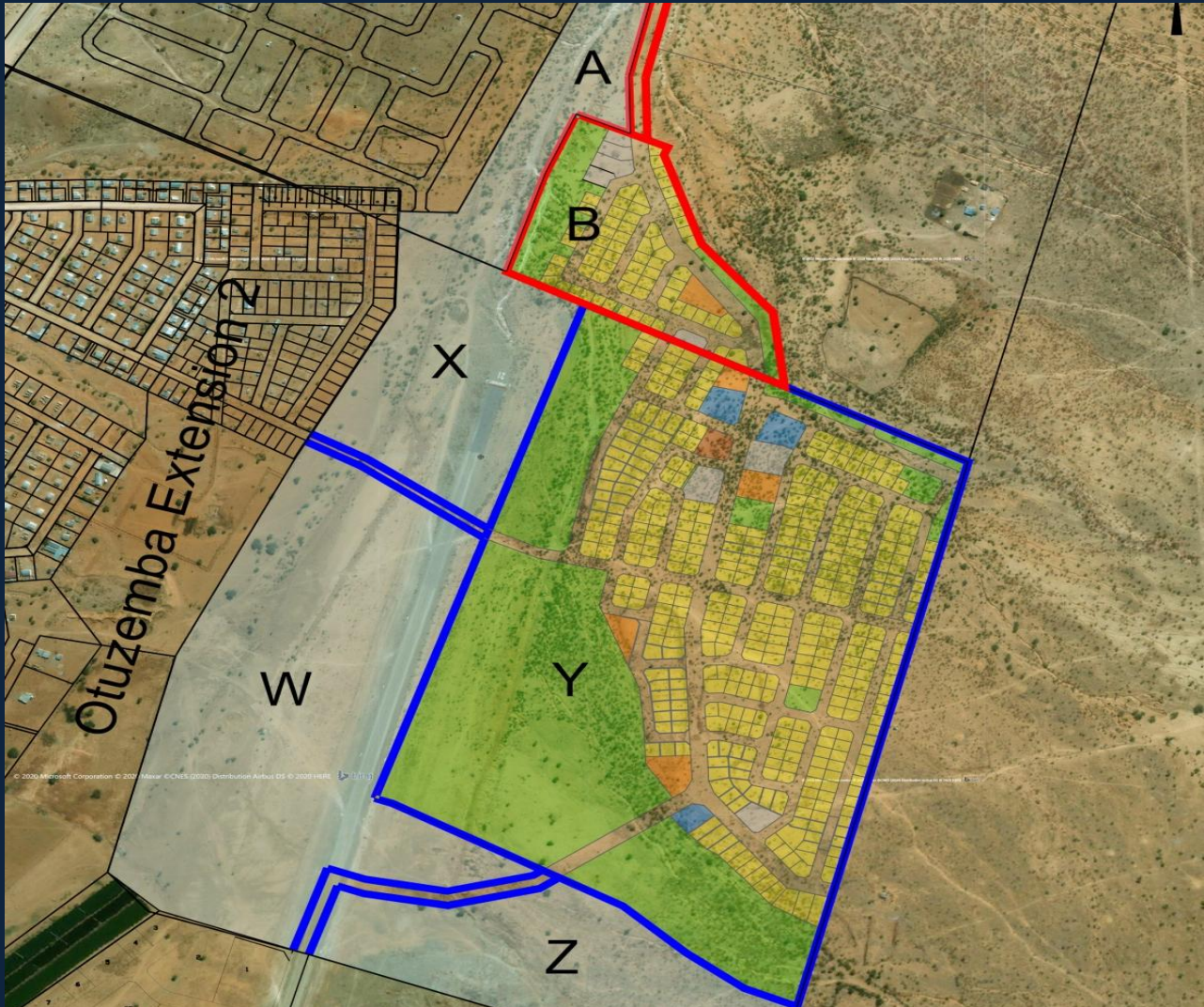


# APPLICATION FOR ENVIRONMENTAL CLEARANCE:

## SCOPING REPORT FOR THE PROPOSED ESTABLISHMENT OF TOWNSHIPS ON PORTION B OF THE REMAINDER OF FARM OPUWO TOWNLANDS NO. 1115 AND PORTION Y OF THE REMAINDER OF OPUWO TOWNLANDS NO. 876



**PROPONENT:**

**CLIENT:**

**Opuwo Town Council**  
P O Box 00  
**Opuwo**  
Namibia



DEVELOPMENT WORKSHOP NAMIBIA  
P O Box 40723  
AUSSPANPLATZ  
**WINDHOEK**  
NAMIBIA



**SUBMISSION:**

**CONSULTANT:**

MINISTRY OF ENVIRONMENT FORESTRY AND  
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PRIVATE BAG 13306  
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TABLE OF CONTENTS

1 APPOINTMENT ..... 1

2 BACKGROUND ..... 1

3 PURPOSE OF THE REPORT ..... 2

4 NATURE OF THE ACTIVITY ..... 3

5 LEGISLATION ..... 4

6 METHODOLOGY ..... 6

6.1 TOPOGRAPHY AND SITE INFORMATION ..... 6

6.2 NATURAL RECEIVING ENVIRONMENT ..... 6

6.3 PUBLIC CONSULTATION..... 7

7 DESCRIPTION OF THE SITE ..... 8

7.1 LOCATION OF THE SITES..... 8

7.2 SIZES AND SHAPES OF THE PORTIONS ..... 9

7.2.1 Portions A and B..... 9

7.2.2 Portions W, X, Y and X of the farm Opuwo Townlands No. 876 ..... 10

7.3 LAND USE ACTIVITIES ..... 11

7.4 ACCESS AND UTILITY SERVICES ..... 11

7.4.1 Access: ..... 11

7.4.2 Electrical Supply: ..... 11

7.4.3 Water Connection:..... 11

7.4.4 Sewerage: ..... 11

7.4.5 Communication: ..... 12

7.5 CULTURAL RESOURCES..... 12

7.6 ENVIRONMENTAL CHARACTERISTICS AND TOPOGRAPHY..... 12

7.6.1 Natural Environment:..... 12

7.6.2 Topography and Flooding ..... 13

7.6.3 Geology and Soil ..... 14

7.6.4	Climate, Wind Directions, and Rainfall: .....	15
7.6.5	Status of Protected Area: .....	15
7.7	SUMMARY OF THE HABITATION ON SITE .....	16
7.8	SUMMARY OF THE PLANNING CONSTRAINTS.....	17
8	THE PROJECT TOWNSHIPS .....	18
8.1	LAYOUT DETAIL .....	18
8.2	THE STREET LAYOUT.....	19
8.2.1	Provision for Drainage: .....	20
9	POTENTIAL IMPACTS.....	20
9.1	SUMMARY OF POTENTIAL IMPACTS.....	20
9.1.1	Benefits of the Project: .....	20
9.1.2	Potential Negative Impacts during the Construction:.....	21
9.1.3	Potential Negative Impacts during Operations: .....	21
9.2	POTENTIAL IMPACTS .....	21
9.2.1	Project Benefits: .....	21
9.2.2	Negative Impacts during Construction: .....	21
9.2.3	Impacts during Operations:.....	22
9.3	LAYOUT STRATEGIES.....	22
9.4	DEALING WITH RESIDUAL IMPACTS .....	24
9.4.1	Residual Social Impacts: .....	24
9.4.2	Residual Environmental Impacts.....	24
10	SUMMARY AND APPLICATION .....	25
10.1	PROJECT IMPACTS, AVOIDANCE MEASURES AND RESIDUAL IMPACTS .....	25
11	APPLICATION FOR ENVIRONMENTAL CLEARANCE.....	28
12	REFERENCES.....	29

## FIGURES

Figure 1:	The Locality of Opuwo .....	1
Figure 2:	Community Meeting.....	7
Figure 3:	Locality of the Portions within the Opuwo Townlands .....	8
Figure 4:	Portions A and B’s Form.....	9
Figure 5:	Portions W to X’s shapes.....	10
Figure 6:	Current Land Use .....	11
Figure 7:	Landscape and Vegetation .....	12
Figure 8:	The Site’s Vegetation.....	13
Figure 9:	Topography and Flooding .....	13
Figure 10:	Rock Types in Namibia.....	14
Figure 11:	Site’s Landscape .....	14
Figure 12:	National Climate .....	15
Figure 13:	Planning Constraints Map .....	17
Figure 14:	Opuwo Layouts.....	18
Figure 15:	Road Access.....	19
Figure 16:	Provision of Pedestrians .....	19
Figure 17:	Constraints Map.....	23

## TABLES

Table 1:	Portions A & B Sizes and Land Uses.....	9
Table 2:	Portions W to X’s Sizes and Land Uses.....	10
Table 3:	Proposed Land Use.....	18

## ANNEXURES

<b>ANNEXURE 1:</b>	FORM 1 APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (SECTION 32)
<b>ANNEXURE 2:</b>	CV (OF THE EAP)
<b>ANNEXURE 3:</b>	CONTACT DETAIL OF THE PROPONENT
<b>ANNEXURE 4:</b>	CONTACT DETAIL OF THE CONSULTANT
<b>ANNEXURE 5:</b>	PASSPORT (EAP)
<b>ANNEXURE 6:</b>	ENVIRONMENTAL MANAGEMENT PLAN

## APPENDIX

<b>APPENDIX A:</b>	APPROVAL FROM THE TOWN COUNCIL
<b>APPENDIX B:</b>	MAP
<b>APPENDIX B.1:</b>	LOCALITY
<b>APPENDIX B.2:</b>	LOCALITY MAP
<b>APPENDIX C:</b>	PUBLIC CONSULTATION PROCESS
<b>APPENDIX C.1:</b>	NOTES AND ADVERTISEMENTS
<b>APPENDIX C.2:</b>	BID DOCUMENT
<b>APPENDIX C.3:</b>	COPY OF THE STAKEHOLDERS LIST
<b>APPENDIX C.4:</b>	MEETING INFORMATION
<b>APPENDIX D:</b>	COMMUNITY MEETING MINUTES
<b>APPENDIX E:</b>	KP FLOOD STUDY

**DEVELOPMENT ROLE PLAYERS:**

**Opuwo Town Council**

P O Box 294

**Opuwo**

NAMIBIA



**Development Workshop Namibia**

P O Box 40723

AUSSPANPLATZ

**Windhoek**

NAMIBIA



**SCOPING REPORT FOR THE ESTABLISHMENTS OF TOWNSHIPS AT OPUWO, PREPARED BY**

**Urban Dynamics Africa**

P O Box 20837

**Windhoek**

NAMIBIA





**GENERAL LOCATION DESCRIPTION OF THE DEVELOPMENT AREA:**

<b>DESCRIPTOR:</b>	<b>LOCATION SPECIFICS:</b>
NATURE OF ACTIVITIES:	The construction of infrastructure through Township Establishments.
REGION:	Kunene Region
LOCAL AUTHORITY:	Opuwo Town Council
FALL WITHIN:	
PORTION B	of the Remainder of the Farm Opuwo Townlands No. 1115
PORTION Y	of the Remainder of Farm Opuwo Townlands No. 867
NEAREST TOWNS / CITY:	Opuwo
SIZE OF PORTION B	4.01 sqm
SIZE OF PORTION Y	41.638 Ha
LAND USE:	Undetermined
STRUCTURES:	Yes
HISTORICAL RESOURCE LISTINGS:	No
CEMETERY:	No
FLOODLINES:	Yes
ENVIRONMENTAL SIGNIFICANT AREA:	<ul style="list-style-type: none"> <li>❖ Mopani Woodlands; and</li> <li>❖ Smaller Ephemeral Rivers</li> </ul>
LATITUDE:	-18.048023
LONGITUDE:	13.860819
RELEVANT LISTED ACTIVITIES:	<p>The Environmental Management Act (Act 7 of 2007),</p> <p><b>Section 8.</b> Water Resource Developments;</p> <p>8.8. Construction and other activities in watercourses within flood lines;</p> <p>8.9. Construction and other activities within a catchment area;</p> <p><b>Section 10.</b> Infrastructure</p> <p>10.1. The construction of-</p> <p>10.1. (b) public roads;</p> <p>10.2. Route determination of roads and design of associate physical infrastructure where-</p> <p>10.2 (a) public roads.</p>

<b>ABBREVIATION:</b>	<b>DESCRIPTION:</b>
am	ANTE MERIDIEM / BEFORE MIDDAY
Av	AVENUE
BID	BACKGROUND INFORMATION DOCUMENT
DEM	DIGITAL ELEVATION MODEL
DWN	DEVELOPMENT WORKSHOP NAMIBIA
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
FEMO	FLOOD EMERGENCY MANAGEMENT OFFICE
FRMP	FLOOD RISK MANAGEMENT PLAN
HIV	HUMAN IMMUNODEFICIENCY VIRUS
i.e.	ID EST. / IN OTHER WORDS
I&APs	INTERESTED AND AFFECTED PARTIES
KP	Knight Pièsold
NBD	THE NAMIBIA BIODIVERSITY DATABASE
NHC	NAMIBIAN HEALTH CARE
NAMPAB	NAMIBIAN PLANNING ADVISORY BOARD
pm	POST MERIDIEM / AFTER MIDDAY
SME	SMALL-AND-MEDIUM-SIZED ENTERPRISE
TRRP	TREE REMOVAL AND REPLACEMENT PLAN
TB	TUBERCULOSIS
WMP	WASTE MANAGEMENT PLAN
<b>UNIT SYMBOL:</b>	<b>UNIT DESCRIPTION:</b>
0°	DEGREES CELSIUS
E	EAST
ha	HECTARES
Km	KILOMETRE
m	METER
mm	MILLIMETRE
S	SOUTH
m <sup>2</sup>	SQUARE METERS
%	PERCENTAGE



## 1 APPOINTMENT

Development Workshop of Namibia (PTY) Ltd., (DWN) appointed Urban Dynamics to obtain Environmental Clearance for the

### **ESTABLISHMENT OF TOWNSHIPS ON PORTION B OF THE REMAINDER OF FARM OPUWO TOWNLANDS NO. 1115 AND PORTION Y OF THE REMAINDER OF OPUWO TOWNLANDS NO. 876 WITHIN THE KUNENE REGION.**

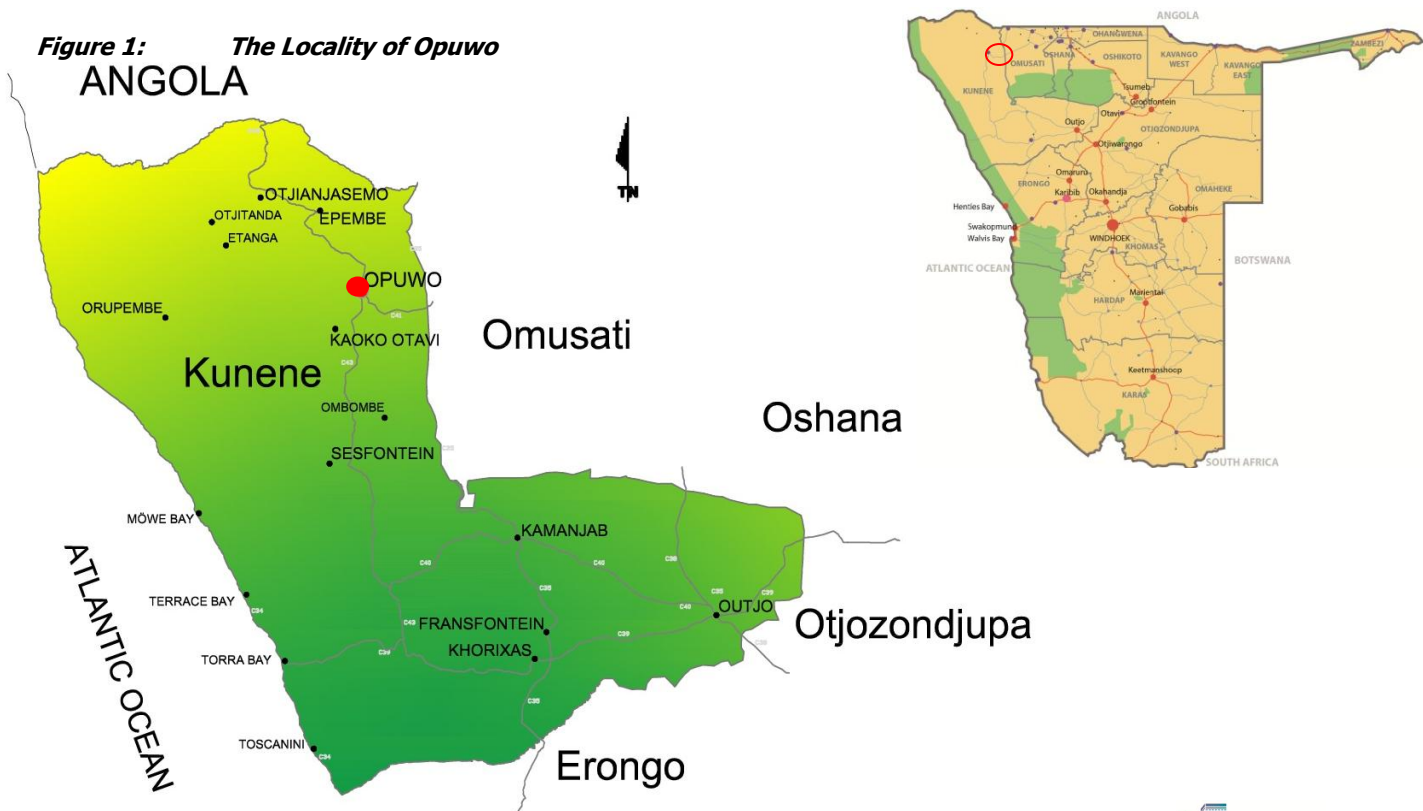
The relevant documentation is included in support of our application to the Environmental Commissioner; please refer to the appendices attached hereto.

## 2 BACKGROUND

Development Workshop of Namibia (DWN) is a non profit trust registered in Namibia. It has a focus on sustainable urban development and poverty reduction and is part of a worldwide network of Development Workshop organisations. It was founded in the 1970s by three architect students in the UK and has been funded by non-governmental organisations, private citizens, and national and international development organisations.

In Namibia, DWN’s activities focus on urban-related research, the provision of low-cost urban land for housing, and the identification and promotion of appropriate low-cost sanitation solutions for low-income residential areas. DWN’s programme is officially supported by the Ministry of Urban and Rural Development and implemented through partnerships with local authorities across the country.

**Figure 1: The Locality of Opuwo**



The DWN has had deliberations with the Opuwo Town Council for new portions of the Remainder of Farm Opuwo Townlands No. 1115 and the Remainder of Opuwo Townlands No. 876 to assist the Council with the provision of low-cost housing via a high-density residential township that caters for the low-income residents of Opuwo

As a result, the DWN approached Urban Dynamics to

- obtain approval for the subdivision of the Remainder of Farm Opuwo Townlands No. 1115 and the Remainder of Opuwo Townlands No. 876,
- submit a need and desirability application to the Ministry of Urban and Rural Development for the establishment of townships on two of the subdivided land and
- obtain approval for the layouts of the two new Townships.

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 Regulations of the Environmental Management Act (Act 7 of 2007), Township Establishment is not a listed activity. Although Section 27 of the Act lists land use and transformation as 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, but that impacts are generally limited since it is mostly 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, as a matter of course, provides the Environmental Commissioner (EC) with a baseline report. This report will enable him to screen the project and determine whether a clearance certificate can be issued, or a full assessment is required. A copy of the minutes of the meeting with the Environmental Commissioner wherein this modus operandi was agreed is attached as (**Appendix "D.2"**).

## 4 NATURE OF THE ACTIVITY

The purpose of the application is to obtain approval from the Ministry of Environment and Tourism in terms of

Section 8. Water Resource Developments:

8.8. Construction and other activities in watercourses within flood lines;

8.9. Construction and other activities within a catchment area;

Section 10. Construction of Infrastructure:

10.1 The construction of –

(b) public roads;

10.2 The route determination of roads and design of associated physical infrastructure where –

(a) it is a public road;

This report documents the baseline information necessary to enable the EC to screen this project and issue an Environmental Clearance Certificate in terms of **Section 33 of the Environmental Management Act (Act 7 of 2007)**.

This report also deals with the nature of the project, identifies the potential impacts that may be expected and the mitigation measures which will be implemented to deal with those impacts.

## 5 LEGISLATION

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

STATUTE	PROVISIONS	PROJECT IMPLICATIONS
<p><b>THE CONSTITUTION OF THE REPUBLIC OF NAMIBIA, 1990:</b></p>	<p>The state shall actively promote and maintain the welfare of the people by adopting, inter-alia, policies aimed at the following:</p> <p>(i) <i>management of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all.</i></p>	<p>Ensure that the ecological integrity of the ecosystems of the area is protected.</p>
<p><b>ENVIRONMENTAL MANAGEMENT:</b></p>	<p><b><i>Environmental Management Act No.7 of 2007:</i></b></p> <p><b><i>EIA Regulation (EIAR) GN 57/2007 (GG 3212):</i></b></p> <p>In terms of Section 10.1(a), 10.1(b), 10.2(a), and 10.2(c) for environmental clearance for the construction of oil, water, gas and petrochemical and other bulk supply pipelines, the construction of public roads and the construction of a road with more than one lane of traffic in both directions.</p> <p>In terms of Section 8.8, 8.10 and 8.11, for construction and other activities in watercourses within flood lines, the reclamation of land from below or above the high-water and the alteration of natural wetlands are listed activities.</p> <p>Prescribes the procedures to be followed for authorisation of the project (i.e. Environmental clearance certificate).</p>	<p>Evaluate if the alignment of the street will impact on the social and natural environment.</p> <p>Determine if the risk of flooding of the erven is at acceptable levels.</p> <p>Determine if proposed limited infill would impact the function of the watercourse or cause flooding elsewhere.</p> <p>Determine how wastewater pipelines in the riverbed should be designed, constructed and maintained to prevent groundwater and other pollution.</p>

<p><b>WATER AND RESOURCES MANAGEMENT:</b></p>	<p><b><i>The Water Act No. 54 of 1956 and Water Resources and Management Act No.27 of 2007 Section 92:</i></b></p> <p>Section 92 (1), A person may not engage in any construction work or activity that causes or is likely to cause, the natural flow conditions of water in to or from a watercourse to be modified, unless the Minister has granted prior written approval for the work or activity to be carried out.</p> <p>Section 100 (e) consult with the regional Council or local authority in determining the geographic extent of flood plain areas in its region or local authority, as the case may be, and assist any such councils in regulating the development and use of land within floodplain areas</p> <p>Section 100 (f) prescribe measures for control and management of storm and flood risk within local authority areas.</p> <p>Section 101 (b) development on the banks of any wetland or dam; and</p> <p>Section 101 (c) the removal of rocks, sand or gravel or any other material from a watercourse.</p>	<p>Assess the potential risk that the planned activities may have on both the watercourse on the one hand and future occupants of the land on the other.</p>
<p><b>THE PUBLIC HEALTH AND HEALTH AND SAFETY REGULATIONS:</b></p>	<p><b><i>The Public Health Act 36 of 1919 as amended and the Health and Safety Regulations:</i></b></p> <p>These acts control the existence nuisances such as litter that can cause a threat to the environment and public health.</p>	<p>Prevent activities which can have an impact on the health and safety of the public.</p>

## 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 to then formulate a planning approach to prepare a layout which harnesses the strengths, accommodate 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 TOPOGRAPHY AND SITE INFORMATION

In terms of obtaining an accurate topographical base map and aerial survey images, a registered land surveyor was appointed by Development Workshop of Namibia to survey the site during February 2020. In addition to contour survey, 5 m contours data was obtained from the Surveyors Generals office.

DWN appointed Knight Pièsold consulting (KP) to create a 1 to 21-year flood analysis of the project site. KP made use of HEC RAS software, to model a 2 Dimensional hydrodynamic numerical model of the project areas flood area. Find attached the flood analysis for the site as **Appendix "E"**.

Site information was obtained by means of a site visit of the area and aerial photography. A site visit was conducted in May 2020 by UDA, KP, NamWater with a senior representative of the Opuwo Town Council and DWN. The site visit identified four structures, rivers, and some crop fields within the project area.

### 6.2 NATURAL RECEIVING ENVIRONMENT

The UDA team conducted an environmental screening for the affected area in March 2020. The team used orthophoto analysis, a site visit, literature surveys and extensive personal experience of the region.

Data sources used include:

- Atlas of Namibia (Mendelsohn et. al, 2002).
- Kunene Regional Development Profile (Kunene Regional Council,2015)
- Opuwo low-cost residential development: Flood Analysis (Knight Pièsold Consulting., 2020)

### 6.3 PUBLIC CONSULTATION

Urban Dynamics notified potentially interested and affected parties of the proposed application. Interested and affected parties were invited to register as stakeholders. A Background Information Document (BID) provided,

- ❖ background on the nature and location of the activity, and
- ❖ details where further information on the application or activity can be obtained.

Simultaneously, two newspaper notices were placed in separate newspapers for two successive weeks, and a notice of intent was placed at the site. The advertisements which were placed are attached as **Appendix "C.1"**. UDA and DWN held a community meeting on the 3<sup>rd</sup> of December 2020 at Opuwo. The meeting's minutes and attendance register are attached as **Appendix "C.4"**

**Figure 2: Community Meeting**





## 7 DESCRIPTION OF THE SITE

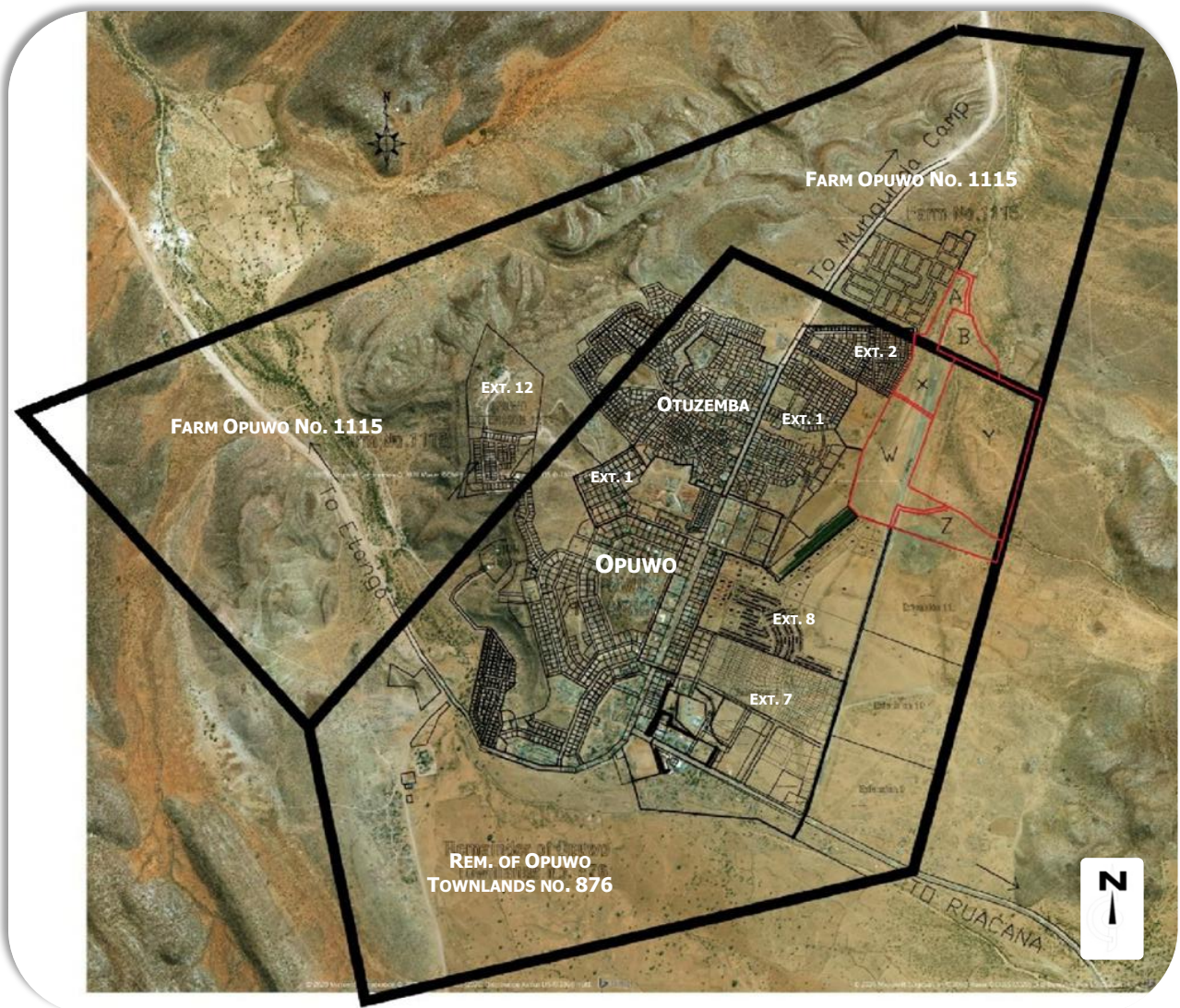
This section provides a planning description of the Opuwo development sites relative to the surrounding urban areas, existing uses and settlement, services and other infrastructure, topography, and any other features of the site.

### 7.1 LOCATION OF THE SITES

Farm Opuwo No. 1115 will be subdivided into Portion A, B and remainder. Simultaneously, the Townlands of Opuwo No. 876 will be subdivided into four new portions, Portions W, X, Y and Z.

The project sites are located at -17.766036 S, 24.693962 E situated north of Extension 8, Opuwo and south-east of Extension 2, Otuzemba.

**Figure 3:** *Locality of the Portions within the Opuwo Townlands*





## 7.2 SIZES AND SHAPES OF THE PORTIONS

### 7.2.1 Portions A and B

**Portion A** of the Farm Opuwo Townlands No. 1115 is approximately 4.01 ha, and **Portion B** of the same Townlands is approximately 6.13 ha. The Portions sizes and land use are shown in **table 1**. **Figure 4** illustrates the shapes of the two Portions.

**Table 1: Portions A & B Sizes and Land Uses**

THE SITE	AREA SIZE/ HA	LAND USE
PROPOSED PORTION A	4.01	UNDETERMINED
PROPOSED PORTION B	6.13	UNDETERMINED
REMAINDER	791.389	UNDETERMINED
<b>TOTAL</b>	<b>801.532</b>	-

**Figure 4: Portions A and B's Form**





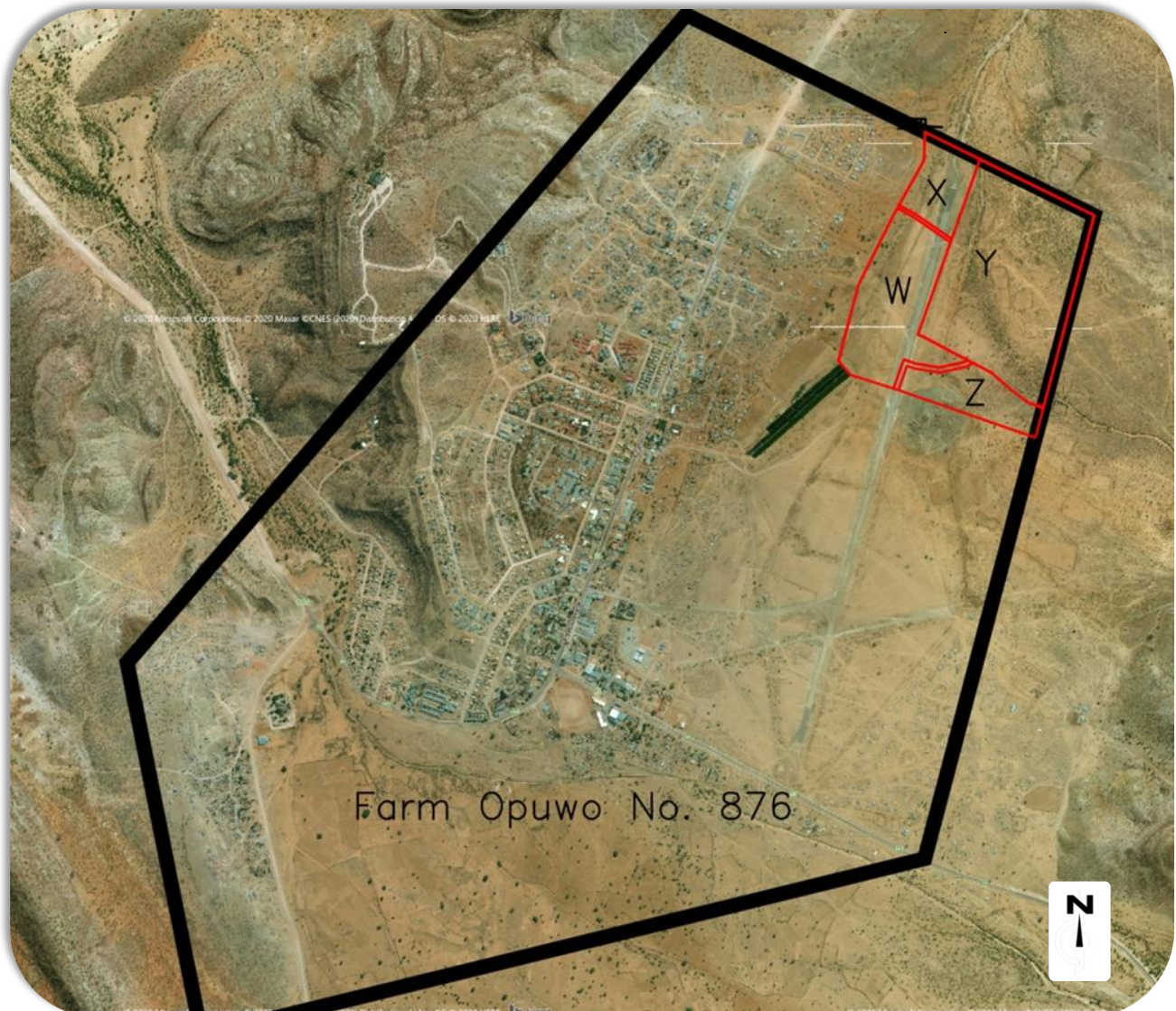
### 7.2.2 Portions W, X, Y and Z of the farm Opuwo Townlands No. 876

**Portion W** is approximate 19.58 ha, **Portion X** is approximate 7.45 ha, **Portion Y** is approximate 41.63 ha, and **Portions Z** is approximate 8.53 ha in extend. The Portions sizes and land use are shown on **Table 2**. **Figure 5** illustrates the shapes of the proposed four Portions.

**Table 2: Portions W to X's Sizes and Land Uses**

THE SITE	AREA SIZE/ HA	LAND USE
PORTION W	19.585	UNDETERMINED
PORTION X	7.453	UNDETERMINED
PORTION Y	41.638	UNDETERMINED
PORTION Z	8.537	UNDETERMINED
REMAINDER	906.9	UNDETERMINED
TOTAL	<b>984.114</b>	-

**Figure 5: Portions W to X's shapes**



### 7.3 LAND USE ACTIVITIES

The proposed development sites are currently zoned "Undetermined". Portion Y's site has four temporary scattered structures. The portion also borders onto the old Opuwo Airfield, which is in the process to be decommissioned as indicated on **Figure 6**.

**Figure 6: Current Land Use**

OLD OPUWO AIR STRIP



FIELDS AND TEMPORARY STRUCTURE



Source: Brian J. McMorrow

### 7.4 ACCESS AND UTILITY SERVICES

#### 7.4.1 Access:

The site is easily accessible by two 20 m distributor roads leading from Otuzemba Ext. 2 to the project area.

#### 7.4.2 Electrical Supply:

Currently, the site has no electricity supply. The proposed development is to be supplied from the Opuwo Town Council's reticulated network, through the nearby extension from the closest and most suitable line.

#### 7.4.3 Water Connection:

The development's source of water supply will be from the Opuwo Town Council's reticulated network.

#### 7.4.4 Sewerage:

The town is served by a sewerage system consisting of a collection network and pump stations that send sewerage to oxidation ponds located on the south-west of the site.



### 7.4.5 Communication:

Telecommunication services are available by means of cellular. However, Telecom landline infrastructure will be implemented by Telecom.

## 7.5 CULTURAL RESOURCES

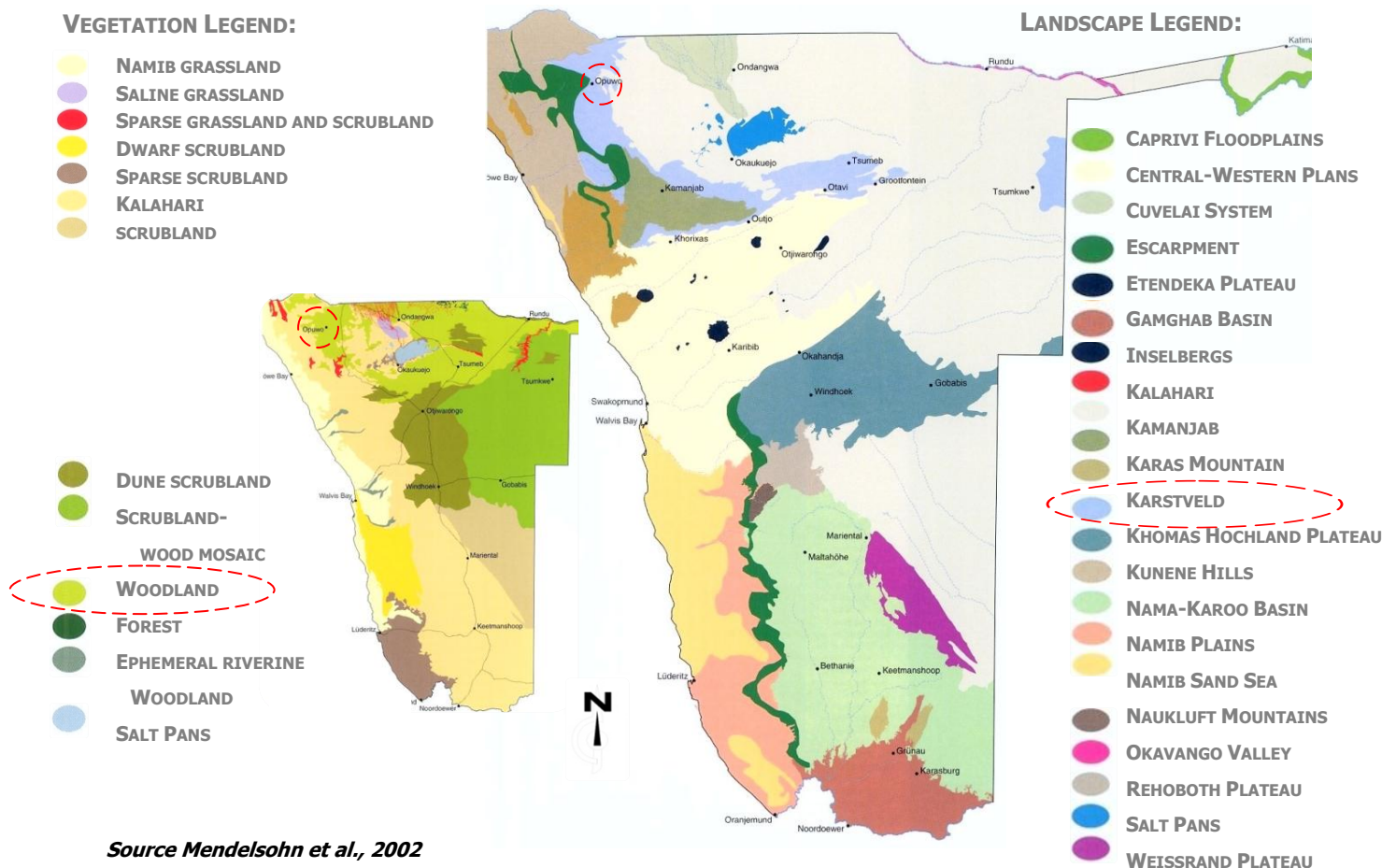
No graves were identified on the site, and no other items of historical value were found or could be identified within the site boundaries.

## 7.6 ENVIRONMENTAL CHARACTERISTICS AND TOPOGRAPHY

### 7.6.1 Natural Environment:

Vegetation in Namibia is strongly influenced by the low rainfall patterns, topography and soil conditions of the regions (Mendelsohn et al., 2002). Opuwo is situated in the north-western part of Namibia within the Kunene Region, which has low-lying hills and vast semi-arid karstveld plains (Mendelsohn et al., 2002).

Figure 7: Landscape and Vegetation



According to Mendelsohn et al. (2002), vegetation surrounding Opuwo is classified as the Acacia Colophospermum (Mopani) - and shrub savanna (Karstveld).

Vegetation at the project area was found to be low-density Mopani Woodlands, with barren areas and very little undergrowth.

**Figure 8: The Site's Vegetation**

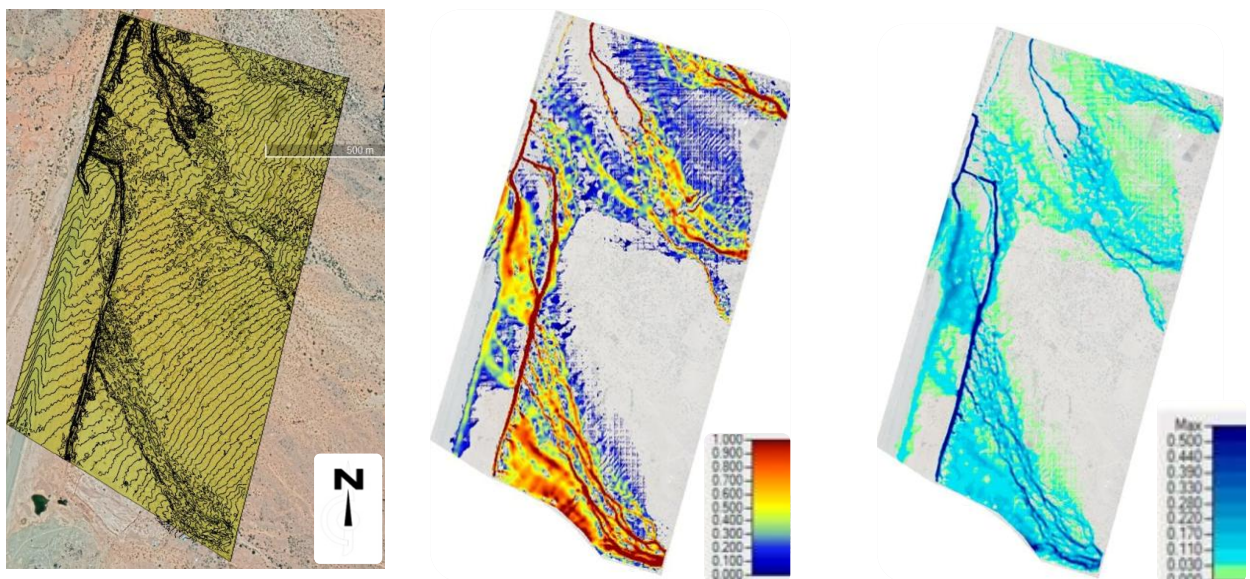


The project site has no residential wildlife and does not form part of the migration routes of wild animals in the Kunene Region

### 7.6.2 Topography and Flooding

The topographical characteristics of Opuwo consist of a large flat area which is almost completely surrounded by the floodplain. The site has a downward slope of 1:16m from a South-Eastern direction and naturally drains into a northern direction.

**Figure 9: Topography and Flooding**





The Floodline study of the site, compiled by Knight Pièsold indicated that a 1 in 25-year flood would submerge a large portion of the northern area and parts of the site's southern area. It is, however, noted that area inundated with low flow velocity (i.e. less than 0.1 m/s), at a very low flow depth (>0.03 m, shown in light green on **Figure 9**).

### 7.6.3 Geology and Soil

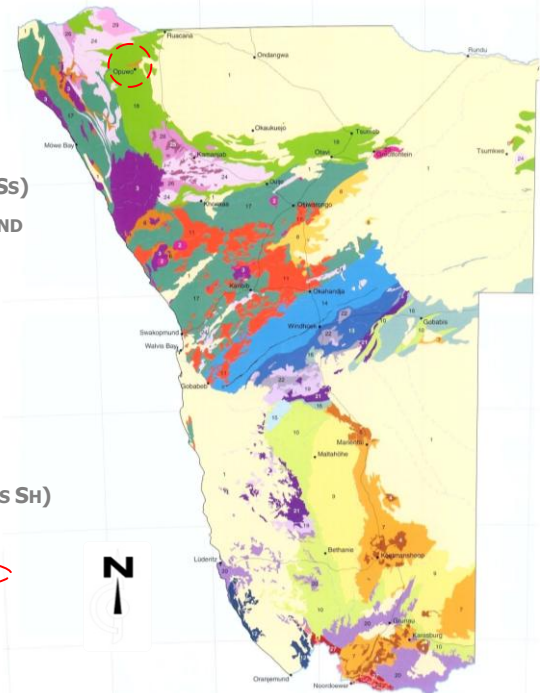
**Figure 10** indicates the locality of the Otavi fold belt in Namibia. The surrounding rock formation at Opuwo is primarily limestone which forms part of the Otavi Group (Mendelsohn et al., 2002). The Kunene Region’s landscapes generally consist of valleys, escarpments, mountains, springs and perennial rivers (Kunene Regional Development Profile, 2015).

**Figure 10: Rock Types in Namibia**

**LEGEND:**

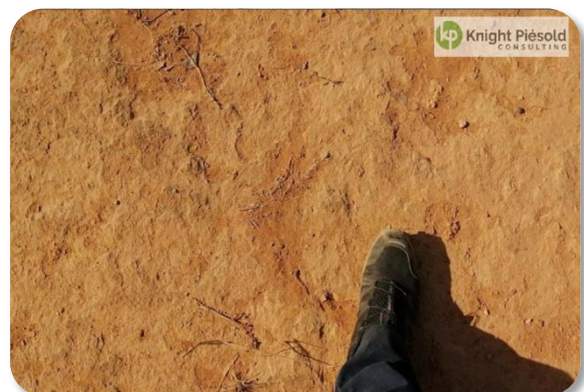
- |   |                             |    |  |
|---|-----------------------------|----|--|
| 1 | KALAHARI AND NAMIB SAND (S) | 10 | FISH RIVER SUBGROUP (Ss)               |
| 2 | IGNEOUS INSTRUSIONS (Ls Ss) | 11 | KUIBIS AND SCHWARZRAND SUBGROUP (Ss C) |
| 3 | ETENDEKA GROUP (Ss)         | 12 | DAMARA GRANITE (G)                     |
| 4 | DYKES AND SILLS (V)         | 13 | GARIEP COMPLEX (Cx)                    |
| 5 | KALKDRAND BASALTS (B)       | 14 | HAKOS GROUP (Ss)                       |
| 6 | HUAB BASIN (Ss SH)          | 15 | KHOMAS GROUP (SCH)                     |
| 7 | MAIN KAROO BASIN (Ss SH)    | 16 | NAUKLUFT MOUNTANS (Ls SH)              |
| 8 | WATERBERG BASIN (Ss C)      | 17 | SWAKOP GROUP (SCH)                     |
|   |                             | 18 | OTAVI GROUP (Ls)                       |
|   |                             | ~  | MATCHLESS BELT (A)                     |

Source Mendelsohn et al., 2002



The project area is in a low lying area, with silty sand, which is shallow and not well-drained. Drainage channels on the site consists of large hard rock and is covered with alluvial pebbles, and is well-drained as indicated on **Figure 11** (Knight Pièsold, 2020).

**Figure 11: Site’s Landscape**





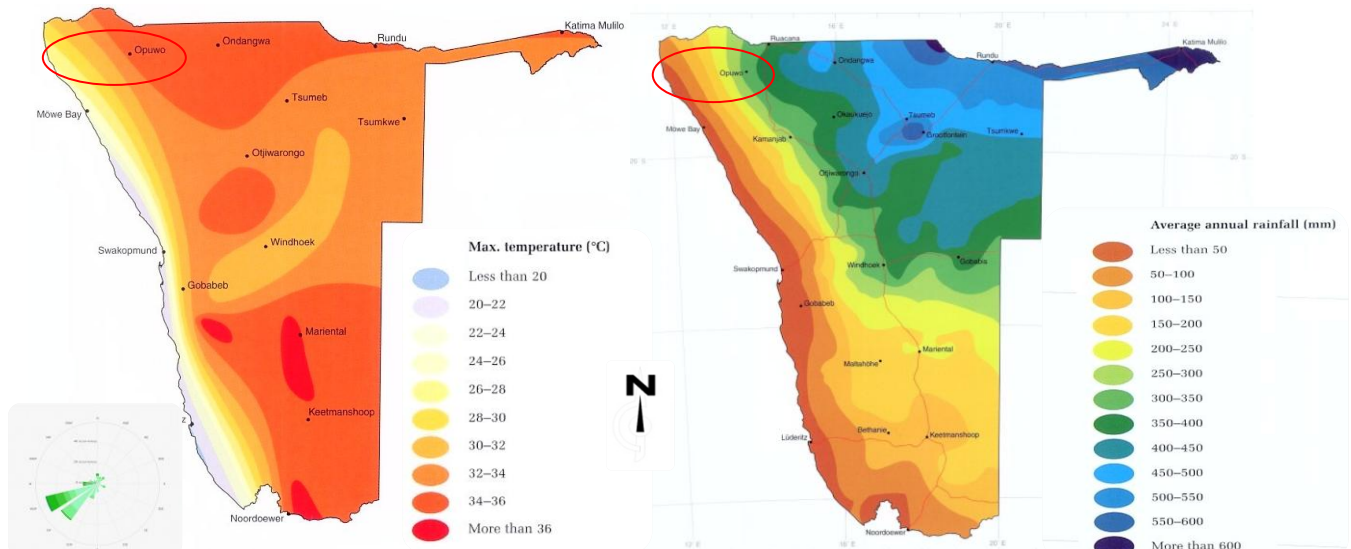
### 7.6.4 Climate, Wind Directions, and Rainfall:

Namibia is a hot and dry country, and due to low levels of humidity in the air, the country experiences low levels of cloud cover and rain, but also extremely high rates of evaporation. During winter months, Opuwo’s temperatures can range from an average of 5 to 26 degrees centigrade and during December, it can reach to more than 35 degrees centigrade (Mendelsohn et al., 2002).

Winds within the region are predominantly south easterly. The area experiences wind calm about 57% of the time. Winds mostly blow from the east and seldom reach speeds exceeding 35 km per hour (Meteoblue, 2020). The windiest month is October.

Opuwo has about 12.5 hours of sunlight, of which December and January are the two months with longest days.

**Figure 12: National Climate**



Source Mendelsohn et al., 2002

Most rain-bearing clouds are fed into the country by east north-easterly winds (Mendelsohn et al., 2002 & Meteoblue 2020) As such, the South and Western parts of the country receive less rainfall than the central and northern parts of the country as indicated on Figure 12. The average monthly humidity at midday ranges from 50% in March to 17% in September. Like the rest of the country, the region has an arid climate and a very short wet season, mainly during February to March. The average yearly rainfall across the region increases from west (50 mm) to east 415, which is less than 50 mm to 415 mm per annum and is very sporadic (Mendelsohn et al., 2012).

### 7.6.5 Status of Protected Area:

The site itself has no protected status.

## 7.7 SUMMARY OF THE HABITATION ON SITE

As a result of the population density at Opuwo, habitat alteration occurred. The site is ecologically degraded, no longer pristine and is not fully functional at the ecosystem level. It may be best described as a highly impacted originally rural agricultural ecosystem and is not a natural environment any more.

Key environmentally relevant features show that:

- ❖ The site has no residential wild mammals, and does not form part of the migration routes of wildlife in the Kunene Region;
- ❖ The site has a downward slope of 1:16 m from a South-Eastern direction and naturally drains into a northern direction;
- ❖ The 1 in 25-year floodline Knight Pièshold recommended for the development is based on a maximum flow depth of 0.03 m. The nature of the development and the rare occurrence of a 1 in 25-year flood event that the flood line will be considered acceptable;
- ❖ The land has been cleared for croplands and is located next to an urban area;
- ❖ Portion Y includes four scattered temporary structures, twenty mahangu fields;
- ❖ The natural vegetation on the project site consists of low-density Mopani Woodlands and, barren areas with very little undergrowth;
- ❖ Soil type at Opuwo consist out of silty soil; and
- ❖ Temperatures in the average winter range from 5 to 26 degrees centigrade and during December it can reach to more than 35 degrees centigrade.

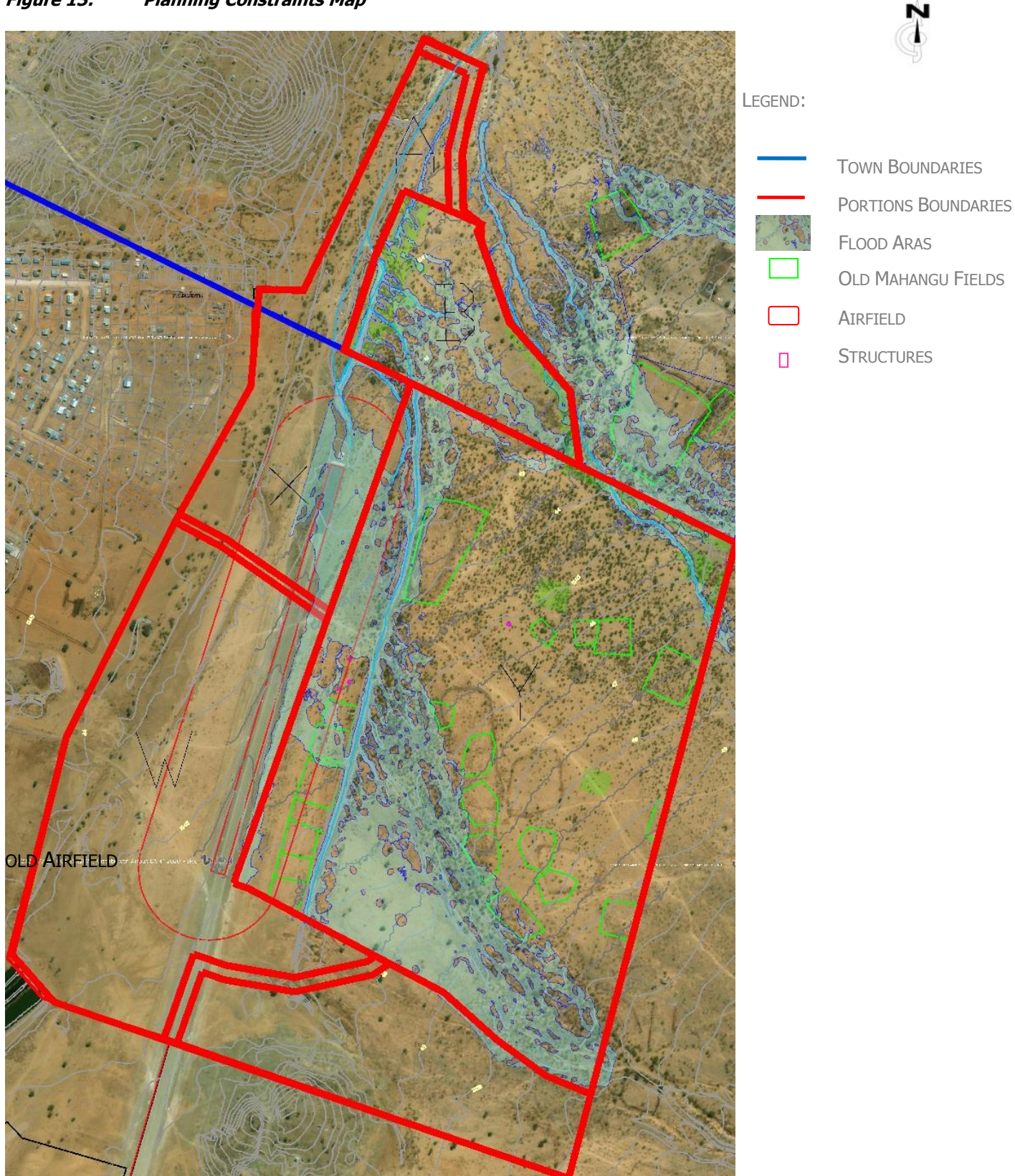
The screening process turned up no significant biodiversity-related issues for the current development, and there are no aspects that require further investigation. However, the layouts should take into account the river channels, and the 1 in 25-year floodline. The scattered trees should be considered in the area, and where necessary permits should be obtained for these to be moved. 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.



## 7.8 SUMMARY OF THE PLANNING CONSTRAINTS

As indicated on the constraints map on **Figure 13**, three temporary structures, 12 old mahangu fields, smaller ephemeral rivers and their flood areas form planning constraints on the sites.

**Figure 13:** *Planning Constraints Map*





## 8 THE PROJECT TOWNSHIPS

After the subdivision of the townlands, the Council and DW Namibia intent to establish two new townships. The first township will be established on Portion B of the Remainder of the Farm Opuwo Townlands No. 1115. The township will be a residential neighbourhood, thereby meeting the rising demand for housing within Opuwo.

The second township will be established on Portion Y of the Remainder of the Opuwo Townlands No. 875. The townships will consist of a mixed-use neighbourhood, thereby meeting the rising demand for housing and business plots within Opuwo and within the Kunene Region.

### 8.1 LAYOUT DETAIL

**Figure 14: Opuwo Layouts**

The layouts will alter the current zoning from undetermined to include Residential-, Institutional-, Business plots and Public Open Spaces. The block's shapes and sizes are illustrated in **Figure 14**.

The tables below provide a summary of the detailed land-use allocation on the Portions, while the mitigated detail of the layout is discussed afterwards.

LEGEND:

- RESIDENTIAL
- GENERAL RESIDENTIAL
- BUSINESS
- INSTITUTIONAL
- CIVIC
- PUBLIC OPEN SPACE

**Table 3: Proposed Land Use**

Portion B			Portion Y		
LAND USE	AREA (M2)	NO. OF ERVEN	LAND USE	AREA (M2)	NO. OF ERVEN
SINGLE RESIDENTIAL	21 151	66	SINGLE RESIDENTIAL	13 2314	389
GENERAL RESIDENTIAL	1 609	1	GENERAL RESIDENTIAL	6 938	4
BUSINESS	-	-	BUSINESS	5 816	3
CIVIC	-	-	CIVIC	1 458	1
INSTITUTIONAL	4860	6	INSTITUTIONAL	5 422	3
POS	16529	3	POS	179 106	11
STREET	16924	-	STREET	84 574	-
<b>Total</b>	<b>61073</b>	<b>76</b>	<b>Total</b>	<b>415628</b>	<b>411</b>

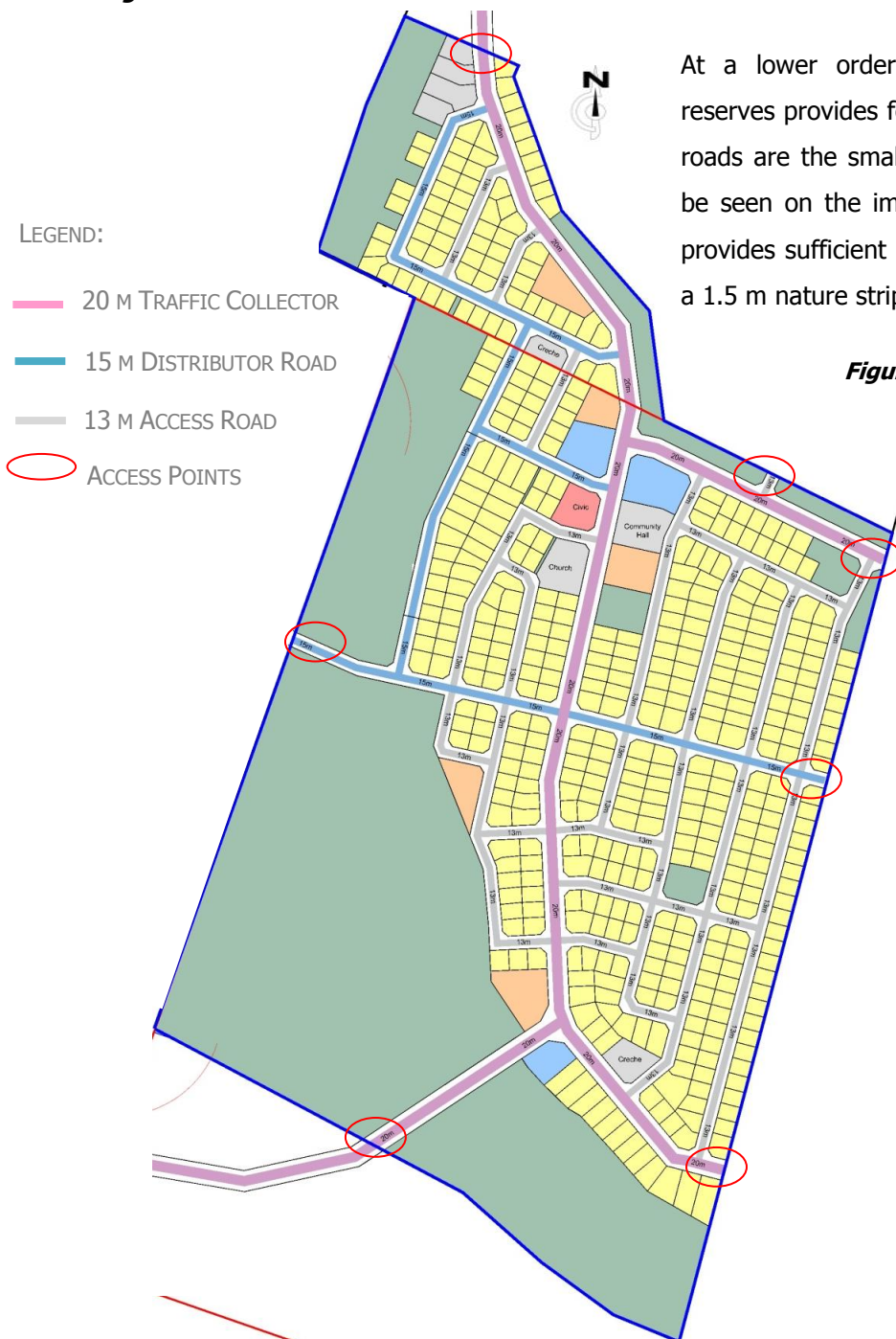


## 8.2 THE STREET LAYOUT

Access to the layout will be obtained through 7 access points. "Traffic Collectors" provide a function of internal mobility throughout the new suburb and also between the different facilities and land use zones within the urban context. They have a 20 m wide road, reserves and fall under the jurisdiction of the local authority.

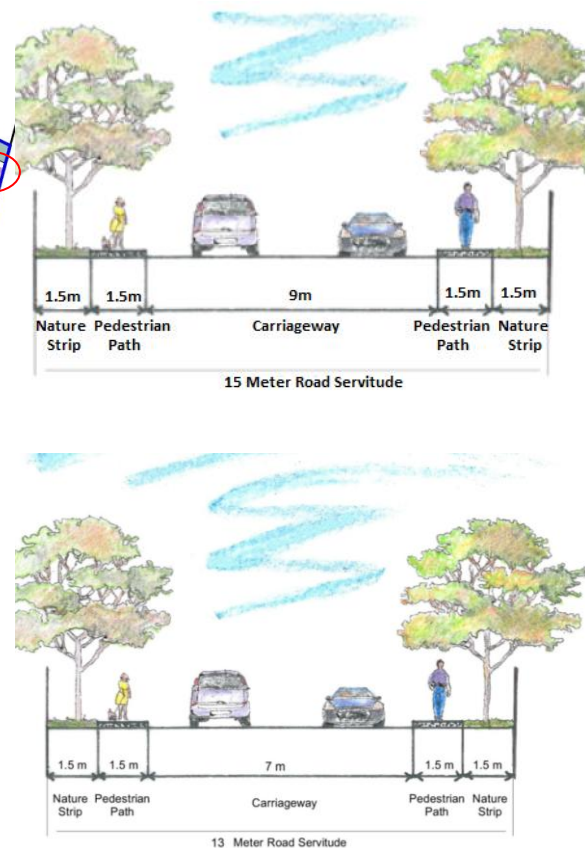
At a moderate order, "distributor Roads" with 15 m wide reserves provide for a medium volume of traffic, linkages between collector roads and ultimately access to the residential erven. The collector roads ease traffic away from the distributor roads reducing congestion on major roads.

**Figure 15: Road Access**



At a lower order, "Access Roads" with 13 m wide reserves provides for the lower volumes of traffic. These roads are the smallest and carry the least traffic. It can be seen on the image below that a 13 m road reserve provides sufficient space for a 7 m two line carriageway, a 1.5 m nature strip and pedestrian path either side.

**Figure 16: Provision of Pedestrians**



### 8.2.1 Provision for Drainage:

Stormwater drainage will be designed, and culverts and bridges will be used to accommodate the flow of the water.

## 9 POTENTIAL IMPACTS

During the course of preparing the Opuwo layout, the team constantly assessed the potential positive and negative impacts of the project. Attempts have been made to enhance and strengthen positive impacts and mitigate and weaken the effects of negative impacts in all cases. Several alterations to the plan were produced until the planners 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 impacts may be transitory in nature (for example, occurring only during the construction phase of the project) 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 EMP.

### 9.1 SUMMARY OF POTENTIAL IMPACTS

The planning of the layout, together with the upgrading of bulk infrastructure and alignment of roads 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 the construction;
- Employment creation and local economic development; and
- Stimulation of the health and wellness of Opuwo and the Kunene Region.

### 9.1.2 Potential Negative Impacts during the Construction:

- Impact of removal of trees from the site;
- Impact of dust;
- Impact of noise;
- Impact on traffic flow during construction;
- Impact on the health and safety of workers; and
- Impact of waste.

### 9.1.3 Potential Negative Impacts during Operations:

- Impact on traffic flow during operations and
- Impact of waste during operation.

## 9.2 POTENTIAL IMPACTS

### 9.2.1 Project Benefits:

- **Provide for serviced erven.** The communities will now have access to properly planned erven with specified erf boundaries. This will lead to residents having formal and permanent occupation of land and security of tenure. The process of layouts creates a formal development framework, which would prevent uncontrolled settlement growth and address the current uncontrolled developments.
- **Stimulate health and wellness within the Opuwo Townlands.** The layout makes provision for 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. Clearly defined roads will allow for the provision of pedestrian infrastructure, creating a safe walking environment.
- **Stimulate the health and wellness of Opuwo within the Kunene Region.** The development will lead to employment creation during the construction and operation phases. It will render services within the formal economy of Opuwo, employ staff, contribute to rates and taxes and spend money within the same economy.

### 9.2.2 Negative Impacts during Construction:

- **Impact of the removal of trees from the site.** The layout was prepared in such a way to avoid the removal of trees. Trees within the project site will remain intact as far as possible during the alignment of the roads.
- **Impact on traffic flow during construction.** Construction vehicles would need to haul the excavated soil to a disposal site and provide building material and other supplies



(i.e. fuel etc.), supplies to the construction site, most of which could be delivered to the site by truck. Construction vehicles are most likely to pass in close proximity to erven, as well as disrupt traffic flow near Extension 2 (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, which will expose the community and workers on the site to dust pollution, and can impact their health. Preventative measures need to be put in place on the site to prevent excessive dust.
- **Impact of potential construction noise.** Construction machinery creates substantial noise, and this will impact the surrounding community. Ongoing noise can cause stress and health impacts on nearby residents.
- **Impact of construction waste.** Solid waste is the expected major source of waste at the construction site. If no waste management plan is in place to address the disposal of general and hazardous waste at the site, it can lead to water and soil pollution on the site, and/or within the water areas.
- **Impact on the health and safety of workers and nearby residents.** Construction activities always have potential risk for workers and nearby residents. Inadequate site management measures can expose workers and residents living near the site to hazardous chemicals and dust and noise. A lack of notices and signs within the area where deep excavation work is done can put the lives of residents and workers in danger.

### **9.2.3 Impacts during Operations:**

- **Impact of operational waste.** Solid waste is also expected to be a significant source of waste during operations. If no recycling disposal of general waste at the settlement happens, it can lead to water air and soil pollution on the site.

## **9.3 LAYOUT STRATEGIES**

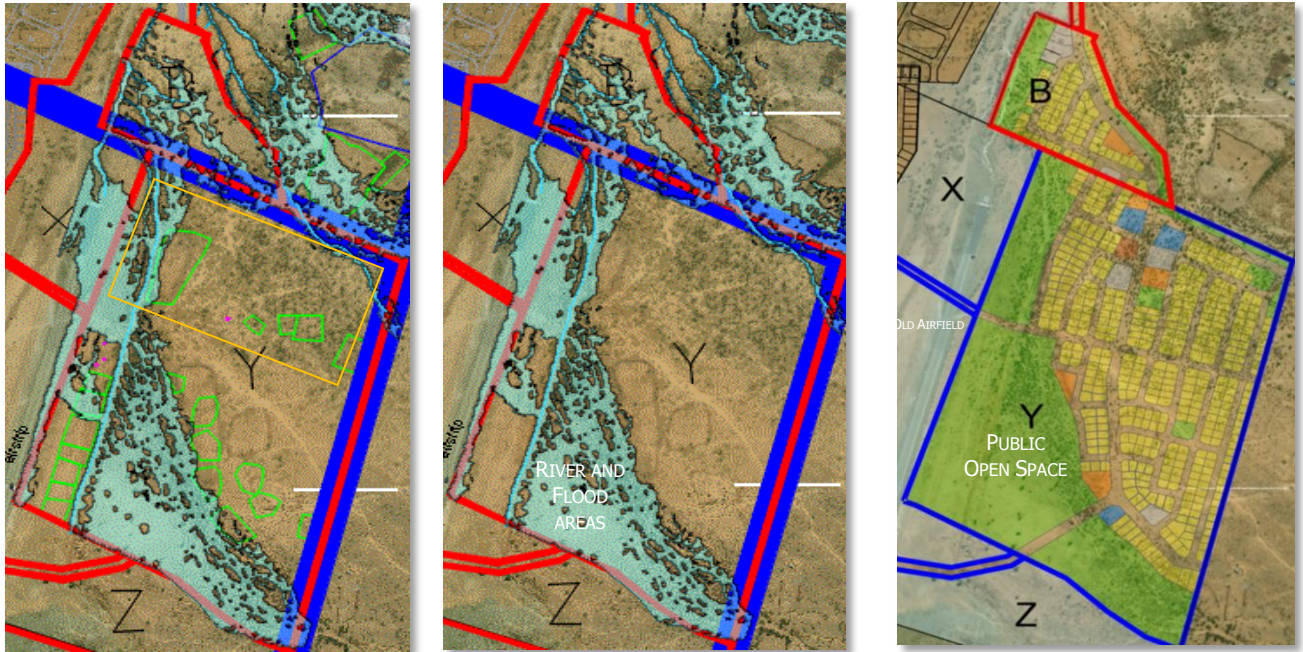
Potential environmental and social impacts were addressed throughout several layout strategies.

The following impacts that can be influenced by alternative layout strategies were considered and dealt with in different ways than was originally proposed:

**Relocation and compensation of structures and crop fields:** Affected structures and fields will be either compensated for where applicable, or alternatives will be made available for such individuals to

relocate their structures to. The Casualty Map below shows the locality of casualties. Owners will be compensated as per the *Cabinet Compensation Policy*.

**Figure 17: Constraints Map**



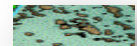





IDENTIFIED CONSTRAINTS: STRUCTURES, RIVER, FLOOD AREA AND CROP FIELDS




FIELDS AND STRUCTURES WILL BE COMPENSATED AND REMOVED

THE LAYOUT ACCOMMODATES THE RIVERS AND FLOOD AREA WITHIN PUBLIC OPEN SPACE

CONSTRAINTS LEGEND:

-  TOWN BOUNDARIES
-  PORTIONS BOUNDARIES
-  RIVER AND FLOOD AREAS
-  20 MAHANGU FIELDS
-  4 STRUCTURES
-  MOPANI WOODLAND AREA

LAYOUT LEGEND:

-  PORTION Y
-  RESIDENTIAL
-  GENERAL RESIDENTIAL
-  BUSINESS
-  INSTITUTIONAL
-  PUBLIC OPEN SPACE



**Accommodating the Mopani woodland areas:** The layout makes provision for public open spaces, to accommodate the pockets of Mopani woodland areas in the site. Continuity of public open spaces, was planned to enable the ecosystem to function with limited interference. The open space areas will make approximately 25% of the total project area, equating to about 351 216 m<sup>2</sup>.

## 9.4 DEALING WITH RESIDUAL IMPACTS

### 9.4.1 Residual Social Impacts:

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

Some structures and Mahangu fields will have to be relocated. However, the owners of these structures are aware that they are within the townlands and will need to make way for future development. In all the cases where structures will be removed, the owners will be compensated as per the provisions of the Cabinet Compensation Policy Guidelines for Communal land by the Opuwo Town Council.

### 9.4.2 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, but this will be limited, and a method to limit it is 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 installed, is included in the provisions of the EMP.
- As a result of their work environment, there will be a potential impact on the health and safety of the workers, during the construction phase. This will be limited, and methods to limit it are contained in the EMP.
- Not all trees can be protected within the layout thus a Tree Management Plan (TMP) should be compiled before construction commences. Mitigation methods are contained in the EMP regarding the TMP and required permits for the removal of protected trees

## 10 SUMMARY AND APPLICATION

### 10.1 PROJECT IMPACTS, AVOIDANCE MEASURES AND RESIDUAL IMPACTS

POTENTIAL IMPACT:	MEASURES:			RESIDUAL IMPACTS:
	AVOIDANCE:	MITIGATION:	ENHANCEMENT:	
<b><i>Stimulate local economic development and create employment opportunities:</i></b>			<p>During the development phase, the construction company will render service within the formal economy, employ staff, pay rates and taxes and spend money all within the same economy.</p> <p>Emphasis must be placed on employing of local people.</p>	
<b><i>Providing serviced residential erven:</i></b>			<p>The project will lead to a formal and permanent occupation of land, the security of tenure, access to capital and partaking in the economy, and ultimately to wealth creation in the operational phase.</p>	

POTENTIAL IMPACT:	MEASURES:			RESIDUAL IMPACTS:
	AVOIDANCE:	MITIGATION:	ENHANCEMENT:	
<b>STIMULATE THE HEALTH AND WELLNESS OF THE COMMUNITY:</b>			<p><b>THE DEVELOPMENT:</b></p> <p>Provide that all services will be on the higher road reserve.</p> <p>Provide for a closed system sewer system, which will prevent pollution during flooding.</p> <p>Provide for pedestrian infrastructure.</p> <p>The development is also situated walking distance from the town centre, schools and health facilities within Opuwo.</p> <p>Provide formal and permanent occupation of land and the security of tenure.</p>	
<b>POTENTIAL NEGATIVE IMPACTS</b>				
<b>POTENTIAL REMOVAL OF STRUCTURES</b>	Avoid the removal of structures and homesteads on the site.	<ul style="list-style-type: none"> <li>Owners will be compensated as per the Cabinet Compensation Policy.</li> </ul>		
<b>POTENTIAL REMOVAL OF EXISTING TREES:</b>	Avoid the removal of existing trees.	<p>Mopani and single trees will be accommodated within:</p> <ul style="list-style-type: none"> <li>Individual erven.</li> <li>The road alignment, reserve.</li> </ul>		<i>Not all the trees can be protected</i>

POTENTIAL IMPACT:	MEASURES:			RESIDUAL IMPACTS:
	AVOIDANCE:	MITIGATION:	ENHANCEMENT:	
<b>POTENTIAL DUST AND NOISE ON THE CONSTRUCTION SITE:</b>		<p><b>Dust:</b></p> <ul style="list-style-type: none"> <li>No removal of vegetation or soil on the site except where necessary during the construction phase.</li> </ul> <p><b>Noise:</b></p> <ul style="list-style-type: none"> <li>Construction work will be restricted between 07h00 and 18h00.</li> </ul>		<i>Not all the dust and noise can be prevented.</i>
<b>POTENTIAL IN AN INCREASE IN TRAFFIC DURING THE CONSTRUCTION PHASE:</b>	Avoid an uncontrolled increase in traffic during the construction phase.	Traffic during the construction phase will be restricted between 07h00 and 18h00.		<i>Increase in traffic can be managed. However, the increase in traffic will still have a potential impact on residents.</i>
<b>HEALTH AND SAFETY OF WORKERS:</b>	Avoid health and safety impacts on workers during the construction phase.	Proper construction practices and safety procedures need to be applied.		<i>Not all the health and safety aspects of the workers can be prevented.</i>

## **11 APPLICATION FOR ENVIRONMENTAL CLEARANCE**

Given the findings of this baseline investigation, no significant biodiversity-related issues were identified, and there are no aspects that require further investigation. However, the layout should consider the river streams, 1 in 25-year floodlines, as well as the various protected species of tree in the area, and where necessary apply for permits for these to be moved.

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 for an Environmental Clearance Certificate as per Section 32 is attached as **Annexure "1"** to this Scoping Report.



## 12 REFERENCES

Kunene Regional Development Profile- The Ultimate Frontier (2015). Retrieved October 8, 2020, from [http://https://kunenerc.gov.na/hu/home](http://https://kunenerc.gov.na/hu/home;);

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