:

A sewerage reticulation network and pump station serve the formal Okahao. Kashenda, Extension 3 will make use of septic tanks and pit latrines.

7.4.4 Road Access:

Accessed to Portion A is obtained through the internal road network of Kashenda Proper as indicated in **Figure 5**.

7.4.5 Communication:

The town has accessibility to selected services, including television, radio, newspaper, telephone, and cell phone.

7.5 CULTURAL RESOURCES

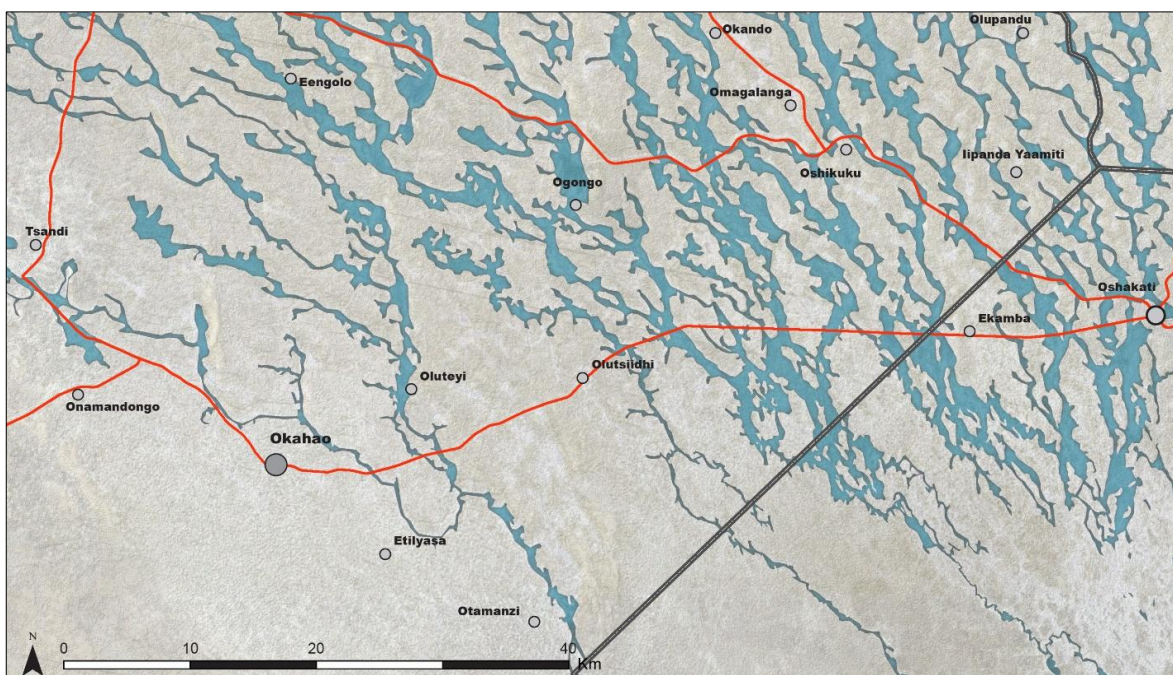
No items of historical value were found or could be identified within the development site's boundaries.

7.6 TOPOGRAPHY AND ENVIRONMENTAL CHARACTERISTICS

7.6.1 Topography & Flooding

Okahao falls outside the area that the Cuvelai channels flow and so does not have the same risk of flooding as towns within the Cuvelai basin. However, there is an increased risk of flooding from local rainfall, as there is no natural drainage system within the town that allows water to flow away.

Figure 6: Okahao’s locality outside the Cuvelai Channels



(Lithon, 2016)

The project area is bereft of any significant changes in elevation. Drainage systems consist of shallow depressions and oshanas that fill with water in the rainy season (Mendelsohn, J. 2013).

Figure 7: Flooding Composite of the Okahao Townlands



After significant rain, water drains into basins and gradually evaporates, drains through the ground and is used by local vegetation. This system of drainage basins is apparent in **Figure 7** that shows a composite of flooded areas made using 12 separate measurements from peak times in the rainy season between 2013 and 2017. Unfortunately flood maximums for the 2010 / 2011 floods were not captured by satellite (Lithon, 2016).

LEGEND:

- FARM OKAHAO TOWNLANDS EXTENSION NO 1213
- FARM OKAHAO TOWNLANDS NO. 969
- PROJECT SITE



Figure 8: Contour Map

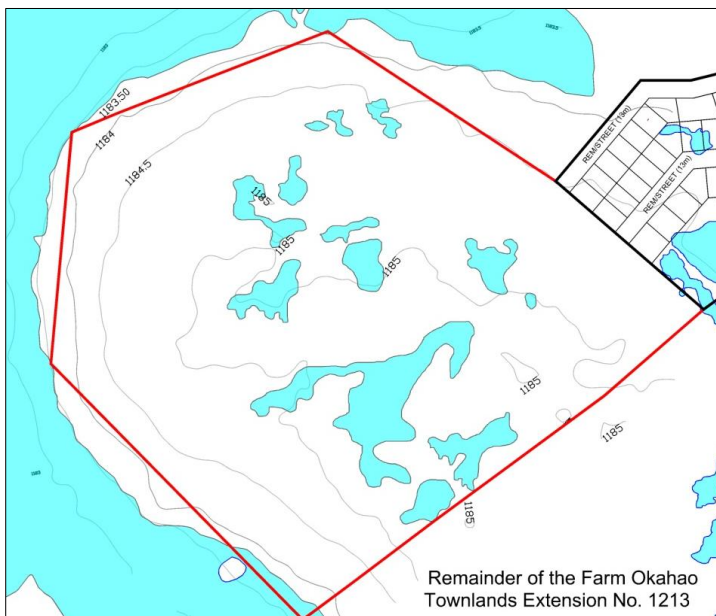


Figure 8 shows Portion A's topography characterised. The site is flat with a downward slope of a 1 m rise per 500m and slopes from southeast to northwest, with the highest point being 1185m above sea level and the lowest is 1184 m. The site accommodates several catchment areas, which accumulate water in the rainy season.

LEGEND:

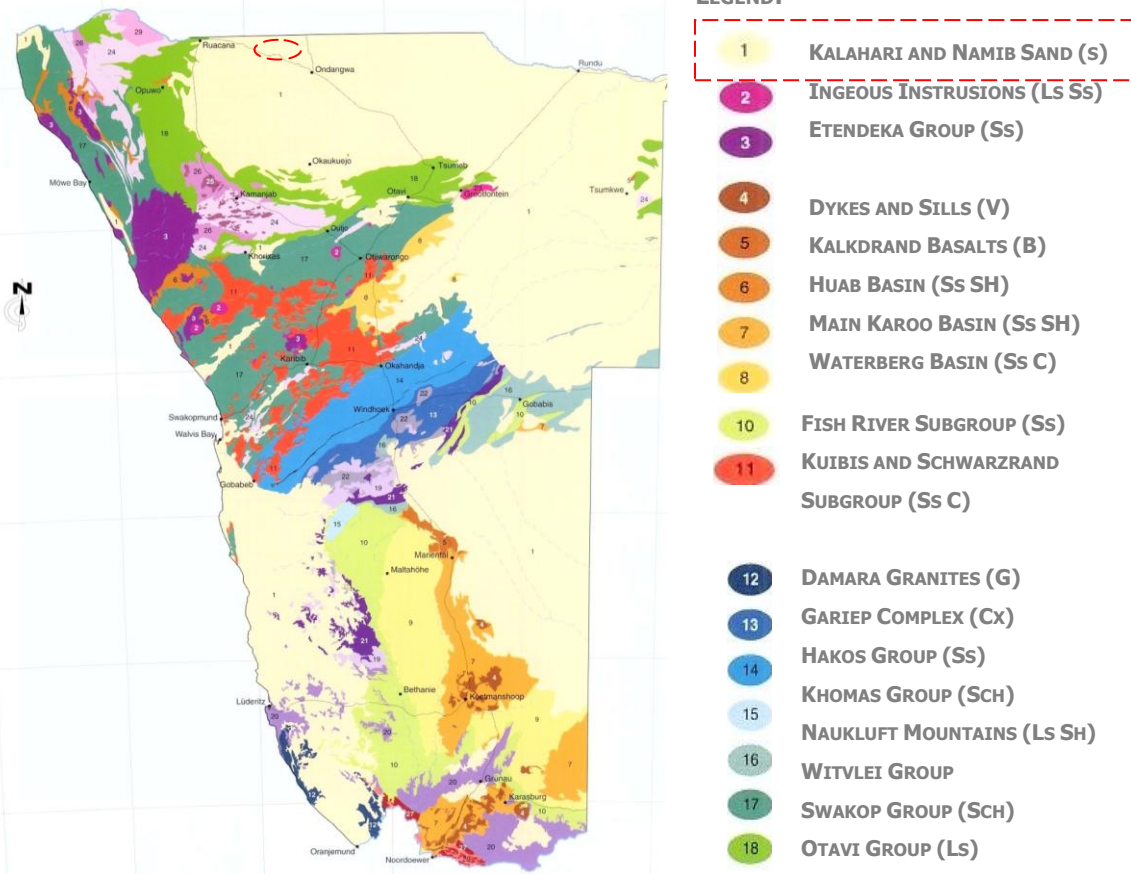
- PORTION BOUNDARY
- EXTENSION BOUNDARY
- CONTOURS
- WATER CATCHMENTS



7.6.2 Soil Conditions:

Surface soil across the region is sand-dominated. **Figure 9** indicates that Okahao is situated within the Kalahari and Namib Sand area of Namibia (Mendelsohn et al., 2002).

Figure 9: Soil types in Namibia



Source Mendelsohn et al., 2002

The image below shows the sandy soil at the Okahao.

Figure 10: Soil condition at Okahao

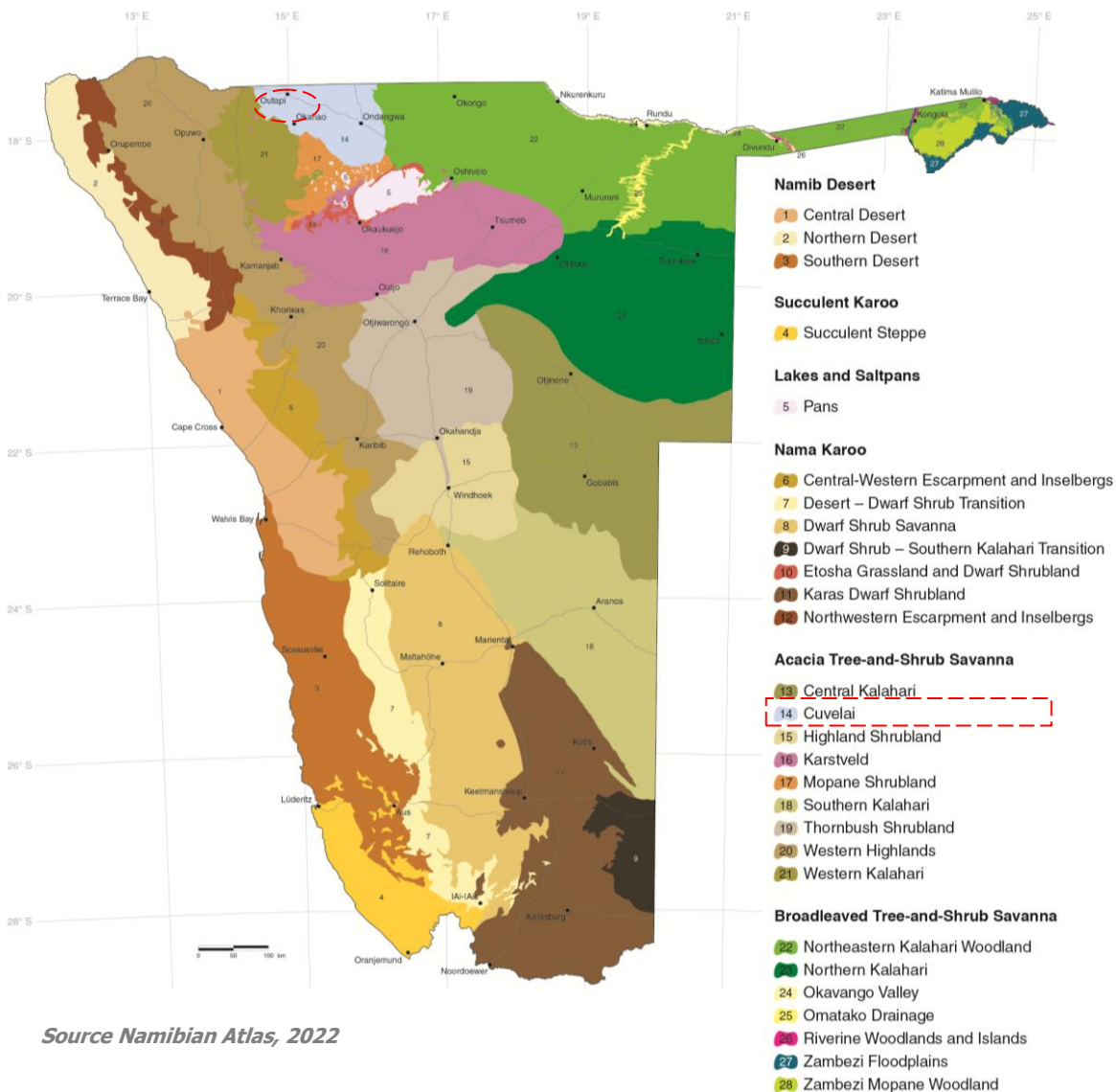
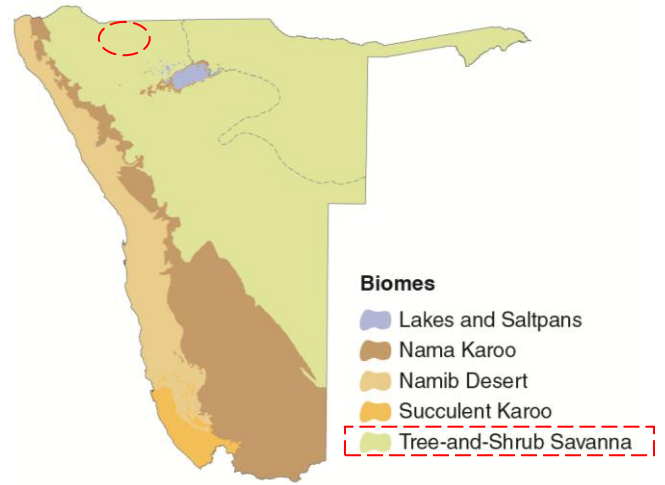


7.6.3 Vegetation Conditions:

Figure 11: Namibia biomes and vegetation types

Namibia’s vegetation landscape includes five (5) Biomes and is divided into twenty-eight (28) vegetation types regions. The region's climate and soil determine the biome and vegetation within an area according to the Namibia Atlas, 2022.

As indicated in **Figure 11**, Okahao falls under the (Acacia) Trees and Shrub Savanna biome vegetation type 14, Cuvelai (Namibia Atlas, 2022).



Source Namibian Atlas, 2022

Little natural vegetation remains beyond grasslands at the project site as indicated on the image below.

Figure 12: Vegetation at the site



7.6.4 Habitats on Site:

Due to the habitat alteration, the area is ecologically degraded, no longer pristine. It may be best described as an impacted ecosystem. Little natural vegetation remains beyond small shrubs and grasslands at the project site, and there is almost certainly no large wild mammal's resident in the area.

7.6.5 Climate, Wind Directions, and Rainfall:

Namibia is a hot and dry country, due to low levels of humidity in the air, the country experiences low levels of cloud cover, rain and extremely high rates of evaporation. The average monthly temperature at Okahao ranges from 17°C in July to 26°C in December. The fewest hours of sunshine experienced per day is about 7 hours in January when there is a lot of cloud cover, and the area also receives the most rain. From May to September, Okahao has about 10 hours of sunlight each day.

Most rain-bearing clouds are fed into the country by north-easterly winds and blocked by dry country. The average monthly humidity at midday ranges from 50% in March to 17% in September. Approximately 99% of the annual rainfalls from October to April with January receiving the most rainfall. The average yearly rainfall across the north-central regions increases from west to east, which is less than 300 mm and not more than 550 mm (Mendelsohn, 2002).

Winds in Okahao are infrequent, as the area experiences wind calm about 57% of the time. Winds mostly blow from the East and seldom reach speeds exceeding 10 km per hour. The windiest months are from January to April.

7.7 STATUS OF PROTECTED AREA

The site itself has no protected status. However, the water areas are the only environmentally sensitive areas within the development site and should be considered.

7.8 SUMMARY OF THE HABITATION ON SITE

The site is ecologically impacted, no longer pristine and not fully functional at the ecosystem level. Due to overgrazing and wood harvesting, extensive habitat alteration occurred. It may be best described as an impacted ecosystem.

Key environmentally relevant features show that:

- ❖ The proposed development is located on Portions A of the Remainder of Farm Okahao Townlands Extension No. 1213. The portion is southwest of Okahao, west of the D3635 at -17.54014S, 15.02542E.
- ❖ The site's topography is characterised by a downward slope of a 1 m rise per 500 m and slopes from southeast and northwest, with the highest point being 1185 m above sea level and the lowest is 1184 m.
- ❖ The site accommodates several catchment areas, which accumulates water in the rainy season.
- ❖ The site is currently vacant and has no infrastructure and is fenced off and is used for animal grazing.
- ❖ A sewerage reticulation network and pump station serve the formal Okahao. Kashenda, Extension 3 will make use of septic tanks and pit latrines.
- ❖ The development site is situated on the edge of the eastern Kalahari, which predominantly consists of Arenosols soil.
- ❖ Vegetation on the sites consists of shrubs and grassland.
- ❖ The site itself has no protected status.

The screening process showed no significant biodiversity-related issues for the current development, and no aspects require further investigation. The layout should consider the catchment areas, which as mentioned accumulate water in the rainy season. Thus it is recommended that the development proceeds without further assessment, as provided for under articles 33 and 34 of the Environmental Management Act.

8 THE PROJECT TOWNSHIP

The client intends to establish a new township on Portion A of the Okahao Townlands Extension No. 1213. The township will consist of a mixed-use neighbourhood, meeting the rising demand for housing and business plots within Okahao and the Omusati Region.

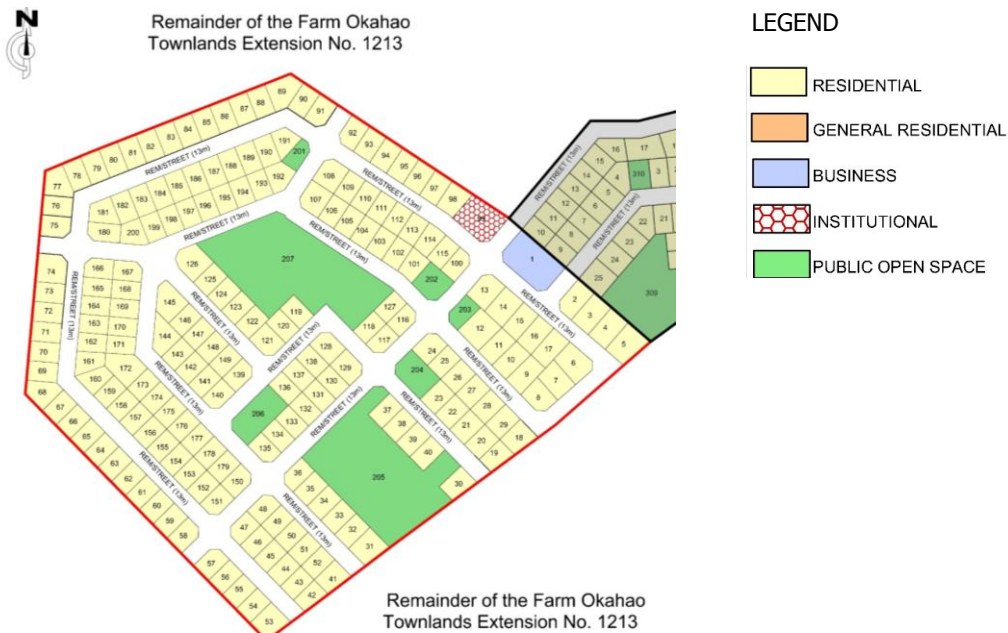
8.1 LAYOUT DETAIL

The proposed layout alters the portion's current zoning from Undetermined to include Single Residential-, Institutional-, Business land use, and Public Open Space. The erven shapes and sizes are illustrated in **Figure 13**.

Table 2: Erf sizes and zonings

KASHENDA EXTENSION 3				
Zonings	# erven	m ²	Ave size (m ²)	%
Residential	198	69 000	348	58
Business	1	1,193	1,193	1
Institutional	1	827	827	1
Public Open Space	7	15,949	2,278	13
Street		32,472		27
TOTAL	207	119441		100%

Figure 13: The Layout



8.2 THE STREET LAYOUT

The site is accessed through the internal road network of Kashenda Proper. The internal roads run from a north eastern to a south western direction. The entire proposed layout network consists of 13m wide roads.

9 POTENTIAL IMPACTS

While preparing the layout, the team continuously assessed the project's potential positive and negative impacts. Attempts have been made to enhance and strengthen positive impacts and mitigate and weaken the effects of negative impacts in all cases. The planners made several alterations to the plan until they were satisfied that the layout had been refined to the point where it limits risks, mitigates negative impacts and enhances positive impacts to as great an extent as possible. The following section explores each of these impacts in detail, describing and exploring the various ideas integrated into the layout and assessing alternatives where they seem viable.

The section also explores positive impacts that are not fully addressed by the layout. Many influences may be transitory in nature (for example, occurring only during the project's construction phase) or unavoidable given the site constraints and the need for maximising long-term benefits overall. These impacts and strategies for dealing with them are discussed here, but given that this document is an application for environmental clearance, the measures dealing with their mitigation/enhancement are dealt with in detail in the Environmental Management Plan (EMP).

9.1 SUMMARY OF POTENTIAL IMPACTS

The planning of the layout, alignment of roads, and upgrading bulk infrastructure has the potential to cause environmental and social impacts. The following is a list of potential impacts identified through the scoping process:

9.1.1 Benefits of the Project:

- Provision for serviced erven;
- Stimulation of economic development and providing new employment opportunities during construction; and
- Stimulation of the health and wellness of Okahao and the Omusati Region.

9.1.2 Potential Negative Impacts during Construction:

- Impact of removal of vegetation from the site;
- Impact of dust;
- Impact of noise;
- Impact on traffic flow;
- Impact on the health and safety of workers;
- Impact of flooding; and
- Impact of waste.

9.1.3 Potential Negative Impacts during Operations:

- Impact of waste during operation.

9.2 POTENTIAL IMPACTS

9.2.1 Project Benefits:

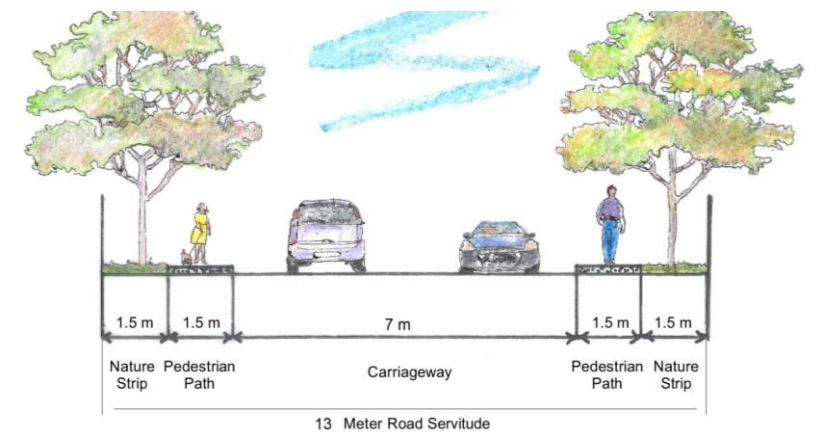
- **Provide for serviced erven.** The layout process creates a formal development framework to prevent uncontrolled settlement growth in addition to addressing the current housing demand within Okahao and the region.

The development will provide the community access to adequately planned erven with specified erf boundaries. The provision of service erven ensures that the residents have a formal and permanent land occupation and security of tenure.

- **Stimulate employment creation and local economic development.** The development will lead to employment creation during the construction and operation phases. By providing for additional business erf, the project will render services within the formal economy of Okahao, employ staff, contribute to rates and taxes and spend money within the same economy.
- **Stimulate health and wellness within the Okahao Townlands and region.** The layout provides much-needed service connections that are safe and in line with the layout. It will also create properly aligned roads which will ease traffic circulation within the township.

The image below indicates the proposed 13m road reserve that provides sufficient space for a 1.5m nature strip, 1.5m pedestrian path and a 3.5m lane with exactly the same uses on the other half of the road.

Figure 14: 13m Road Servitude



In accordance with the Council for Scientific and Industrial Research (CSIR) Redbook for Human settlement making, local streets ought to accommodate pedestrians as they fall part of the most important low-order social spaces. Moreover, the CSIR guide emphasises that lower income groups need to utilise hard open spaces, such as streets, as part of the urban room; incorporating socialising and playing space.

The layout ultimately provides for mix of motorised and non-motorised users. Although these streets are in part dominated by vehicular movement, they include the hard open space components of sidewalks, bicycle paths and space for the provision of engineering services. Therefore, clearly defined routes will allow for the provision of pedestrian infrastructure, creating a safe walking environment.

9.2.2 Negative Impacts during Construction:

- **Impact on traffic flow during construction.** Construction vehicles would need to haul the excavated soil to a disposal site and provide building materials and other supplies (i.e. fuel etc.) to the construction site, most of which could be delivered by truck. Construction vehicles are most likely to pass near erven and disrupt traffic flow within Kashenda Proper (although the exact access routes to the site are yet to be defined).
- **Impact of dust.** The movement of construction vehicles on bare soil will cause excessive dust, exposing the community and workers to dust pollution and affecting their health. Preventative measures should be put in place to prevent excessive dust.
- **Impact of potential construction noise.** Construction machinery creates substantial noise, and this will impact the surrounding community. Constant noise can cause stress and health impacts on nearby residents.
- **Impact of construction waste.** Solid waste is the expected significant source of waste at the construction site. If no waste management plan is in place to address general and hazardous waste disposal, it can lead to water and soil pollution on the site and nearby water areas.
- **Impact on the health and safety of workers.** Construction activities always have potential risks for workers. Inadequate site management measures can expose workers to hazardous chemicals, dust, and noise. A lack

of notices and signs within the area where deep excavation work is done can put workers' lives in danger.

9.2.3 Potential Negative Impacts during Operations:

Potential flooding: Flood lines were identified indicating the flood areas within the site during the planning phase. The flood areas are accommodated in public open spaces, to ensure that no development takes place within these flood areas. Flood areas within the road reserve will be filled when constructing the road. Stormwater drainage should be designed, and culverts need to be used to accommodate the water flow.

- **Impact of operational waste.** Solid household waste is the expected source of waste in the two townships after the development phase. Suppose the Town Council has no Waste Management Plan (WMP) or Waste Removal Plan (WRP) to address general and hazardous waste disposal at the extensions. It can lead to soil pollution on the site and/or within the water areas.

During the operational phase, there is a risk that pit latrine and septic tanks contamination will cause surface runoff through floodwaters, surface contaminants will be exposed to surface water, and contaminants will be released into the air through the respiratory tract and the respiratory system.

9.3 DEALING WITH RESIDUAL IMPACTS

9.3.1 Residual Social Impacts:

No Residual Social Impacts were identified.

9.3.2 Residual Environmental Impacts:

Residual environmental impacts through this project could be elaborated on as follows:

- The development project will create dust and noise during the construction phase. This will be limited; methods to limit it are contained in the EMP.
- The project development will have an impact on traffic during the construction phase.

To minimise the increase in transportation during the construction phase, mitigation measures to manage the vehicles on the construction site when services are included in the EMP provisions.

- As mentioned before, solid waste is the expected source of waste at the construction site. Mitigation methods are contained in the EMP regarding a WMP for the construction site.
- During the construction phase, there will be a potential impact on the workers' health and safety due to their work environment. This will be limited, and methods to restrict it are contained in the EMP.
- Solid household waste is the expected source of waste in the new townships. Mitigation methods are contained in the EMP regarding the removal of waste within the new township.
- During the operational phase, there will be a potential impact on the ground water as a result of the use of septic tanks/pit latrines. This will be limited, and methods to restrict it are contained in the EMP.
- Stormwater drainage should be designed, and culverts need to be used to accommodate the water flow.
- During the operational phase, there will be a potential impact on the ground water as a result of the use of septic tanks or pit latrines. This will be limited, and methods to restrict it are contained in the EMP.

10 SUMMARY AND APPLICATION

10.1 PROJECT IMPACTS, AVOIDANCE MEASURES AND RESIDUAL IMPACTS

POTENTIAL IMPACT:	MEASURES:			RESIDUAL IMPACTS:
	AVOIDANCE:	MITIGATION:	ENHANCEMENT:	
<i>Stimulate local economic development and create employment opportunities:</i>			<p>During the development phase, the construction company will render services within the formal economy, employ staff, pay rates and taxes and spend money within the same economy.</p> <p>Emphasis should be placed on the requirement and employment of local people.</p>	
<i>Providing serviced residential erven:</i>			<p>The project will lead to formal and permanent land occupation, tenure security, access to capital and partaking in the economy, and ultimately to wealth creation in the operational phase.</p>	
<i>STIMULATE THE HEALTH AND WELLNESS OF THE COMMUNITY:</i>			<p>THE DEVELOPMENT:</p> <p>Provide that all services will be on the higher road reserves.</p> <p>Provide a closed system sewer system, which will prevent pollution during flooding.</p> <p>Provide for pedestrian infrastructure.</p>	

POTENTIAL IMPACT:	MEASURES:			RESIDUAL IMPACTS:
	AVOIDANCE:	MITIGATION:	ENHANCEMENT:	
POTENTIAL DUST AND NOISE ON THE CONSTRUCTION SITE:	Avoid dust and noise during the construction phase.	<p>The EMP mitigation measures for</p> <p>Dust:</p> <ul style="list-style-type: none"> No removal of vegetation or soil on the site except where necessary during the construction phase. <p>Noise:</p> <ul style="list-style-type: none"> Construction work will be restricted between 07h00 and 18h00. <p>The timeline for the potential impact is short-term, and the responsibility lies with the contractor and the Okahao Town Council.</p>		<i>Not all dust and noise can be prevented.</i>
POTENTIAL IN AN INCREASE IN TRAFFIC DURING THE CONSTRUCTION PHASE:	Avoid uncontrolled increase in traffic during the construction phase.	<p>The EMP mitigation measures for traffic at the site include:</p> <ul style="list-style-type: none"> Traffic during the construction phase will be restricted between 07h00 and 18h00. <p>The timeline for the potential impact is short-term, and the responsibility lies with the contractor and the Town Council.</p>		<i>An increase in traffic can be managed, although the increase in traffic will still have a potential impact on nearby residents.</i>
HEALTH AND SAFETY OF WORKERS:	Avoid health and safety impacts on workers during the construction phase.	<p>The EMP mitigation measures for the health and safety of workers at the site include:</p> <ul style="list-style-type: none"> Construction practices and safety procedures need to be applied. <p>The timeline for the potential impact is short-term, and the responsibility lies with the</p>		<i>Not all the health and safety aspects of the workers can be prevented.</i>

		contractor.		
WASTE MANAGEMENT:	Avoid pollution as a result of no waste management.	<p>The EMP mitigation measures for the waste on the construction site and during operations include:</p> <ul style="list-style-type: none"> • During construction, a waste management plan should be used on the site. • The township needs to be included in the Okahao Town Councils' waste management system or program during the operational phase. • Each erf should make use of a 2 000l underground watertight PVC septic tank. <p>The potential impact timeline is short-term during construction and long-term during operations.</p> <p>The responsibility lies with the contractor/ Town Council.</p>		<i>Not all pollution can be prevented.</i>

11 APPLICATION FOR ENVIRONMENTAL CLEARANCE

Given these baseline investigation findings, no future environmental impacts were identified due to creating the street portions or the construction activities within the Okahao development area.

It is recommended that the development proceeds without the need for further assessment, as provided for under articles 33 and 34 of the Environmental Management Act. The Application Form 1 for an Environmental Clearance Certificate as per Section 32 is attached as **Annexure "1"** to this Scoping Report.