


# ENVIRONMENTAL ASSESSMENT OF THE PROPOSED OTJIMBINGWE EXTENSION 1 ON ERF 287 OTJIMBINGWE

## FINAL SCOPING REPORT



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PROJECT NAME	Proposed Establishment of Otjimbingwe Extension 1 on Erf 287 Otjimbingwe
STAGE OF REPORT	Final Scoping Report
CLIENT	Erongo Regional Council
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## ACRONYMS & ABBREVIATIONS

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BID	Background Information Document
CBD	Convention on Biological diversity
DEA	Department of Environmental Affairs
ED	Enviro Dynamics
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ERC	Erongo Regional Council
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
I&AP's	Interested & Affected Parties
MAW	Ministry of Agriculture, Water and Forestry
MET	Ministry of Environment and Tourism
NamWater	Namibia Water Corporation
NDP	National Development Plan
NPC	National Planning Commission

## EXECUTIVE SUMMARY

### Introduction

The Erongo Regional Council (ERC) desires to formalise the settlement busy forming adjacent to the existing Otjimbingwe Town, creating 300 new erven to accommodate existing informal and new households there. The new area will be called Otjimbingwe Extension 1 and is to be subdivided from Erf 287 Otjimbingwe.



*Locality of Otjimbingwe Extension 1 (Yellow area)*

The project entails the approval of the layout, the survey and registration of the new erven, in order for the ERC to lease the erven to the applicable households. At this stage, the project does not include the provision of services such as access roads, water connections, power and sewerage, although this is the next step of the development, and separate applications and assessments will be made for these projects.

In order to fulfil the statutory processes of the new residential area, an application needs to be submitted to the Directorate of Environmental Affairs, for an Environmental Clearance Certificate. The Erongo Regional Council appointed Enviro Dynamics to complete this application and the process required on their behalf. This Scoping Report has been prepared as the outcome of the work done for this purpose.

### *Key positive impacts*

The formalisation of the settlement area namely Otjimbingwe Extension 1 shows clear benefits to the community of Otjimbingwe. The tenure of the settlers will be secured through a lease agreement with the Erongo Regional Council. They will now receive the security to erect a home without being removed from the land. The layout provides the order for the economic provision of services including roads, electricity, water and sewerage and the removal of waste. The formalisation of the settlement will create some jobs in the short term.

Enviro Dynamics therefore supports this layout being approved and surveyed.

### *Key negative impacts*

#### *Socio-economic impacts*

The Settlement Office is well aware and is organising the re-settlement of those who need to be re-settled with compensation (14 households) and those who need to be resettled without compensation. It is the latter group that may resist.

The community in Otjimbingwe has very little economic capacity and live off the land for all practical purposes. Concern exists that the community will not be able to afford the lease agreements and the services to be provided. This reality will likely create a debt situation for the Erongo Regional Council.

It is recommended that a feasibility study be conducted in the community to determine the affordability levels. The lease amounts and services to be provided should be commensurate with these levels. The future sustainability of the area, including maintenance of the services depend very much on the feeling of ownership of the community and how they contribute to its future.

Demand management is necessary to ensure defaulting is avoided.



### *Ecological impacts*

The study area is arid and the habitat with the biodiversity that it supports is sensitive to disturbance. Development in the area will likely contribute to desertification of the land through the loss of vegetation cover and loss of biodiversity through the loss of protected tree species on the site.

The mature trees on the site need to be surveyed, marked and included in the contracts of the contractors to avoid.

The community needs to be made aware of the importance of vegetation, including large trees on their plots.

The planting of additional trees in the area is promoted, e.g. at the water points where they will receive water automatically.

Community awareness raising and mentoring is an important component of the success of this project and it is recommended for inclusion in the community work of the ERC and the Settlement Office. Topics to include in the awareness raising include conflict resolution, working as teams, maintenance of services, the benefits of ecology and biodiversity, waste management, preventing water pollution.

### *The way forward*

The management actions to take are captured in the Environmental Management Plan attached as Appendix G. Enviro Dynamics supports Environmental Clearance for this establishment of Otjimbingwe Extension 1, on condition that the actions in the EMP be implemented.

# 1 INTRODUCTION

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## 1.1 BACKGROUND AND RATIONALE

### 1. INTRODUCTION

The Erongo Regional Council (ERC) desires to answer for the need for additional erven in Otjimbingwe (Figure 1) by creating 300 new erven to the West of the existing town. The new area will be called Otjimbingwe Extension 1.



Figure 1: Locality of Otjimbingwe in the Erongo Region

According to the Environmental Management Act (Act 7 of 2007) and its Regulations (2012) the proposed creation of the new area requires an Environmental Impact Assessment. An application needs to be made for an Environmental Clearance Certificate with the submission of a report, showing how the project will affect the ecological and social environment and how these are to be dealt with during the course of the project.

The Erongo Regional Council therefore appointed Enviro Dynamics to conduct this work on their behalf.

With this document, the Draft Scoping Report, we present the findings of the work as supporting information for the Environmental Clearance Certificate application.

## 1.2 SCOPE OF THE WORK

In order to identify the environmental problems and opportunities that may result because of the creation of this new residential area, the following work was conducted:

- Step 1: Evaluated the proposed layout overlayd onto maps
- Step 2: Layout adjustment (was not required)
- Step 3: Place a notice in the press to solicit public input, prepare a Background Information Document, compile a stakeholder database and prepare an Enviornmental Clearence Application to the Ministry of Environment and Tourism.
- Step 4: Desk study
- Step 5: Arrange and hold focal meetings, particularly with the Otjimbingwe community
- Step 6: Analysis and impact identification
- Step 7: Reporting: this report

## 1.3 CONSULTANTS

Stephanie van Zyl of Enviro Dynamics is conducting this work, with the assistance of Norman van Zyl. They are both qualified Environmental Assessment Practitioners. The CV of Stephanie van Zyl is attached as Appendix A.

## 1.4 LIMITATIONS

This report prepared for a Clearance Application only involves the Proposed Township Establishment and is not an application for clearance for the construction of the services, although the project is considered as a whole, giving guidance of what needs to be covered during those next steps.

## 1.5 STRUCTURE OF THIS REPORT

This report is structured as follows:

Section 1: Background and Scope of work

Section 2: Project Description

Section 3: Legislative Requirements

Section 4: The Biophysical and Socio-economic baseline of the study area

Section 5: The Impact Assessment

Section 6: Conclusions and Recommendations

## 2 PROJECT DESCRIPTION

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### 2.1 INTRODUCTION

This Project Description Chapter sets out to:

- describe the project locality and its role players;
- provide the rationale for the project; and
- provide a description of the project characteristics.

### 2.2 PROJECT LOCALITY

The project is located in the Karibib Constituency in the Erongo Region of Namibia (Figure 2). As may be seen on the map, the newly proposed extension (yellow area on map) of Otjimbingwe is located to the south-west of the existing town, on the intersection of the District Roads 1967 and 1953. The land slopes gently to the Swakop River just to the south of the area.



Figure 2: Project locality

### 2.3 NEED AND DESIRABILITY FOR THE NEW ERVEN

The proposed layout is attached hereto as Appendix 1. Erf 287, Otjimbingwe, from which the new smaller erven will be subdivided, is located at the intersection of main roads DR1953 and DR 1967. Erf 287, Otjimbingwe is 26.6353ha in extent and is earmarked for future development. Currently there are formal and informal structures and some services such as electricity on the site. The erf slopes gradually and is suitable for development.

This new township is created for the purpose of formalizing this informal area and to ensure that development takes place in a structured manner. The provision of services to this area will be easier and more cost effective if done according to the proposed layout. The need for serviced and surveyed land also exists within Otjimbingwe. The community, through the Tradition Leaders is always looking for development and investors. Creating land for such unlocks such opportunities to the community.

The street network was designed in such a way that it connects to the existing street network of Otjimbingwe Proper. Two main roads passing from East to West and North to South through the township are both 15m in width, all other internal roads have the width of 12m. Access to the new Township will also be obtained from District Road 1953, and approval for this will be sought by the ERC from the Roads Authority.

The layout was prepared in such a way that the different land uses are complementary to the needs of the community and the design to blend harmoniously with the existing structures. The layout ensures the minimum impact on existing structures. A number of 13 casualties is known, of which one is a permanent structure.

In the layout, residential erf sizes vary between 455m<sup>2</sup> to 1030m<sup>2</sup> with a predominant erf size of ±600m<sup>2</sup>.

Provision was made for 8 business erven, mostly centrally located for easy access from the main road. As part of adhering to the need of the community, provision is made for an erf earmarked for an open market and one for a fuel retail facility, both falling under the business zoning. The community also envisaged the need for a crèche within the settlement, therefore provision was made for this erf close the existing school, with mostly residential erven surrounding it.

Other zonings include: two erven with church zoning, one for the Local Authority, one for a Private Open Space and four will be reserved for the Government for administrative purposes. Proposed Erf 285 is undevelopable due to rocks and proposed Erf 284 is flat to accommodate a playing area for kids, hence both were given a zoning of Public Open Space.

The ERC is convinced that the layout, once approved, surveyed and registered will have a positive impact on the community of Otjimbingwe.

## 2.4 THE PLANNING PROCESS

The statutory process for the ERC to complete is the establishment of a township. Submissions needs to be made to NAMPAB (Namibia Planning Advisory Board ) and to the Townships Board in terms of the Subdivision of Land Ordinance for the Establishment of a Township and for the approval of the layout.

These Boards consider matters such as the need and the desirability of the project, and the various standards for creating a technically sound, safe, healthy and convenient residential township.

Once these approvals have been obtained, the new township will be surveyed and submitted to the Surveyor General for the opening of a new township register which contains the new erven. Each erf will have its own Title Deed. It is the intention of the ERC to lease the erven to the occupants on the land.

## 2.5 EXISTING AND PROPOSED SERVICES

As discussed in this paragraph, service provision is very basic to the settlement area being considered. Currently no planning has been done to extend these services. It is likely that service provision will be implemented incrementally depending on the availability of funds. The services can only be installed once the new erven have been approved.

The existing Otjimbingwe town has access to District Road 1953 and the new area will obtain access from the same road pending approval from the Roads Authority. Even though the boundaries for the internal roads are being determined by this new layout, the road surfacing, etc. has not yet been determined or designed and is not included in this assessment.

There are existing Erongored low voltage overhead power lines serving the existing structures in the study area (Otjimbingwe Proper and Extension 1). These will have to be moved to correlate with the new layout.

There are existing oxidation ponds and full waterborne sewerage supplying the existing Otjimbingwe Proper. The new area has no sewerage connections or other facilities, although sewer pipelines will be extended in future to this area from the existing ponds for this purpose. This will be an investigation and project on its own.

Bulk water supply exists from Namwater and Otjimbingwe Extension 1 has communal stand points. Individual water connections will be considered in future.

The Erongo Regional Council will be in consultation with all applicable authorities in this regard. Environmental Clearance will be sought in cases where infrastructure provision requires an environmental clearance certificate according to the listed activities of the Environmental Management Regulations.



### 3 OVERVIEW OF THE LEGAL ENVIRONMENT

The consultants have reviewed the international and national legal instruments, which may have a bearing on the project. Table 1 below outlines the relevant legal instruments as well as the contact people in case there are permit requirements.

#### 3.1 LEGAL INSTRUMENTS

Table 1: Relevant provisions from applicable legal instruments

LEGISLATION/ POLICY/ GUIDELINE	RELEVANT PROVISIONS	IMPLICATIONS FOR THIS PROJECT
INTERNATIONAL		
Convention on Biological Diversity (1992)	Article 6 (b) provides for the explicit consideration of “the conservation and sustainable use of biological diversity into relevant... plans, programmes and policies”	General principle to be applied in the development, applicable to the protected tree species on the site, and the river ecology to be conserved.
NATIONAL		
Namibian Constitution First Amendment Act 34 of 1998	Chapter 11 Article 95: Promotion of the Welfare of the People	Ecological sustainability should inform and guide this project. Avoidance of ecologically sensitive areas should be a priority.
Environmental Management Act (No 7	Requires that projects with significant environmental impact are subject to an	The Environmental Management Act and its regulations should inform and guide

LEGISLATION/ POLICY/ GUIDELINE	RELEVANT PROVISIONS	IMPLICATIONS FOR THIS PROJECT
of 2007)	environmental assessment process (Section 27).  Details principles which are to guide all EAs.	this EIA process.
EIA Regulations GN No 28-30 (GG No 4878)	Details requirements for public consultation within a given environmental assessment process (GN No 30 S21).  Details the requirements for what should be included in a Scoping Report (GN No 30 S8) an EIA report (GN No 30 S15).	Public consultation is being conducted according to these requirements. Community consultation is a very important part of this project.
Labour Act 11 of 2007	Details requirements regarding minimum wage and working conditions (S39-47).	Although this part of the project only involves the establishment of the township (excluding services) the contracts should ensure that all contractors involved during the construction, operation and maintenance of the area comply with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	Although this part of the project only involves the establishment of the township (excluding services) the contracts should ensure that all contractors involved during the construction, operation and maintenance of the area comply with the provisions of these legal instruments.
Public Health Act 36 of 1919	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	Although this part of the project only involves the establishment of the township (excluding services) the contracts should ensure that all contractors involved during the construction, operation and maintenance of the area comply with the provisions of these legal instruments.
Water Act 54 of 1956	The Water Resources Management Act 24 of 2004 is presently without regulations; therefore the Water Act No 54 of 1956 is still in force:  Prohibits the pollution of underground and	The protection of ground and surface water resources should be a priority.

LEGISLATION/ POLICY/ GUIDELINE	RELEVANT PROVISIONS	IMPLICATIONS FOR THIS PROJECT
	<p>surface water bodies. Liability of clean-up costs after closure/ abandonment of an activity.</p>	
<p>Subdivision of Land Ordinance  Town Planning Ordinance 18 of 1954</p>	<p>Subdivision of land situated in any area to which an approved Town Planning Scheme applies must be consistent with that scheme.</p>	<p>The impact of subdividing the land into smaller portions and the resulting settlement on the land needs to be considered.</p>
<p>Regional Councils Act (No 22 of 1992)</p>	<p>The Act makes provision for Regional Councils (RCs) to plan and develop the region in a sustainable manner for the benefit of the people in establishing, managing and controlling of Settlement areas focusing on the core services.</p>	<p>The ERC is the Competent Authority in terms of this act and responsible to ensure that the provisions of this scoping report are implemented.</p>

In summary the legal instruments which are applicable to this settlement project, involve the planning laws which enable the Erongo Regional Council to create erven for people to settle on. The project does not involve any specific construction component, except for the individual erection of houses, and other structures on the property. The construction of services will be considered in separate EIAs. The Erongo Regional Council should consider how the individual plot owners might contribute to or detract from sustainable living. They should promote sustainable living as far as possible. This involves clean living with responsible waste management, protecting large trees, keeping vegetation cover to control dust, promoting the planting of trees to enhance biodiversity, leaving small drainage lines for natural drainage, and promoting community through regular communication and conflict resolution.

## 3.2 STRATEGIC PLANNING DOCUMENTS

The following documents have goals, which need to be considered to determine how this project would contribute to their implementation.

### 3.2.1 VISION 2030

Applicable goals include:

- Maintain stable, productive and diverse ecosystems, managed for long-term sustainability;
- People's Quality of life: to provide rural areas equitable access to safety, shelter, essentials services and innovative employment opportunities within an efficiently managed, clean and aesthetically pleasing environment.
- Wealth, Livelihood and the Economy: to improve access to basic social services notably the poverty reduction through income distribution.

### 3.2.2 NDP5

- Social Transformation: To improve household lives through accelerated delivery and service of land and housing.
- Train rural communities in the sustainable use of natural resources
- Strengthen sustainable land management
- Safeguard ecosystems, species and genetic diversity
- Sustained environmental awareness campaigns

### 3.2.3 ERONGO REGIONAL STRATEGIC PLAN

Three of the goals of the ERC Strategic Plan 2017/2-18-2021-2022 are:

- Strengthening Socio-Economic Development;
- Improving regional development planning and
- ensure provision of affordable housing.

Through these goals, the ERC is committed to improve the quality of life in the region, as outlined in the National Development Plan. The establishment of Otjimbingwe Extension 1 is a significant step in this direction for Otjimbingwe.

The above goals in the national and regional plans of Namibia need to be considered and integrated into this project. The next chapter provides an overview of the public consultation process that was undertaken for the project, with a summary of the inputs that were provided by those who participated.

## 4 PUBLIC CONSULTATION AND DISCLOSURE

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### 4.1 INTRODUCTION

This layout involves a new residential area for existing residents residing on the land, as well as for new residents, probably from the existing Otjimbingwe area who will settle there. Public consultation was mainly geared to consult with the existing residents, the adjacent residential area, as well as with the leadership of the Otjimbingwe community.

Authorities consulted included NamWater and Erongo Red.

The project is being conducted by the Erongo Regional Council. They are the competent authority of the project and responsible for the development of the land. Their settlement office was responsible for arranging consultation meetings with the community.

### 4.2 STEPS TAKEN TO CONSULT

#### 4.2.1 Newspaper advertisements

A notice was placed in two newspapers for two consecutive weeks as per the regulations, as below (Appendix B).

Table 2: Notifications placed in the press

DATE	NATIONAL NEWSPAPER	CIRCULATION
24 January 2019	Republikein	Afrikaans Newspaper, National
31 January 2019	The Namibian	English Newspaper, National

#### 4.2.2 Community consultation meeting

- Two consultation meetings were arranged with the local community, through the Erongo Regional Council Settlement Office
- The meetings were held on 7 February 2019.

- The first meeting was a general community meeting to which the general community of Otjimbingwe was invited. This was done through the leadership of the community. See the attached proceedings for this meeting (Appendix C).
- A second meeting was held, focusing on the people who are currently settled on the land where the layout is planned, particularly those whose homes encroached upon the newly proposed erf boundaries (see the layout plan, Appendix D). The proceedings of this meeting are provided in Appendix C).

#### 4.2.3 Background Information Document

A background information document was prepared (Appendix E), and this was used mainly to circulate to the authorities, who are responsible for service provision to the area, i.e. ErongoRed and NamWater. Another person registered in response to the notice in the press and he was sent the information as well. The Circulation list is attached as Appendix F.

### 4.3 THE OUTCOME

Input was solicited during the community meetings; the outcome of which is described below.

#### 4.3.1 General Community meeting

The community committee (self-appointed) made it clear that this project should not go ahead unless the services of the existing township (Otjimbingwe Proper) have provided. The consultants explained that this is a separate process concerning the adjacent layout. Their concern should be dealt with separately and can only be finalised if the community cooperates (pegs were pulled out which hampered the work). Certain attendants of the meeting were disruptive and the meeting was therefore closed (see details in Appendix C).

#### 4.3.2 Meeting with the affected people

Those that attended were positive about the project and understand that they will have to move to fit with the created erven. It was also explained that those who moved in after the erven were registered, but who are not settled on a plot will not be compensated. A few minor issues were listed namely:

- 1) How will small drainage lines be accommodated on the erven? (the drainage lines were inspected after the meeting and it was found that they are minor and that there is ample space on each plot.
- 2) How will the existing power lines be accommodated? ErongoRed will conduct an investigation once these services are planned.
- 3) There are existing sewerage problems – how will this be avoided in the area? For now the project involves the creation of the erven only. Once sewerage is contemplated, this will be considered.
- 4) The need for the new plots is high. This is confirmation that the project is needed in the area.

#### 4.3.3 Further Consultation

##### *Community meeting*

It was recommended that the ERC holds a meeting with the wider community to bring order to the leadership structure and to resolve the outstanding matters which concern the existing township.

This was done and the outcome of the meeting is presented in Appendix H. It is clear from the minutes of the meeting that the issues all related to the existing settlement and does not concern the newly proposed layout. However, it is believed that this opportunity for the community to discuss their current concerns was good and necessary.

##### *Affected parties meeting*

During the initial consultation meeting a number of people attended, and the outcome was positive as stated above. However, it was uncertain how many people attended that are directly affected (i.e. those to be moved with compensation vs without compensation – i.e. moved there after the layout was presented). The Council was requested to have another meeting with the directly affected people to ascertain their understanding of the resettlement process. This meeting took place in April 2019. See Appendix H.



The people currently settled on the new layout consists of 14 households that were settled there before the layout was presented. The settlement office will identify erven close to their current location that they can be resettled to. They were all present at the meeting. They were explained the process and had no objections. They will be compensated according to the structures that were present before the new layout was introduced.

There are also a number of structures erected in the layout after it was presented to the community. These households were instructed to move without compensation. These households, had an opportunity to attend the first and second meetings, but as yet they remain identifiable. The Council and the settlement office will have to identify them so they can relocate without compensation.

## 5 BIO-PHYSICAL AND SOCIAL ENVIRONMENT

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### 5.1 INTRODUCTION

This section provides an overview of the bio-physical and socio-economic features of the area, concentrating on those characteristic which may be affected by and which influence the project and its sustainability.

### 5.2 BIO-PHYSICAL FEATURES

#### 5.2.1 Geophysical features

##### *Geology*

Otjimbingwe falls within the Central-western Plains landscape of Namibia and is situated approximately 855 m above sea level, although the surrounds may reach above 1000 m (Mendelsohn, Jarvis, Roberts, & Robertson, 2009).

The wider project area mainly consists of metamorphic material from the Swakop Schist group, with bands of Damara granite protruding (van Wyk, 2001). The project site lies on the Schists.

Mineralisation may be significant if it is taken into account that there are various Exclusive Prospecting Licences in the project area. The Ministry of Mines and Energy database confirms, however, that there are no exclusive prospecting licences

registered on Otjimbingwe (MME, 2019), which is land governed and owned by the State.

#### *Terrain and soils*

The terrain gently slopes from north to south towards the northern banks of the Swakop River.

Soil fertility seems to be medium except for fertile river soils deposited along the banks of the Swakop River. The soils specific to the site are eutric (mainly fertile) regosols. The soils are very shallow with the rock surfacing to the north-east. Regosols are usually medium to fine textured, of actively eroding landscapes, forming a fairly thin cover over the base rock about 50 cm thick (Mendelsohn, et al., 2009). These soils are susceptible to erosion where there is any degree of slope. Vegetation cover on these soils are thin because they cannot provide most plants with sufficient water or nutrients. They can support only low densities of livestock.

#### *Rivercourses and groundwater*

The project area falls within the Swakop River Catchment. The main feature of this catchment in the project area is the Swakop River that flows in a south-westerly direction (Jacobson, 1995).

This section of the Swakop River still receives significant inflows from the immediate catchment area, mainly by means of the Khan, Omusema, and Onjosa rivers (van Wyk, 2001). The most productive section of the catchment however does not contribute to the flow in this section of the Swakop River due to the construction of the Swakoppoort and Von Bach dams upstream of the project area. In the past, several shallow wells and springs were used for water supply in Otjimbingwe, but since the building of the two dams these sources have since dried up (Christelis, 2001). The water from the Swakoppoort Dam will in future serve the project and pipelines already exist for this purpose.

Although the Swakop River bed contains a narrow linear aquifer in the project area, this aquifer is limited in its potential yield as well as recharge, making it unreliable as a major source to the project. It is located in alluvium and production stands at 280,000 m<sup>3</sup>/annum from an average depth of 12 m. This resource is currently utilised for the water supply network in and around Otjimbingwe, but it has been replaced by water from the Swakoppoort Dam.

#### *Meteorological features*

The average annual maximum and minimum temperatures of Otjimbingwe are 32 °C and 7 °C respectively ([www.worldweatheronline.com](http://www.worldweatheronline.com), 2013). The minimum

temperatures usually occur during June/July in winter and the maximum temperatures usually in December.

The average annual rainfall in the project area varies from 200 mm to 250 (Jacobson, 1995). Rainfall mostly consists of isolated thunder storms in summer. The variation in annual rainfall is high (50-60%) and minimum rainfall figures is set at about 100 mm per annum (Mendelsohn *et al.*, 2009). The area is therefore exposed to drought risk.

Regional climate data indicates that weather patterns are changing. Average temperatures are increasing and rainfall patterns are becoming increasingly unpredictable. Unfortunately data is unavailable to determine this exactly for the project area.

### 5.2.2 Geophysical and meteorological sensitivities

The following geophysical and meteorological sensitivities were identified.

Table 3: Geophysical and meteorological sensitivities

ENVIRONMENTAL FEATURE	DESCRIPTION	SENSITIVITY	POTENTIAL IMPACT
Meteorology	Climate arid and rainfall becoming increasingly unpredictable	Sensitivity to disturbance – linkages to poverty and ability to produce agriculture	Disturbance of vegetation cover, causing increased desertification and contributing to poverty cycles
Groundwater	Groundwater aquifer along the Swakop River bed.	Recharge potential has been reduced	Local aquifer overexploited. The NamWater source from Swakoppoort is to be used, therefore no additional risk.
Groundwater	Groundwater aquifer along the Swakop River bed.	Risk of groundwater pollution due to construction activities and other activities in the neighbourhood.	Pollution of the groundwater aquifer due to waste and spills.

Soils	Soils in the project area are loose, shallow layers less than 50 cm thick.	Disturbance of the surface can lead to soil erosion Disturbance of the surface can lead to excessive dust conditions	Soil erosion due to construction activities in the area. Increased dust due to construction traffic and activities.
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### 5.2.3 Biodiversity

#### Vegetation

A vegetation study done for Namwater in 2012 (Enviro Dynamics, 2012) indicates that the habitat of the site can be described as flat terrain with rocky outcrops. It is a typical *Acacia erubescens* (yellow bark acacia) habitat. Significant protected trees on site are *Acacia erioloba* (Camelthorn).

Species like *A. tortilis*, (umbrella-thorn) *A. mellifera\_detinens* (black-thorn), *Boscia albitrunca* (shepherd's tree), *Boscia foetida* (Smelly shepherd's tree), (*Rhigozum trichotomum* (three-thorn rhigozum), *Albizia anthelmintica* (worm-cure albizia), *Acacia hebeclada hebeclada* (candle-pod acacia), *Acacia Karroo* (Sweet-thorn), *Acacia reficiens* (red umbrella-thorn) are also found.

These species have specific ecosystem services in the area, including the use of the wood for construction and cooking, protection of the soil from erosion and dust, fodder to animals, relief to humans and animals from the hot climate. The vegetation cover is particularly crucial in this arid environment, because the area is sensitive to disturbance and desertification kicks in quickly in case of over exploitation.

Protected species include the Camelthorn, the Sheperds Tree, Lammerdrol and the Worm-cure Albizia.

The vegetation of the study site as well as the surrounds is already deteriorated due to livestock over grazing as well as settlement that has taken place in some areas. There are parts of the site, particularly to the north-east that are more densely vegetated although still denuded. Figure 4 gives an impression of the vegetation cover found on site.



Figure 4 General impression of the vegetation cover found on site

**Fauna**

The surrounding area is known for a relatively rich wildlife given the arid environment. According to Mendelsohn et al (2009) the bird diversity within the typical landscape is 171- 200 species while the mammal diversity is from 62-75 species. The reptile diversity for this typical lanscape is 71-80 species.

The representative landscape is also known to have bird, reptile and mammal endemism. The following table provides a brief list of endemic species.

GROUP	SPECIES
<p>ENDEMIC BIRDS</p>	<p><i>EUPODOTIS RUEPELLII</i> RÜPPELL'S KORHAAN  <i>POICEPHALUS RUEPELLII</i> RÜPPELL'S PARROT  <i>PHOENICULUS DAMARENSIS</i> VIOLET WOOD-HOOPOE  <i>TOCKUS MONTEIRI</i> MONTEIRO'S HORNBILL  <i>PARUS CARPI</i> CARP'S TIT  <i>NAMIBORNIS HERERO</i> HERERO CHAT  <i>LANIOTURDUS TORQUATUS</i> WHITE-TAILED SHRIKE  <i>FRANCOLINUS HARTLAUBI</i> HARTLAUB'S FRANCOLIN  <i>ACHAETOPS PYCNOPYGIUS</i> ROCKRUNNER</p>
<p>ENDEMIC MAMMALS</p>	<p><i>GERBILLURUS PAEBA INFERNUS</i> HAIRY-FOOTED GERBIL  <i>GERBILLURUS SETZERI</i> SETZER'S HAIRY-FOOTED GERBIL  <i>CISTUGO SEABRAI</i> NAMIBIAN WING-GLAND BAT  <i>EQUUS ZEBRA HARTMANNAE</i> HARTMANN'S MOUNTAIN ZEBRA</p>

REPTILES	AGAMA PLANICEPS NAMIBIAN ROCK AGAMA

The number of wildlife within an area is determined by the amount of disturbances; the more the animals are disturbed the fewer animals will stay in the area for they will migrate. The concentration of human activities in Otjimbingwe drives animals away from the area. Construction activities may increase wildlife disturbance.

The people residing in the surrounds communal livestock farmers. Cattle, donkeys and goats are the preferred livestock in this area.

Most of the remote areas from Otjimbingwe only have stock posts which are guarded by herders. The goats and cattle are prone to concentrate at water points, which leads to degraded grazing and vegetation around these focal points.



Figure 5: The vegetation of the Swakop River

The nearby Swakop River drains the area and is an oasis for wildlife and humans. It is a major conduit of water, wood and food resources. The River also shows signs of ecological deterioration such as *Propospis* Species (an alien invasive species) growing on the banks and in the course of the river (Figure 5).

## Habitat related sensitivities

Table 4 Habitat related sensitivities

ENVIRONMENTAL FEATURE	DESCRIPTION	SENSITIVITY	POTENTIAL IMPACT
Vegetation	Removal of vegetation to accommodate infrastructure and housing	Construction activities could destroy sensitive vegetation.	Damaging and removing of indigenous vegetation, leading to dust problems, soil erosion, a harsh environment without relief, loss of vegetation resources, loss of habitat and biodiversity.
Alien invasive species	Removal of vegetation to clear pipeline routes	Construction activity could propagate alien invasive species.	Increase or propagation of alien invasive species.
Fauna	Animals could be hunted, poached or disturbed by the construction personnel and activities and by the inhabitants of the area	Poaching activity could reduce the amount of fauna.	Reduction and disturbance of fauna.

### 5.3 SOCIO-ECONOMIC ENVIRONMENT

This section provides the socio-economic context of the project – a crucial component to be understood to consider the need and desirability as well as sustainability issues related to the project.

#### 5.3.1 Introduction

Having been the country's first colonial capital, Otjimbingwe has played an important role in the history of Namibia (Fuller, 2010). It was also the first established Native Reserve (Fuller, 2010). Today, this once thriving agricultural centre faces a number of challenges, which includes a lack of services as well as socio-economic issues such as unemployment. NamWater recently upgraded the water supply to the area, with a pipeline system from the Swakoppoort Dam to supply the area with bulk water. Each household in Otjimbingwe Proper has a water connection. The

area has underground power lines to each household. Currently the existing town is being provided with waterborne sewerage.

### 5.3.2 Historical overview

During the late 1800s, Otjimbingwe became the first capital of the then German South-West Africa and the seat of the colonial administration. It was also the central location for the Rhenish Mission Society. Today, many of the buildings such as the church and the educational facilities for missionaries can still be found in the area. They area however mostly in a state of disrepair (Figure 6).



Figure 6: Some of the buildings of the past.



Agriculture also played an important role in Otjimbingwe. The availability of water contributed to the irrigation of vegetable gardens and plantations, producing food even for the surrounding areas (Fuller, 2010).



Figure 7: An agricultural implement of former days.

With the construction of the railway line between Windhoek and Walvis Bay, this town was bypassed. Consequently, the administration head offices were moved to Windhoek. All of this contributed to the ceasing of key economic activities in the former capital. In addition, the Von Bach and Swakappoort Dams were constructed which possibly adversely impacted on the replenishing of the aquifers. As a result, boreholes are becoming depleted and the water quality of some have been altered, which are thus also not favourable for agricultural activities.

### 5.3.3 Population size and growth

Otjimbingwe is situated in the Karibib Constituency of the Erongo Region. This constituency had an estimated population of 13 300 people in 2011 (NPC, 2012). The average household size in this constituency was estimated at 3.5 people in 2011. (NPC, 2012).

The population of the urban Otjimbingwe settlement is estimated to be approximately 1711 people, based on the 2011 census.

### 5.3.4 Income and employment

Livestock farming is the main livelihood strategy pursued by the people in the project area (NPC, 2007). In some instances, households receive cash remittances and support from members working elsewhere as remuneration for looking after their livestock (NPC, 2007). One can conclude that the community is thus very dependent on natural resources, especially water and grazing.

Since the availability of figures for the main income sources in the project area are limited, those available for the Karibib Constituency are presented in Table 5. This does provide some insight into the livelihood strategies pursued in the surrounding area.

Table 5: Main Sources of Income for the Karibib Constituency (NPC, 2003)

MAIN SOURCES OF INCOME	PERCENTAGE
Farming	9
Wages and Salaries	49
Cash Remittances	14
Business, non-farming	7
Pension	15

Concerns regarding unemployment and loitering of the youth have been raised by the Otjimbingwe Independent Development Association. It was found that the absence of employment and recreational opportunities contributes to ill-behaviour (NAMPA, 2012).

Although there are no formal unemployment figures available for the project area, it is repeatedly referred to as 'high'. Further aggravating this trend is the fact that employment opportunities in Otjimbingwe are also limited (Fuller, 2010). With farming being the main source of income in the absence of formal employment, a local agricultural centre has been established in the area to provide information and services to the farmers (Fuller, 2012).

### 5.3.5 Land uses

In the proposed project area, the land use is dominated by farming, both communal and commercial, which reflects strongly on the livelihood strategies pursued by this community. Another land use activity present in this area is exploration for minable minerals. This does however not contribute to the livelihoods of the affected community.

These two main land use activities are further described below.

### 5.3.6 Farming

In Namibia, more land is used for agriculture than any other activity with 78 % of the country being used for farming (Mendelsohn, 2006). This is also true for the communities of the Otjimbingwe areas.

In the rural area surrounding Otjimbingwe, two farming systems are prevalent, namely cattle farming on commercial farms, and cattle and goat farming on communal land. The commercial farms are situated to the north-west of Otjimbingwe.

With regards to the communal farming areas, the livestock is seen as a form of savings and security (NPC, 2007). As previously mentioned, the availability of water and grazing land is crucial in sustaining this activity. Farming in this area is dominated by goat farming, followed by cattle. The rural farming activities and the urban area in Otjimbingwe are closely interlinked, with subsistence mostly being from the land in the surroundings. It is expected that some workers on the commercial farms support their families in urban Otjimbingwe.

### 5.3.7 Future development plans

The development projects for the current financial year for the area, according to Mr SP Nyau, Chief Development Officer of the Erongo Regional Council, are the following:

- Construction of Boardroom at the Tsoaxaudaman Tradition Authority
- Construction of additional marketing stalls at the Germany initiative centre ( X2)
- Construction of temporary structure for old age pensioner (plot between Otjimbingwe Settlement & Tsoaxaudaman Traditional Authority)
- § Upgrading of Otjimbingwe Pump Station by installing two submersible pumps, painting and erecting of new fence
- Construction of services infrastructure (sewerage network and about 50 households are expected to be connected to the existing sewerage line)

### 5.3.8 Key socio-economic Sensitivities

Based on the above baseline information, a number of key sensitivities regarding the socio-economic environment in the project area, has been identified. These are summarised in TaTable 6.

Table 6: Summary of Key Socio-Economic Issues

ASPECT	DESCRIPTION	POTENTIAL IMPACT
Legacy	The proposed project area has been a thriving agricultural plantation centre in the past. There are no economy-generating projects underway save for construction projects initiated by the Government.	Currently a poor economy, could be strengthened in future if agriculture is re-established.
Semi-nomadic lifestyle	The community has become accustomed to move around in search of drinking water for themselves, and especially cattle and goats. This also affects ownership and settlement patterns in the urban Otjimbingwe.	Instability as far as responsibility of leaseholds are concerned.
Unemployment	The area has a relatively high unemployment rate. Fears regarding unemployment amongst the youth, and associated loitering, has been raised.	The proposed project can contribute to temporary employment when services are upgraded.
Affordability	The demand for erven is expected to increase as the population in the area grows, although growth is relatively low. The main livelihood strategy is farming, along with some cash remittances.	Defaulting in paying for the lease amounts and the services offered. Lack of funding for the services.

## 5.4 HISTORY AND ARCHAEOLOGY

A study done by John Kinahan (2012) provides information on the historical and archaeological landscape of the area.

#### 5.4.1 Historical Background

Otjimbingwe was an important trading entrepôt and a centre of missionary activity in the late pre-colonial period. The settlement lay at the informal boundary of OvaHerero chiefdoms in central Namibia, and the steady northward expansion of Oorlam Nama chiefdoms in the south.

European traders such as Charles John Andersson, Frederick Green and Thomas Baines became influential participants in the political dynamics of late 19<sup>th</sup> century central Namibia, as did various missionaries such as Hugo Hahn and Friedrich Kleinschmidt. A number of buildings, including Andersson's defensive tower, and the wagon-building works of the trader Hälbich still survive in a dilapidated state.

Otjimbingwe became a so-called Native Reserve in the early 20<sup>th</sup> century, and was used to re-settle communities that had been displaced from freehold farmland from the surrounding Windhoek, Okahandja and Karibib Districts.

#### 5.4.2 Summary of relevant finds

The Otjimbingwe area is dominated by minor surface scatters of stone artefact debris, with some pottery, bone and ostrich eggshell.

These sites are almost exclusively associated with the granite outcrop features and tend to occur at vantage points rather than natural shelters. The evidence observed in the field suggests that these were temporary hunting sites and there was little indication of sustained occupation, no evidence of rock art and no features that might indicate the presence of burials.

The age of the sites is difficult to estimate from the evidence observed, but the presence of pottery suggests that the sites were used during the last 1 000 years when thin-walled, mica-tempered pottery was in common use throughout the Erongo Region.

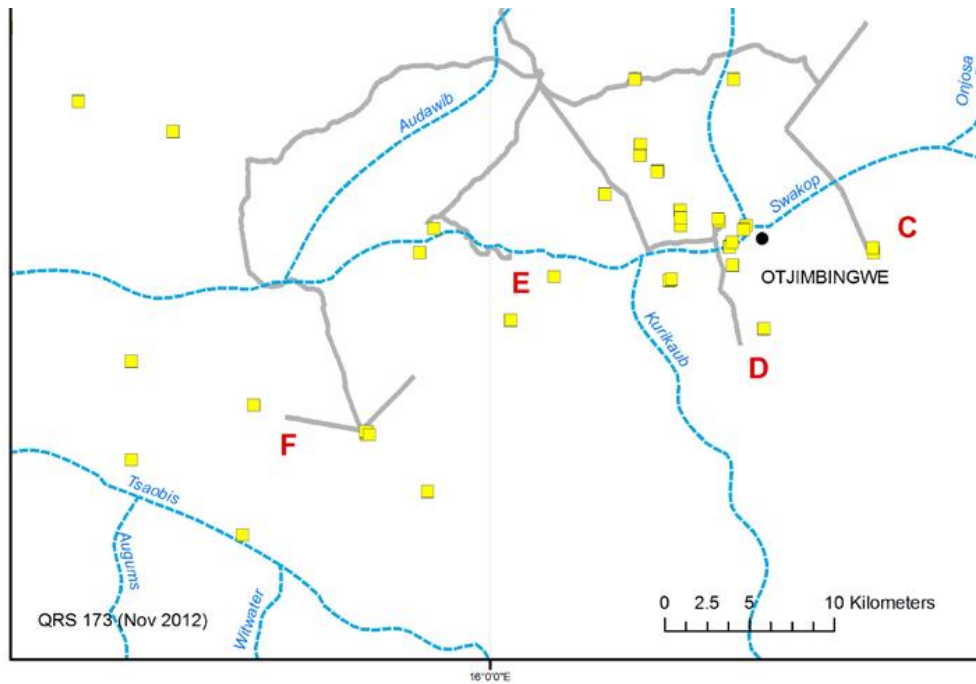


Figure 8: Archaeology survey with identified sites (yellow squares)  
 Source: Archaeological Survey, Kinahan, 2012.

### 5.4.3 Archaeological sensitivities

The following sensitivities could be identified.

Table 5-7 Archaeological sensitivities

ENVIRONMENTAL FEATURE	DESCRIPTION	SENSITIVITY	POTENTIAL IMPACT
Archaeological sites	29 archaeological sites identified in the broader area	Construction activity could destroy the sites.	Destroyed archaeological sites and information.

## 6 IMPACT ASSESSMENT

The sensitivities in the previous chapter coupled with the outcome of the consultation process and the consultant's experience culminated in the list of impacts identified in this chapter. The criteria used to conduct the assessment are given below.

Table: Description of criteria used to define the significance of the impacts.

CRITERIA	DESCRIPTION				
Extent	Site specific At the facility constructed/ operated.	Local Limited to within a 10km radius	Regional (100km radius)	National Namibia	International Extending beyond Namibia's borders
Duration	Very Short Term 3 days	Short term 3 days – 1 year	Medium term 1 - 5 years	Long term 5 – 20 years	Permanent > 20 years
Intensity/ Magnitude	No lasting effect  No environmental functions and processes are affected	Minor effects The environment functions, but in a modified manner	Moderate effects Environmental functions and processes are altered to such extent that they temporarily cease	Serious effects Environmental functions and processes are altered to such extent that they permanently cease	
Probability	Considers the likelihood of the impact occurring and is described as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures).				
Degree of Confidence in Predictions	Is based on the availability of specialist knowledge and other information.				

The overall significance Table 8 rating provided is defined as follows:

Table 9: Significance rating description

SIGNIFICANCE RATING				
	None	Low	Medium	High
IMPACT SIGNIFICANCE	A concern or potential impact that, upon evaluation, is found to have no significant impact at all.	Any magnitude, impacts will be localised and temporary. Accordingly the impact is not expected to require amendment to the project design.	Impacts of moderate magnitude locally to regionally in the short term. Accordingly the impact is expected to require modification of the project design or alternative mitigation.	Impacts of high magnitude locally and in the long term and/or regionally and beyond. Accordingly the impact could have a 'no go' implication for the project unless mitigation or re-design is practically achievable.

**Mitigation and Enhancement Measures**

Where negative impacts are identified, mitigation objectives have been set, and practical, attainable mitigation measures must be recommended that will minimise or eliminate the impacts. Where mitigation is not feasible, this has been stated and reasons given.

In the case of positive impacts, enhancement measures are recommended for optimising the benefit to be derived.



Table 10: Impact Assessment table

Nature	Extent	Duration	Intensity	Probability	Degree of Conf. in predictions	Mitigation	Significance without and with mitigation
<b>PLANNING PHASE</b>							
Boosting of the economy due to the employment of people for the construction of services, the	Local	Long term	Medium	High	High	Enhance by employing poeple from the local area on the construction contracts.	
Provision of housing and basic needs, stimulating , well-being, dignity and pride in the community.	Local	Long term	High	High	High	Consult with the people to ensure they understand the programme of the project. Do not create expectations that cannot be met.	Medium to high
Community conflict resulting from the work in Otjimbingwe Proper	Local community	Long term	High	High	High	Hold community meetings to resolve the outstanding matters in Otjimbingwe Proper separately from this development.	High to Low

<p>Defaulting due to low affordability levels of rent and services</p>	<p>Local</p>	<p>Long term</p>	<p>High</p>	<p>High</p>	<p>High</p>	<p>Conduct a feasibility study to determine the levels of services that are affordable to the majority of the community. Provide only those services.</p> <p>Pre-paid meters</p> <p>Ongoing management of defaulting</p>	<p>High Medium</p>
<p>Increased soil erosion, dust and desertification due to removal of vegetation</p>	<p>Regional</p>	<p>Long term to permanent</p>	<p>Medium</p>	<p>High</p>	<p>High</p>	<p>Allow only the necessary removal of vegetation</p> <p>EMP measures to conserve vegetation cover</p> <p>Encourage the growth of grass even in erven to avoid dust and erosion.</p>	<p>Medium Low</p>
<p>Reduction in biodiversity due to removal of vegetation and spread of alien vegetation</p>	<p>Local</p>	<p>Permanent</p>	<p>Medium</p>	<p>High</p>	<p>High</p>	<p>Mark trees to be conserved and include these into the construction contracts - not to be removed.</p>	<p>Medium Low</p>

						<p>Make an agreement with the Forestry Nursery at Okahandja to plant trees at the water points, to promote biodiversity in the area.</p> <p>Avoid the spread of alien vegetation in the construction contracts.</p>	
Loss of archaeological sites due to destruction during construction	Local	Permanent	Loa	Improbable	High	Chance procedure in EMP	<p>Low</p> <p>Very low</p>

## 7 CONCLUSIONS AND RECOMMENDATIONS

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### 7.1 KEY POSITIVE IMPACTS

The formalisation of the settlement area namely Otjimbingwe Extension 1 shows clear benefits to the community of Otjimbingwe. The tenure of the settlers will be secured through a lease agreement with the Erongo Regional Council. They will now receive the security to erect a home without being removed from the land. The layout provides the order for the economic provision of services including roads, electricity, water and sewerage and the removal of waste. The formalisation of the settlement will create some jobs in the short term.

Enviro Dynamics therefore supports this layout being approved and surveyed.

### 7.2 KEY NEGATIVE IMPACTS

#### 7.2.1 Socio-economic impacts

The Settlement Office is well aware and is organising the re-settlement of those who need to be re-settled with compensation (14 households) and those who need to be resettled without compensation. It is the latter group that may resist.

The community in Otjimbingwe has very little economic capacity and live off the land for all practical purposes. Concern exists that the community will not be able to afford the lease agreements and the services to be provided. This reality will likely create a debt situation for the Erongo Regional Council.

It is recommended that a feasibility study be conducted in the community to determine the affordability levels. The lease amounts and services to be provided should be commensurate with these levels. The future sustainability of the area, including maintenance of the services depend very much on the feeling of ownership of the community and how they contribute to its future.

Demand management is necessary to ensure defaulting is avoided.

### 7.2.2 Ecological impacts

The study area is arid and the habitat with the biodiversity that it supports is sensitive to disturbance. Development in the area will likely contribute to desertification of the land through the loss of vegetation cover and loss of biodiversity through the loss of protected tree species on the site.

The mature trees on the site need to be surveyed, marked and included in the contracts of the contractors to avoid.

The community needs to be made aware of the importance of vegetation, including large trees on their plots.

The planting of additional trees in the area is promoted, e.g. at the water points where they will receive water automatically.

Community awareness raising and mentoring is an important component of the success of this project and it is recommended for inclusion in the community work of the ERC and the Settlement Office. Topics to include in the awareness raising include conflict resolution, working as teams, maintenance of services, the benefits of ecology and biodiversity, waste management, preventing water pollution.

## 7.3 THE WAY FORWARD

The management actions to take are captured in the Environmental Management Plan attached as Appendix G. Enviro Dynamics supports Environmental Clearance for this establishment of Otjimbingwe Extension 1, on condition that the actions in the EMP be implemented.

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