

## **TUSENELDE SHIIKWA AND JOHANNA IITULA**

SCOPING (INCLUDING IMPACT ASSESSMENT) FOR THE  
SUBDIVISION OF ERF 247 AND SUBSEQUENT CONSOLIDATION OF  
ERF A/247 WITH ERF 109 AND ERF B/247 WITH ERF 110 AND  
REMAINDER, PERMANENT CLOSURE OF ERF A AND B/247

TSANDI, OMUSATI REGION

NOVEMBER 2023

<b>DOCUMENT CONTROL</b>	
<b>REPORT TITLE</b>	SCOPING (INCLUDING IMPACT ASSESSMENT) FOR THE SUBDIVISION OF ERF 247 AND SUBSEQUENT CONSOLIDATION OF ERF A/247 WITH ERF 109 AND ERF B/247 WITH ERF 110 AND REMAINDER, PERMANENT CLOSURE OF ERF A AND B/247
<b>PROJECT NO</b>	SEC6
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<b>DATE</b>	NOVEMBER 2023
<b>CLIENT ADDRESS</b>	P.O BOX 94, TSANDI
<b>CURRENT REVISION</b>	FINAL



### **CONSULTANT'S EXPERTISE**

I.N.K Enviro Consultants cc is the independent firm of environmental consultants that has been appointed by Tusenelde Shiikwa and Johanna litula to conduct the EIA process.

Immanuel N. Katali, the Environmental Specialist holds a B.Arts (Honors) Geography, Environmental Studies and Sociology and has over seven years of relevant experience in conducting/managing Environmental Impact Assessments (EIAs), Social Impact Assessments (SIA), compiling Environmental Management Plans (EMPs) and Environmental Compliance/Monitoring Audits in Namibia. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).

### **DECLARATION OF INDEPENDENCE AND DISCLAIMER**

The environmental consultant herewith declare that this report represents an independent assessment of the proposed rezoning activities, on the request of Tusenelde Shiikwa and Johanna litula.

I.N.K Enviro Consultants cc has prepared this report based on an agreed scope of work and acts in all professional manner as an independent environmental consultant to Tusenelde Shiikwa and Johanna litula and exercises all reasonable skill and care in the provision of its environmental professional services in a manner consistent with the level of expertise exercised by members of the environmental profession.

The information, statements and commentary contained in this report have been prepared by I.N.K Enviro Consultants cc from information provided by Tusenelde Shiikwa and Johanna litula. I.N.K Enviro Consultants cc does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made by the party that provided the information or any conclusions reached. I.N.K Enviro Consultants cc has based this report on information received or obtained, on the basis that such information is accurate and, where it is represented to I.N.K Enviro Consultants cc as such, complete.

I.N.K Enviro Consultants cc is not responsible and will not be liable to any other person or organization for or in relation to any matter dealt within this report, or for any loss or damage suffered by any other person or organization arising from matters dealt with or conclusions expressed in this report (including without limitation matters arising from any negligent act or omission of I.N.K Enviro Consultants cc). This report must not be altered or added to without the prior written consent of either I.N.K Enviro Consultants cc or Tusenelde Shiikwa and Johanna litula.

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## 1 INTRODUCTION

### 1.1 Introduction to the Proposed Project

Mrs. Tusenelde Shiikwa and Mrs. Johanna litula intend on obtaining an Environmental Clearance Certificate (ECC) for the Subdivision Of Erf 247 and Subsequent Consolidation of Erf A/247 With Erf 109 And Erf B/247 With Erf 110 And Remainder, Permanent Closure of Erf A And B/247 measuring a total of 1138.67 m<sup>2</sup>. Erf 247 is located in Tsandi, Omusati Region, Namibia (Figure 1).

The proposed site and immediate surrounding areas comprise of the following:

- ◆ Public Open Space.
- ◆ Existing overhead powerline.
- ◆ Residential houses

Prior to commencement of the construction activities, an Environmental Clearance Certificate (ECC) is required on the basis of an approved Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). It is with this background that, I.N.K Enviro Consultants cc (I.N.K) an independent firm of consultants, was appointed to undertake the Environmental Impact Assessment process for this project. More details regarding the EIA process that was followed are presented in Section 1.4.1.

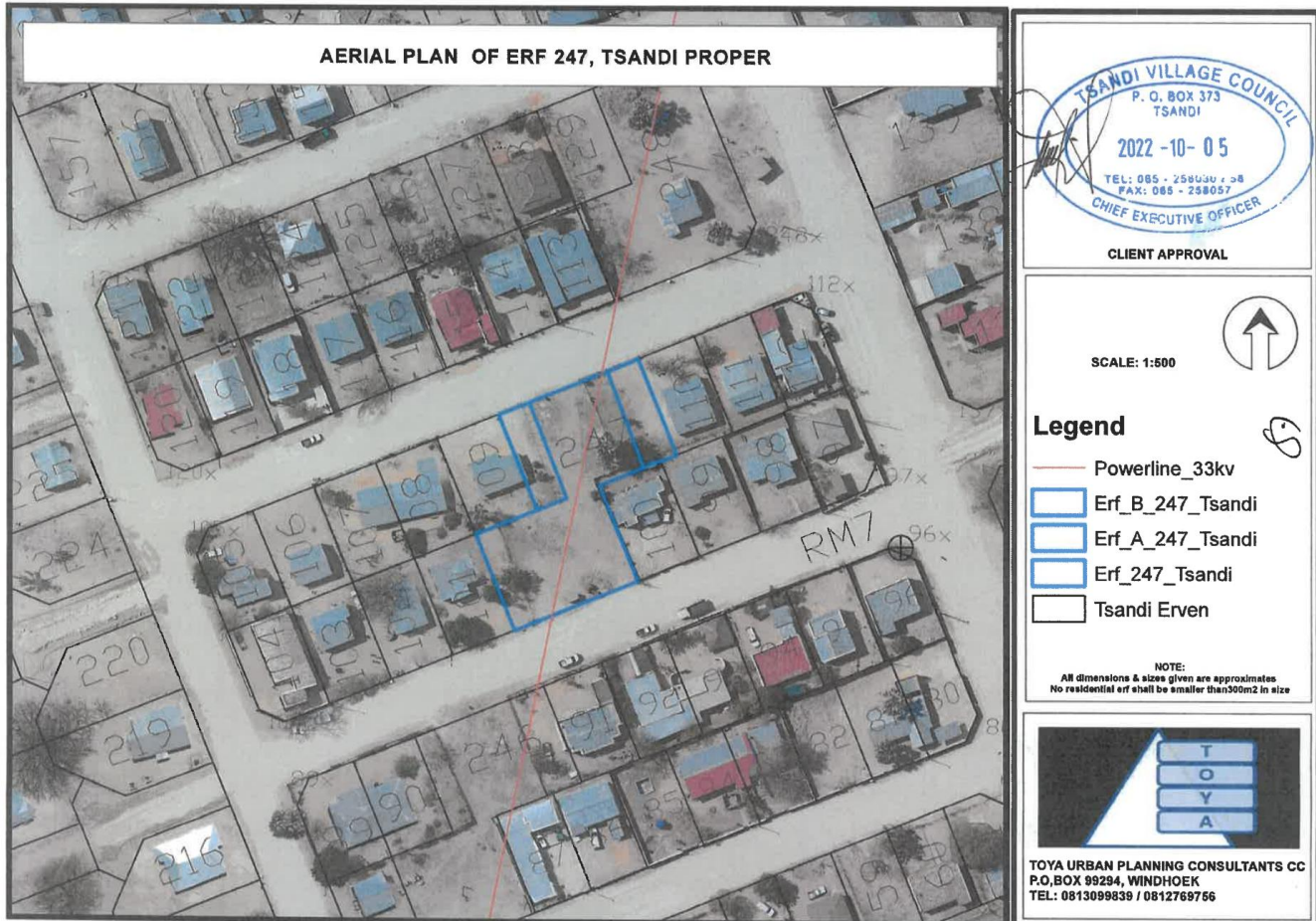


Figure 1: Locality Map

## 1.2 Objectives of the Study and Opportunity to Comment

This Scoping (including impact assessment) Report has been compiled and was distributed as part of the EIA process that is being undertaken for the proposed Subdivision of Erf 247 and Subsequent Consolidation of Erf A/247 With Erf 109 and Erf B/247 With Erf 110 And Remainder, Permanent Closure of Erf A and B/247.

The Scoping Report summarises the EIA process being followed and provides an overview of the affected environment. It includes an assessment of the environmental impacts that the activities are likely to have and sets out the consultants' recommendations. The proposed management and mitigation measures relating to the operation activities are documented in an Environmental Management Plan (EMP).



Registered Interested and Affected Parties (I&APs) are being provided with the opportunity to comment on this Scoping (including impacts assessment) Report. Once the comment period ends, the report will be updated to a final report with due consideration of the comments received and will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT) for decision-making.

### 1.3 Project Motivation (Need and Desirability)

The Namibian government identified housing as a priority area in 1990 and considers housing as both an enabler of economic growth and a tool for reducing poverty by creating sustainable communities.

The high rate of growth in the number of urban households is due largely to people moving to towns and cities from rural areas in search of better services and jobs, and by internal reproduction and household formation within the urban areas. This strongly suggests that solving the urban housing question is of key importance to a growing number of citizens and is central to addressing the overall problem of landlessness. The challenge facing the project proponent is its contribution towards achieving these goals while at the same time preventing and/or mitigating potential negative social and environmental impacts.

### 1.4 Introduction to the Environmental Impact Assessment

Environmental Impact Assessments are regulated by the Ministry of Environment, Forestry and Tourism (MEFT) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966) and enacted on 6 February 2012. The Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.

#### 1.4.1 EIA Process

The EIA process that has been followed is summarized in the table below:

**Table 1: EIA Process**

EIA OBJECTIVES	CORRESPONDING ACTIVITIES
<b>Project initiation, Screening Phase</b>	
<ul style="list-style-type: none"> <li>◆ Understanding of the environmental and social baseline relating to the proposed Project.</li> <li>◆ Notify the decision-making authority of the proposed Project.</li> <li>◆ Initiate the environmental impact</li> </ul>	<ul style="list-style-type: none"> <li>◆ Project Inception and initiation meetings to discuss the Project and EIA process requirements.</li> <li>◆ Liaise with various Specialists</li> <li>◆ Draft EIA Schedule</li> </ul>



EIA OBJECTIVES	CORRESPONDING ACTIVITIES
<p>assessment process.</p> <ul style="list-style-type: none"> <li>◆ Site visits and identify environmental issues.</li> <li>◆ Identify key stakeholders and early identification of other I&amp;APs.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Initiate baseline studies.</li> <li>◆ Submit Application for authorizations and a Background information Document (BID) to the competent authorities.</li> <li>◆ Register the Project and Applications for environmental clearances with MEFT (DEA) on their online portal.</li> <li>◆ Early identification of environmental aspects and potential impacts associated with the proposed Project.</li> </ul>
<b>Scoping (Combined Assessment Phase)</b>	
<ul style="list-style-type: none"> <li>◆ Notify other regulatory authorities and I&amp;APs of the proposed Project (via newspaper advertisements, BID, emails, site notices and telephone calls).</li> <li>◆ Conduct Key Stakeholder and Focus Group meetings.</li> <li>◆ Carry out specialist investigations and establish baseline environmental conditions.</li> <li>◆ Determine the terms of reference for additional assessment work.</li> <li>◆ Compile Scoping Report and Issues and Response Report (IRR)</li> <li>◆ Distribute the Scoping Report for review and comment by relevant authorities and I&amp;APs.</li> <li>◆ Consider comments received and compile the final report.</li> <li>◆ Submit the final reports to relevant</li> </ul>	<ul style="list-style-type: none"> <li>◆ Develop Public Participatory Process (PPP) Programme.</li> <li>◆ Develop I&amp;AP database.</li> <li>◆ Prepare BID and distribute to I&amp;APs.</li> <li>◆ Notify government authorities and IAPs of the Project and EIA process (telephone calls, e-mails, BID newspaper advertisements and site notices).</li> <li>◆ IAP registration and comments.</li> <li>◆ Focus group meetings with authorities and IAPs.</li> <li>◆ Investigations by appointed specialists.</li> <li>◆ Compilation of Scoping Report and EMPs.</li> <li>◆ Distribute Scoping Report and EMPs to all IAPs for review and comments.</li> <li>◆ Obtain comments and update the Scoping Report and EMPs.</li> <li>◆ Submit final documents to MME, MAWLR and MEFT for review and decision-making.</li> </ul>

EIA OBJECTIVES	CORRESPONDING ACTIVITIES
Ministries for their review and final decision on the Applications for environmental clearance.	

Within this framework, the required components of the scoping (including impact assessment) report are discussed in more detail as part of the scoping Methodology in Section 2 below.

EIAs are influenced by national legislation and a range of guidelines. The legislation applicable to this project and the EIA process is discussed further in Section 3 below.

#### 1.4.2 EIA Team

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed to undertake the environmental impact assessment and related processes.

Immanuel N. Katali, the EIA project manager and lead practitioner holds a B.Arts (Honours) Degree in Geography, Environmental Studies and Sociology and has over seven years of relevant experience in conducting/managing EIAs, compiling EMPs and Socio-Economic Studies. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).

## 2 SCOPING METHODOLOGY

### 2.1 Information collection

I.N.K used various information sources to identify and assess the issues associated with the proposed project. These include:

- ◆ Site visits by I.N.K;
- ◆ Consultation with Project Technical Team and relevant information shared by the proponent;
- ◆ Consultation with MEFT via online application system;
- ◆ Atlas of Namibia;
- ◆ Google Earth; and
- ◆ Internet sources.

### 2.2 Scoping Report

The main purpose of this Scoping Report is to indicate which environmental aspects relating to the proposed project might have an impact on the environment, to assess them and to provide management and mitigation measures to avoid or minimise these impacts.

Table 2 outlines the Scoping Report requirements as set out in Section 8 of the Environmental Impact Assessment Regulations that were promulgated in February 2012 in terms of the Environmental Management Act, 7 of 2007.

**Table 2: Scoping report Requirements stipulated in the EIA regulations**

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
(a) the curriculum vitae of the EAPs who prepared the report;	Section 1.4.2 and
(b) a description of the proposed activity;	Section 4
(c) a description of the site on which the activity is to be undertaken and the location of the activity on the site;	Sections 4 & 6
(d) a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Sections 6, 7 and 8
(e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report;	Section 3
(f) details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including - (i) the steps that were taken to notify potentially interested	Sections 2.3, 2.4, 2.5

<p>and affected parties of the proposed application;                  (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given;                  (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application; and                  (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;</p>	
<p>(g) a description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the community that may be affected by the activity;</p>	<p>Sections 1.3 and 5</p>
<p>(h) a description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity;</p>	<p>Sections 7 and 8</p>
<p>(i) terms of reference for the detailed assessment; and</p>	<p>Section 7 &amp; 8</p>
<p>(j) a management plan, which includes -                  (i) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure;                  (ii) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and                  (iii) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.</p>	<p>Separate Document</p>

## 2.3 Public participation process

The public participation process for the proposed project is conducted to ensure that all persons and/or organisations that may be affected by, or interested in the proposed project, were informed of the project and could register their views and concerns. By consulting with relevant authorities and I&APs, the range of environmental issues to be considered in this Scoping Report (including the assessment of impacts) has been given specific context and focus.

## 2.4 Interested & Affected Parties (I&APs)

The following table (Table 3) provides a list of persons, group of persons or organisations that were informed about the project and were requested to register as I&APs should they be interested and/or affected.

**Table 3: Rezoning Activities Stakeholders**

IAP Grouping	Organisation
Government Ministries	<ul style="list-style-type: none"> <li>▪ Ministry of Environment, Forestry and Tourism (MEFT);                             <ul style="list-style-type: none"> <li>• Department of Environmental Affairs (DEA);</li> </ul> </li> </ul>
Local Governance	The Tsandi Village Council
Site Neighbours	Tsandi Residential
Media	Newspaper adverts: Die Republikein and The Namibian Sun
Other interested and affected parties	Any other people with an interest in the proposed project or who may be affected by the proposed project.

## 2.5 Steps in the consultation process

Table 4 sets out the steps that were followed as part of the consultation process:

**Table 4: Consultation process with I&APs and Authorities**

TASK	DESCRIPTION
<b>Notification - regulatory authorities and IAPs</b>	
Notification to MEFT	I.N.K submitted the Application Form (online system) as a form of project registration and notification to MEFT.
IAP identification	A stakeholder database was developed for the proposed project and EIA process. Additional I&APs will be updated during the EIA process as

TASK	DESCRIPTION
<b>Notification - regulatory authorities and IAPs</b>	
	required.
Distribution of background information document (BID), flyers and stakeholders meeting invitation letters	<p>BIDs were made available to all I&amp;APs on the project's stakeholder database and were available at the scoping meetings. Copies of the BID were available on request to I.N.K.</p> <p>Flyers and stakeholder meeting invitation were distributed to the residents of Okahao.</p> <p>The purpose of the BID was to inform I&amp;APs and authorities about the proposed project, the EIA process, possible environmental impacts and means of providing input into the EIA process. Attached to the BID was a registration and response form, which provided I&amp;APs with an opportunity to submit their names, contact details and comments on the project.</p>
Newspaper Advertisements	<p>Advertisements were placed as follows:</p> <ul style="list-style-type: none"> <li>◆ Die Republikein (8 and 15 June 2022)</li> <li>◆ The Namibian Sun (8 and 15 June 2022)</li> <li>◆ Allgemeine Zeitung (8 and 15 June 2022)</li> </ul>
Scoping Meetings	<p>Several consultations were made with I&amp;APs. This included meetings, email and telephonic conversations.</p> <p>A public meeting was arranged as follows:</p> <ul style="list-style-type: none"> <li>◆ Subdivision site on 03 August 2022</li> </ul>
MEFT review of Scoping Report and EMP	A copy of the final Scoping Report, including authority and I&AP review comments, will be submitted to MEFT on completion of the public review process via the online application system.

### 3 ENVIRONMENTAL LAWS AND POLICY

*This section discusses and describes the governing laws, policies and acts that are relevant to the environmental impact assessment for the proposed Horticulture Irrigation Project.*

The Republic of Namibia has five tiers of law and several policies relevant to environmental assessment and protection, which includes:

- ◆ The Constitution
- ◆ Statutory law
- ◆ Common law
- ◆ Customary law
- ◆ International law

Key policies currently in force include:

- ◆ The EIA Policy (1995).
- ◆ Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).

As the main source of legislation, the Constitution of the Republic of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and mitigate against adverse environmental impacts.

#### 3.1 Legislation Applicable to the Proposed Project

- ◆ **The Constitution of the Republic of Namibia as Amended:** Article 91 (c) provides for duty to guard against “the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia.” Article 95(l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources.
- ◆ **Environmental Management Act No. 7 of 2007 (EMA) and EIA Regulations GN 28, 29, and 30 of EMA (2012):** GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process.
- ◆ **Water Act No. 54 of 1956:** Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.



- ◆ **Local Authorities Act No. 23 of 1992:** The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council.
- ◆ **National Heritage Act No. 27 of 2004:** The Act is aimed at protecting, conserving and registering places and objects of heritage significance.



## 4 PROJECT DESCRIPTION

### 4.1 Proposed Subdivision Activities

Mrs. Tusenelde Shiikwa and Mrs. Johanna litula intend on obtaining an Environmental Clearance Certificate (ECC) for the Subdivision Of Erf 247 and Subsequent Consolidation of Erf A/247 With Erf 109 And Erf B/247 With Erf 110 And Remainder, Permanent Closure of Erf A And B/247 measuring a total of 1138.67 m<sup>2</sup>.

### 4.2 Engineering services

The erf will be connected to the municipal reticulation system of the Tsandi Village Council. The erf will be connected to the existing services that are anticipated to be sufficient for the proposed development.

### 4.3 Construction Activities

Construction activities will take place during the establishment and preparation of the sites. Therefore, it is expected that construction will involve the following activities:

- ◆ Appoint subcontractors, labours, etc.
- ◆ Clearing and grubbing and other earth moving activities.
- ◆ Stockpiling topsoil and sub-soil.
- ◆ Foundation excavations.
- ◆ Setting up contractor's laydown areas.
- ◆ Digging of foundations and trenches.
- ◆ Delivery of materials – storage and handling of material such as sand, rock, cement, etc.
- ◆ General building/construction activities including, amongst others: mixing of concrete; operation of construction vehicles and machinery; civil; painting; etc.

#### 4.3.1 Site Preparations for Infrastructure

Site preparation includes the demarcation of the footprint of the proposed development and the laydown area to be located  $\pm 15$  m for each of the proposed project component and infrastructure site, for the storage and partial assembly of the project material or equipment to be installed or constructed.

#### 4.3.2 Waste Management during construction activities

Relatively small quantities of waste is anticipated to be generated during the construction phase. Waste shall be transported to the nearest waste disposal site.

#### 4.3.3 Transport routes/Access

The site is located along existing roads and tracks within the townland.

#### 4.3.4 Storage of Equipment and Tools

Equipment and tools used on a daily basis will be stored in a temporary storage facility on site.

#### **4.3.5 Rehabilitation of temporary construction sites and laydown area**

The removal of all temporary construction equipment will be undertaken at the end of construction activities. This will be done as per Environmental Management Plan recommendations.

## 5 PROJECT ALTERNATIVES

### 5.1 The “no project” option

With reference to section 1.3, The high rate of growth in the number of urban households is due largely to people moving to towns and cities from rural areas in search of better services and jobs, and by internal reproduction and household formation within the urban areas. This strongly suggests that solving the urban housing question is of key importance to a growing number of citizens and is central to addressing the overall problem of landlessness.

The no-go alternative is the baseline against which all alternatives are assessed. The no-go alternative would essentially entail maintaining the current situation, whereby the land will remain zoned as Public Open Space and the construction of the proposed houses will not take place.

The proponent will have to ensure that the identified mitigation measures and commitments to address the potential impacts will appropriately be implemented and adhered to.

Without the implementation and adherence of the air pollution commitments in the EMP, the project will be a “fatal flaw”.

## 6 DESCRIPTION OF THE CURRENT ENVIRONMENT

This section was compiled utilising the following sources of information:

- Visual observations during a site visit by I.N.K
- Google Earth
- Atlas of Namibia
- Internet sources

### 6.1 Climate

The climate in Tsandi is referred to as a local steppe climate, with about 444 mm of precipitation falling annually. The average annual temperature in Tsandi is 22.7 °C.

### 6.2 Socio-Economic

#### 6.2.1 Population Density

Most of the population in the region live where fresh water is available due to seasonal floods or to abundant water points and thus small-scale agriculture is possible. Therefore, a very large number of people settled in the vicinity to shallow water wells or near to the oshana system of the Cuvelai, where also more fertile soil is present. To profit from the better infrastructure and the labour opportunities more and more people moved into the existing growth centre of Tsandi town. Isolated villages are distributed throughout the area.

#### 6.2.2 Land-use

Many serviced plots and unserviced land for housing and other business undertakings are available in the town.

#### 6.2.3 Urban Infrastructure

Basic urban services that are in Tsandi are water, sewer, gravel streets, and power reticulation. These services are mainly constructed in the township. The area has good infrastructure and services (road networks, telecommunications, postal services, schools, hospitals, safety and security services and basic urban services (i.e. water, sewer, electrical reticulation and shopping complexes. The telephonic and mobile communication infrastructures are well established.

### 6.3 Traffic

From initial site observations, the current traffic numbers on the gravel road appears to be low. The construction activities is not anticipated to interrupt traffic flow.

### 6.4 Air Quality

From visual observations, the main source of air quality impacts in the project will come from the adjacent gravel street road and various construction activities in the surrounding area. It is expected that fugitive dust may be present during dry, windy conditions.

### 6.5 Visual

An existing powerline runs through proposed project area. The area is potentially not sensitive to change in general, due to the nature of the town development and existing infrastructure.

## 6.6 Hydrogeology

### 6.6.1 Surface Water

The region belongs to the very flat hydro geological Cuvelai Basin dipping from some 1150 m above sea level (asl) in the north east to 1080m asl in the Etosha Pan. The proposed site is surrounded by existing water flooding plain which flows during the rainy season which extends from October to April with the highest amount falling between December and March. Because of the high average evaporation rates, it is estimated that a considerable amount of rainfall (80 per cent) evaporates shortly after precipitation (MWAFF, 2006).

### 6.6.2 Groundwater

The site lies within the Omusati Multi-zoned Aquifer comprises unconsolidated to semi-consolidated sediments of the Kalahari Sequence, mainly sand, clay and calcrete/dolocrete but also large evaporitic deposits. The groundwater quality is mainly brackish with shallow freshwater in places. The aquifer is separated from the Oshana Multi-layered Aquifer because it is not recharged by the Cuvelai drainage system. Recharge takes place by means of lateral throughflow from the Etosha Limestone Aquifer and Otavi Dolomite Aquifer aquifers in the west (MAWF, 2006).

## 6.7 Biodiversity

### 6.7.1 Flora

Perennial grass species such as the *Anthephora pubescens* are occasionally encountered south of Okahao in the *Terminalia sericea – Colophospermum mopane shrublands* association, where human impacts seem relatively minimal. This climax species is rare in most areas of central north and its occurrence in moderate to high abundance indicates a veld in good condition. Patches of calcrete-enriched soils have been encountered, as also indicated by species such as *Cataphrates alexandri* and *Enneapogon cenchroides*. The vegetation structurally occurs as a bushveld but with more high shrubs (2-5m) than the common low shrubs (1-2m). Geographically, this vegetation type is found more abundantly south of Okahao Constituency where human settlements are fewer. (Kangombe, F. 2010).

Apart from small patches of grasslands within the water flooding pan where the site lies, the area is largely disturbed by the town development and human settlements and movements of people surrounding the proposed site.

### 6.7.2 Fauna

The proposed site lies within the urban centre which is largely characterised by residential houses as part of the town development. Few animals that are known to be found near the study area includes, livestock which can be seen grazing in the surrounding areas.

## 6.8 Noise

Existing noise sources within and around the project site include:

- ◆ natural sounds from wind, animals, and birds;
- ◆ vehicle movement on the adjacent gravel street road;

The immediate surroundings of the project site has inhabitants. The sensitivity of noise receptors usually increases at night when conditions are quiet, and ambient noise levels are at their lowest. However, no construction activities are anticipated at night time.

## 6.9 Heritage

No visible archaeological artefacts or heritage sites were noted in the proposed project development area by I.N.K during the site visit and neither did the Tsandi Village Council raise any such concerns.



## **7 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS**

**Table 6: Environmental aspects and potential impacts associated with the rezoning activities**

ACTIVITY FACILITY / ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref	
<b>Construction Phase</b>	Soil stripping (earthmoving equipment)	<p>Potential impact on biodiversity (physical impacts and general disturbance)</p> <ul style="list-style-type: none"> <li>• Loss of habitat</li> <li>• Loss of biodiversity</li> </ul>	<p>With reference to section 6.7.1, Apart from small patches of grasslands within the water flooding pan where the site lies, the area is largely disturbed by the town development and human settlements and movements of people surrounding the proposed site.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<b>R01</b>
		<p>Potential impact on archaeological sites</p> <ul style="list-style-type: none"> <li>• Destruction and loss of archaeological sites</li> </ul>	<p>It is unlikely that any heritage artefacts can be found on site, due to the fact that the site has already been disturbed to a certain extent.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<b>R02</b>
	Oil and diesel spillages from vehicles and other equipment	Impact on surface water and groundwater water quality.	<p>The proposed housing construction activities may pose the risk of contamination of soil, mainly through accidental spills of oil and diesel etc. Due to the nature of the project, there is a low risk of big hydrocarbon spillages.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<b>R03</b>

ACTIVITY / FACILITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
	Dust	Impact on 3 <sup>rd</sup> party health and safety	<p>The immediate surroundings of the project site has communities inhabited in the area, therefore impact of air pollution on communities is identified.</p> <p>Refer to Section 8 for the assessment of the potential impacts on Air Quality.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<b>R04</b>
	Traffic	Injury to people and animals and 3 <sup>rd</sup> party health and safety impacts	<p>With reference to section 6.3, the current traffic numbers on the gravel road appears to be low. The construction activities is not anticipated to interrupt traffic flow.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<b>R05</b>
	Noise	Increase in disturbing noise levels (nuisance impact to third parties)	<p>With reference to section 6.8, Existing noise sources within and around the project site include, natural sounds from wind, animals, and birds; vehicle movement on the adjacent gravel street road;</p> <p>The immediate surroundings of the project site has inhabitants. The sensitivity of noise receptors usually increases at night when conditions are quiet, and ambient noise levels are at their lowest. However, no construction activities are anticipated at night time.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<b>R06</b>

ACTIVITY / FACILITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
	<p>Waste disposal</p> <hr/> <p>Sewerage management</p>	<p>Emissions to land, impact on biodiversity, environmental degradation and nuisance impacts and contamination of surface water and groundwater</p>	<p>Relatively small quantities of waste is anticipated to be generated during the construction phase. Waste shall be transported to the nearest waste disposal site.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<p><b>R07</b></p>
	<p>Visual Impacts and sense of place</p>	<p>Changes in visual conditions</p>	<p>An existing powerline runs through the proposed project area. The area is potentially not sensitive to change in general, due to the nature of the town development and existing infrastructure.</p> <p>The related management and mitigation measures are stipulated in the EMP.</p>	<p><b>R08</b></p>

## **8 ENVIRONMENTAL IMPACT ASSESSMENT**

### **8.1 Assessment Approach and Methodology**

Both the criteria used to assess the impacts and the Method of determining the frequency/severity of the impacts is outlined in Table 14. This Method complies with the EIA Regulations: EMA, 2007 (Government Gazette No. 4878) EIA regulations.

Both mitigated and unmitigated scenarios are considered for each impact in the EIA results.



**Table 7: Assessment MEFThodology and Criteria**

Likelihood/ Frequency	Definition	Probability	Rating	Consequence/ Severity				
				Insignificant	Minor	Moderate	Major	Critical
				Very minor or no impact.	Minor impact that can be contained	Impact may have moderate effects	Serious impact/effect	Permanent Impact/effect
			1	2	3	4	5	
Very high	Almost certain Extremely likely	>90%	5	Low	Medium	High	Extreme	Extreme
				5	10	15	20	25
High	Very likely Will probably occur	60-90%	4	Low	Medium	Medium	High	Extreme
				4	8	12	16	20
Medium	Likely to happen	40-59%	3	Low	Low	Medium	Medium	High
				3	6	9	12	15
Low	Possible but unlikely	10-39%	2	Low	Low	Medium	Medium	Medium
				2	4	6	8	10
Very low	Conceivable but extremely unlikely	<10%	1	Low	Low	Low	Low	Low
				1	2	3	2	2

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No	Potential Impact	Frequency	Severity	Without Mitigation	Control/ Mitigation	Frequency	Severity	With Mitigation
1	Potential Impact on Flora	2	1	2	<ul style="list-style-type: none"> <li>Any additional excavations made in the area should be backfilled.</li> </ul>	1	1	1
2	Potential Impact on Fauna	2	1	2	<ul style="list-style-type: none"> <li>Only use the designated site access roads provided shall be used as practical as possible and avoid creating new tracks or access roads unnecessary;</li> </ul>	1	1	6
3	Potential Impacts of waste generation	2	3	6	<ul style="list-style-type: none"> <li>Workers should be sensitized to dispose of waste responsibly and not to litter;</li> <li>All domestic and general operations waste produced daily should be contained until such that time it will be transported to the approved designated waste facilities;</li> <li>If applicable, hazardous waste should be properly handled, stored and disposed of at the nearest authorized waste sites;</li> <li>No waste should be buried or burned on-site or anywhere else throughout the project lifecycle;</li> </ul>	2	2	4
4	Potential Impacts on: <ul style="list-style-type: none"> <li>Archaeological sites</li> </ul>	2	1	2	<ul style="list-style-type: none"> <li>If any archaeological material or human burials are uncovered during the course of development activities, then work in the immediate area should be halted, the find would need to be reported to the heritage authorities and may require inspection by an archaeologist.</li> </ul>	1	1	6
5	Potential Impacts on Groundwater and Surface Water	2	3	6	<ul style="list-style-type: none"> <li>A no-go buffer area of at least 15 m should be allocated to any water bodies in the area.</li> <li>No dumping of waste products of any kind in or in close proximity to any surface water bodies.</li> <li>Contaminated runoff from the various operational activities should be prevented from entering any surface or ground water bodies.</li> <li>Ensure that surface water accumulating on-site are channeled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment.</li> <li>Disposal of waste from the various activities should be properly managed.</li> <li>Areas where hydrocarbons will be utilized, the surface should be covered with a plastic impermeable plastic liner to prevent the spillage on the soils and eventual infiltration into the ground.</li> <li>Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated during construction works.</li> </ul>	2	2	4



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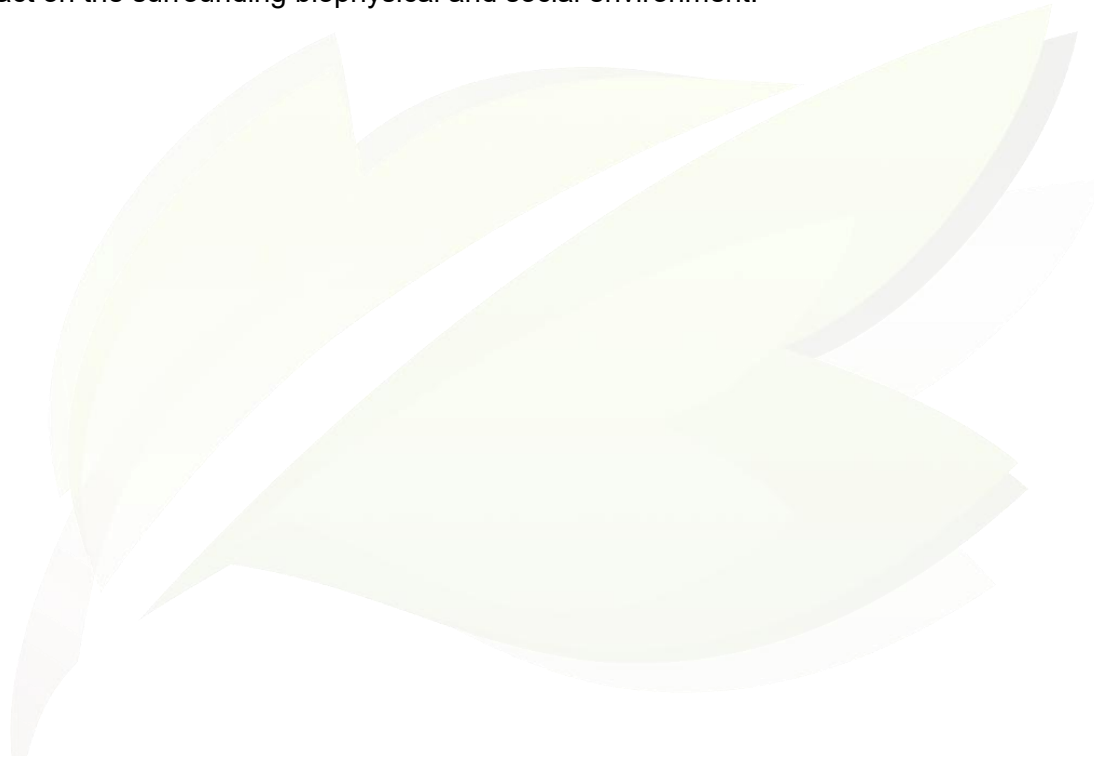
No	Potential Impact	Frequency	Severity	Without Mitigation	Control/ Mitigation	Frequency	Severity	With Mitigation
					<ul style="list-style-type: none"> <li>◆ All hydrocarbon substances and other potential pollutants associated with the project activities should be contained in designated containers on site and later disposed of at nearby approved waste sites in accordance with the discharge standards. This is to ensure that these hazardous substances do not infiltrate into the ground and affect the groundwater quality.</li> <li>◆ In cases of accidental fuel or oil spills on the soils from site vehicles, machinery and equipment, the polluted soil should be removed immediately and put in a designate waste type container for later disposal as per the preceding bullet point. The removed polluted soil should either be completely disposed of or cleaned and returned to where it was taken from on site or can be replaced with a cleaner soil. This is to ensure that the pollutants contained in the soil does not infiltrate into the site soils and eventually reach to groundwater.</li> <li>◆ Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching groundwater bodies. The impact would be more on groundwater (aquifers) since the construction works will be done in the dry months, thus there would be no rain to trigger (polluted) runoff to surface water bodies.</li> </ul>			
6	Noise and Air Quality	3	4	12	<ul style="list-style-type: none"> <li>◆ Do not allow commercial activities that generate excessive noise levels.</li> <li>◆ Continuous monitoring of noise levels should be conducted to make sure the noise levels does not exceed acceptable limits.</li> <li>◆ No activity having a potential noise impact should be allowed after 18:00 hours if possible.</li> </ul>	3	2	6

## 9 CONCLUSIONS

It was concluded from the qualitative assessment by I.N.K that the development of the project could potentially have minimal or insignificant impacts on the environment.

Mitigation measures have been identified and recommended by I.N.K to promote the positive impacts of the project, as well as to avoid / minimise the negative impacts to acceptable levels. An EMP was further developed which identifies potential impacts of the project during the construction and operation phases. The EMP is a legally binding document, which the proponent and contractors onsite must adhere to.

I.N.K concludes that should the management actions and mitigation measures provided in the EIA and EMP report be implemented, the project would have an acceptably low significant impact on the surrounding biophysical and social environment.



## References

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