

ENVIRONMENTAL IMPACT ASSESSMENT OF THE PROPOSED DEVELOPMENT OF OTJOMUISE EXTENSION 12

SCOPING REPORT

Submitted to:

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

Prepared for:

OMBA Holdings (PTY) LTD

by:

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EXECUTIVE SUMMARY

OMBA Holdings (Pty) LTD appointed Integrated Environmental Management Solutions (IEMS) to conduct an Environmental Impact Assessment (EIA) for the development of Otjomuise Extension 12. Such a development has been necessitated by the growing demand for housing need and economic development. Located on the central west of Windhoek, Otjomuise Extension 12 covers a surface area of 124,059.85 m², of which 102,548.81 m² has been earmarked for different uses, namely: residential (56,014.47m²), educational (15,750.07m²), business (8,065.36m²), offices and shop houses (8,383.61m²), recreational (10,881.65m²) and municipal (3,453.65 m²).

The EIA aimed to assess the potential environmental and social impacts of the Otjomuise Extension 12 Development Project. As part of the assessment, the applicable legal framework, policies and international conventions were also identified and listed. The EIA particularly looked at the environmental impacts of the development on the land and biological environment, and the impact of the resulting pollution (air, water, land, and noise) on the environment; both during the construction and operation phases. The EIA also considered the impact of the development on the socio-economy. Both the positive and negative impacts were considered, and mitigation measures for potential negative impacts were proposed.

The assessment revealed an anticipated potential damage to the land environment, as well as an alternation of topography and geomorphology, which will result from clearing of the land for construction. In the process, loss of vegetation and mini-fauna species will also be experienced. However, none of the valuable plant and faunal species will be lost. This finding was revealed by the scoping study on the fauna that is found in the area, which also looked at the vegetation species. The scoping assessment further revealed that land degradation will be a potential indirect consequence in the long-term.

Pollution in form of air, water, solid and noise will be experienced, both during the construction and operation phases. These will further have negative impacts, related to health, environment integrity and human physiology. However, the severity of impacts can be avoided by implementing the mitigation measures that have been proposed.

In terms of social impacts, the development will contribute to the development of Namibia at large, as it will bring about affordable houses, create job and business opportunities (approx. 140), and will present opportunities for accessing basic facilities such as educational, recreational and open market space for small, micro or medium enterprises. In addition, it is anticipated that the local markets, businesses, banks and revenue institutions will potentially benefit from this development, both during the construction and operation phases.

Despite the potential negative impacts of the proposed development on the environment, although significant, their worst consequences can be prevented, particularly if the proposed mitigation measures are implemented. Most importantly, the positive impacts of this development seem to weigh more compared to the negative impacts. This benefit, and the fact that mitigation measures have been proposed to address the potential negative impacts, suggests that the development

should rather proceed and not stopped. Therefore, this assessment recommends that an Environmental Clearance Certificate (ECC) should be awarded for the development to go ahead, on condition that the mitigation measures should be implemented. In addition, the Environmental Management Plan (EMP) accompanying this report should be implemented in order to avoid the worst environmental impacts.

ACRONYMS AND ABBREVIATIONS

CBD: Convention on Biological Diversity

BID: Background Information Document

ECC: Environmental Clearance Certificate

EIA: Environmental Impact Assessment

EMP: Environmental Management Plan

HPP: Harambee Prosperity Plan

IAPs: Interested and Affected Parties

ILO: International Labour Organisation

NDP: National Development Plan

SDGs: Sustainable Development Goals

UNFCCC: United Nations Framework Convention on Climate Change

UNCCD: United Nations Convention to Combat Desertification

WHO: World Health Organisation

1. BACKGROUND

Over the past years, particularly after Namibia's independence, Windhoek has been experiencing a high demand for housing and economic empowerment. This is particularly due to the increasing town population, which can be attributed to the uncontrolled movement of people from other towns and from rural areas, in search for employment opportunities, business opportunities and better living conditions. Recently, OMBA Holdings Pty (LTD) through City of Windhoek has identified Otjomuise Extension 12, as a potential area for residential development, which could also offer business and other socio-economic opportunities to the residents of Windhoek. The identified area is currently in-tact, but will be transformed into a multiple-use area comprising of houses, educational facilities, recreational facilities, business facilities and facilities for public use.

The proposed development is of essence, as it will not only present an opportunity for housing provision and economic empowerment in Windhoek, but will contribute to the development of Namibia at large. According to the Fifth National Development Plan (NDP 5) of Namibia, economic infrastructure and social development are sub-pillars of economic progression and social transformation, which will contribute to inclusive, equitable and sustainable economic growth; and to capable and healthy human resources. Ultimately these will contribute to poverty eradication and reduction of inequality.

Despite the valuable opportunities that the proposed development will present, the proponent has to adhere to the applicable legislations, the Environmental Management Act No. 7 of 2007, and the Environmental Impact Assessment (EIA) regulations of 2012, which state that any land-use change and developmental activities for commercial purposes cannot be undertaken without an Environmental Clearance Certificate (ECC). This means that environmental and social impacts of the proposed activities needed to be identified, along with their mitigation measures. However, the development can only go ahead if an ECC is awarded by the Ministry of Environment, Forestry and Tourism (MEFT).

Given the above background, OMBA Holdings (Pty) LTD appointed Integrated Environmental Management Solutions (IEMS) to conduct an EIA for the proposed development. The overall aim of the assessment was to identify the potential environmental and social impacts of the Otjomuise Extension 12 development project. The EIA has taken into consideration the positive and negative impacts associated with the development of the proposed area, and has made efforts to identify and propose mitigation measures. It paid particular attention to all the activities that will be involved, both during the construction, and the operational phases, and their associated impacts.

This scoping report presents the findings of the scoping study conducted as part of the EIA of the proposed development, and is accompanied by an Environmental Management Plan (EMP).

2. PROJECT AREA DESCRIPTION

2.1. Description

The proposed site, Otjomuise Extension 12, is located on the central west of Windhoek, and is adjacent to the Otjomuise Extension 10 suburb, which is currently under development. Otjomuise Extension 12 covers a gross surface area of approximately 124,059.85 m², of which 102,548.81 m² has been earmarked for different uses, as per Table 1 below. It is further situated in close proximity of an industrial area indicated in the map (Map 1 a & b).

Table 1: Breakdown of the different areas within Otjomuise Extension 12

Area description	Size (m ²)
Residential	56,014.47
Educational / school	15,750.07
Business	8,065.36
Offices / shop houses	8,383.61
Recreational	10,881.65
Municipal	3,453.65
Total	102,548.81



Map 1 a. Proposed site location and its relative distance from the central business district (CBD)



Map 1 b: Proposed site location within the Otjomuise suburb

Otjomuise Extension 12 is located in a mountainous area, however, it is relatively flat but rough, with a shallow hills on the periphery. Given its hilly nature, the landscape within the site has created storm water runoff streams. Nevertheless, the area has been estimated to accommodate over 100 different-sized houses, a sport field for a school and the public, a school, shop houses and several facilities for retail and business.

The development of such a site will require a wide range of expertise from various disciplines (urban planners, civil engineers, quantity surveyors, land surveyors, electrical engineers, water engineers, biodiversity specialists, hydrologists and builders among others) before it can be transformed into a habitable area.

2.2. Vegetation

The proposed development site is covered by vegetation; predominantly grass, shrubs and acacia trees; and has never been developed for any use before. It is however degraded and is not fully functional at ecosystem level. Such degradation can be attributed to human activities, including the illegal harvesting of firewood, especially along the vehicle tracks found within the area. The grass and shrubs are poorly developed on the quartzitic soils of the hills, however, well grown in the sandy areas that are located in the valley bottom – where a large proportion of alien species are found. Noteworthy, there is no range-restricted habitat within the development site.

2.3. Water/hydrology

This section presents the groundwater and surface water conditions on the site, as well as the general hydrological context of the Windhoek area. The site lies roughly 1 km south of the Goreagab Dam, whereby the surface water preferential flow is influenced by the presence of the dam in the area. In terms of groundwater, the Windhoek aquifer, which supplies water to the city, and also serves as a water storage, is located on the southern side of the city, in the upstream direction of the proposed site.

2.3.1 Groundwater

The hydrogeology of the Windhoek aquifer is dominated by faulted and fractured quartzite and schist rocks. The dominant groundwater flow direction is northwards from the quartzite mountains south of the city towards the city, which is underlain by schists (Figure 1). The flow follows preferential pathways along the numerous faults and fracture zones that transect the area. The quartzites can be divided into pure quartzites from the Auas Mountains south of Windhoek, and impure or micaceous quartzites that lie between the city and the Auas Mountains (Murray, 2017).

The proposed extension is located on the schist of the Kuiseb Formation, a lithology with little or no capacity to hold water (Aquitard). The Kuiseb schist encompasses several lithologies, dominated by garnet-muscovite-chlorite-biotite schist, with a distinctive pervasive cleavage, which makes the underlying rocks permeable to percolating water and fluids from the surface into the aquifer (Mapani *et al.*, undated). Groundwater contamination potential therefore only exists in these geological features. Faults play a significant role by increasing the fracture density of the fissile schist, and providing links between the surface and the aquifer below. It is therefore critical to closely monitor all sewage pipes, filling stations, dump sites, including cemeteries, to protect the groundwater from pollution.

Note should also be taken that apart from the mapped geological faults, more similar structures are highly likely present in the area, as well as the proposed extension. Additionally, it is important to note that the mapped features might also well extend beyond their mapped ends.

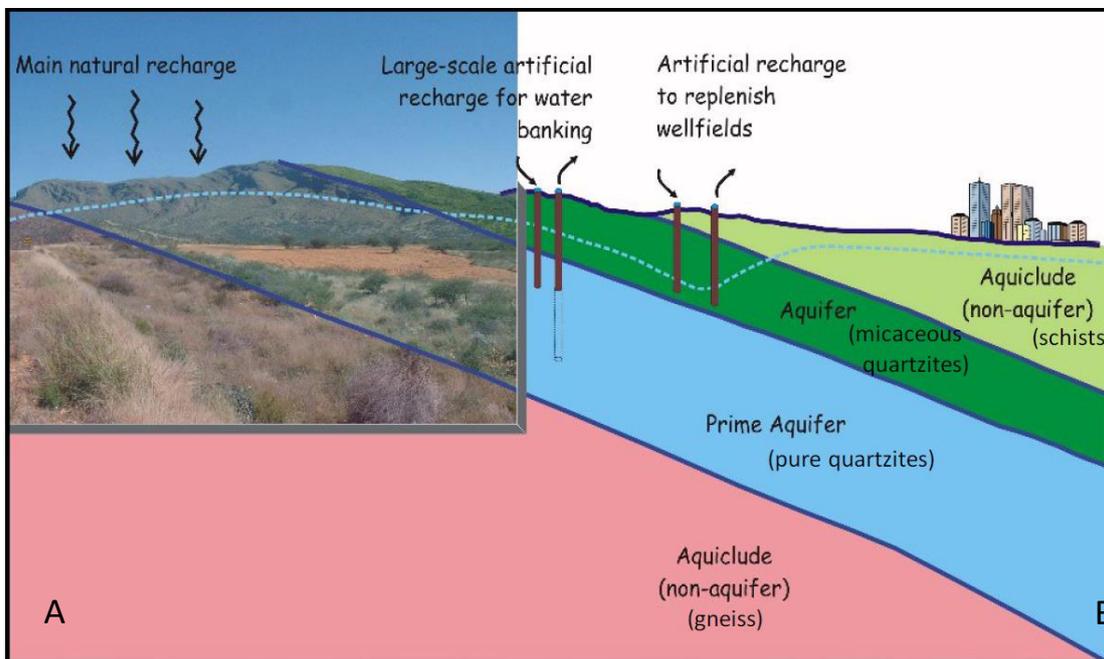
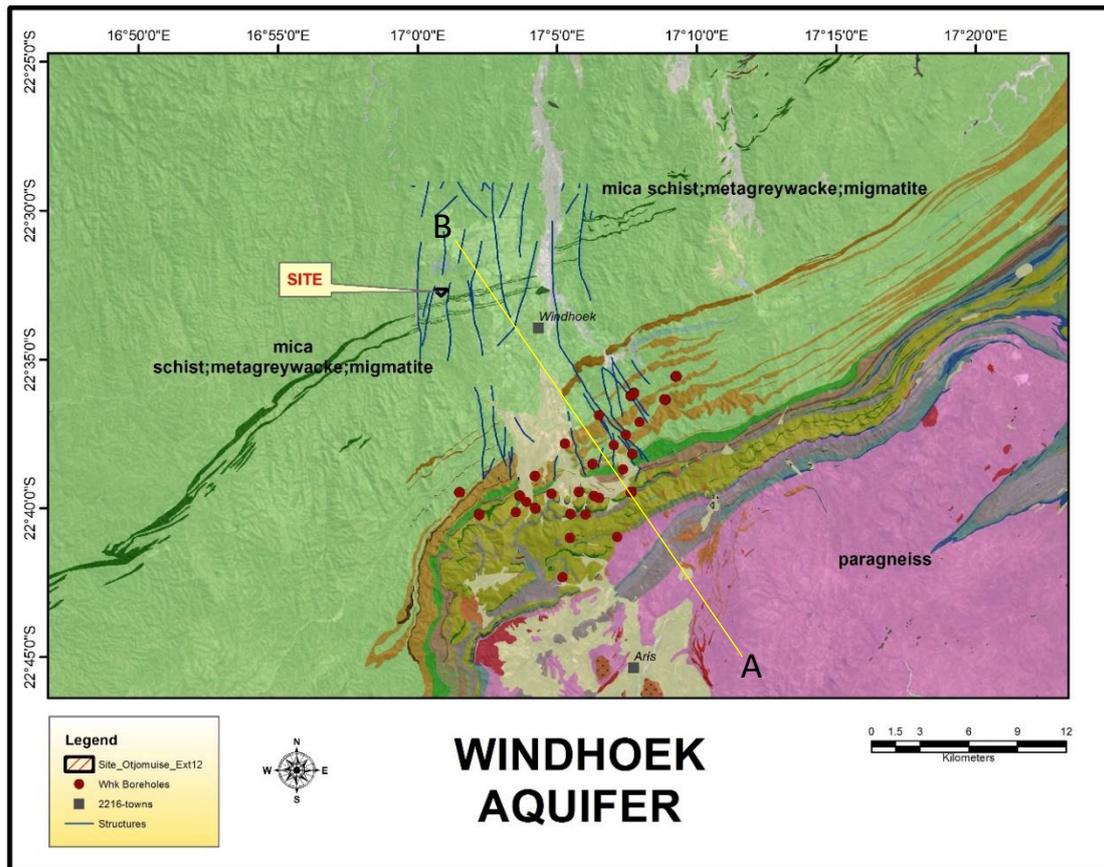
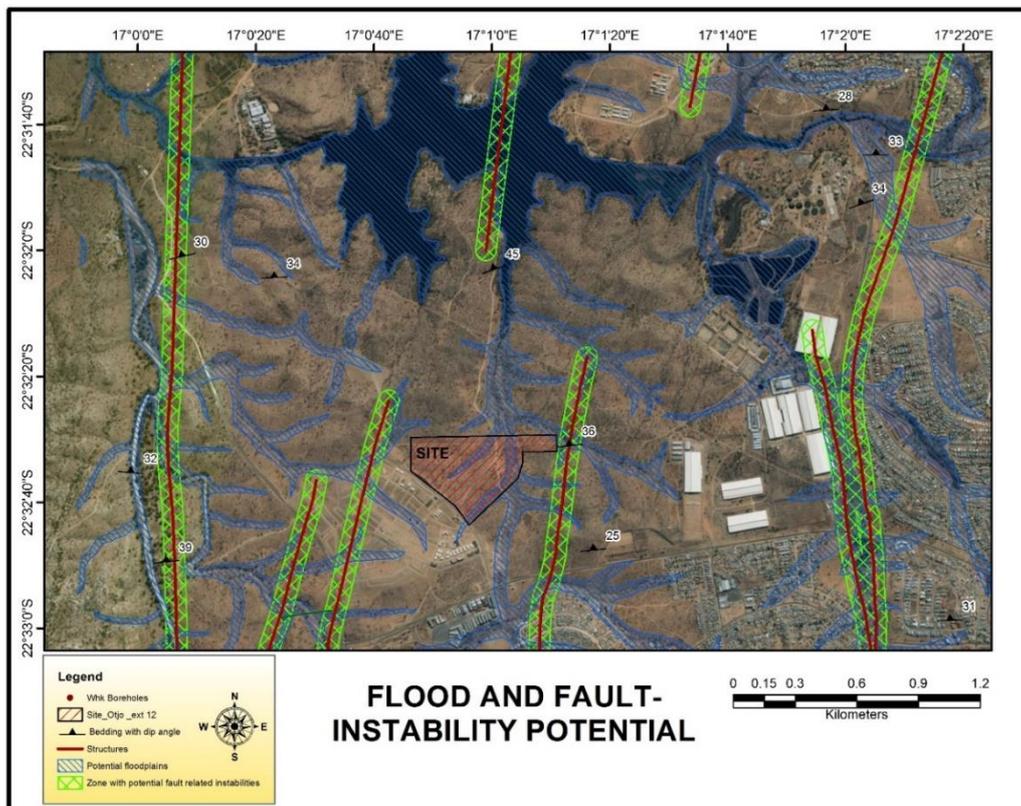


Figure 1. Schematic representation of the lithologies found in Windhoek, including the aquifer lithologies in the south of the city, and taken along section A-B (adopted from Murray, 2017)

2.3.2 Surface water

The average annual rainfall in Windhoek is 360 mm, while the average evaporation rate is 2 170 mm/a. The city relies on three dams, the Windhoek Aquifer and two sources of direct reclamation to provide for its population of 326 000 (Murray, 2017).

Although the proposed extension is relatively flat, a degree of potential flooding exists especially on the eastern side due to river tributaries linked to the Goreagab Dam (Map 2). These present preferential water flow channels in which runoff waters will tend to gravitate and onset flooding. Additionally, these faults may also cause geotechnical ground instability which have potential to affect the proposed developments.



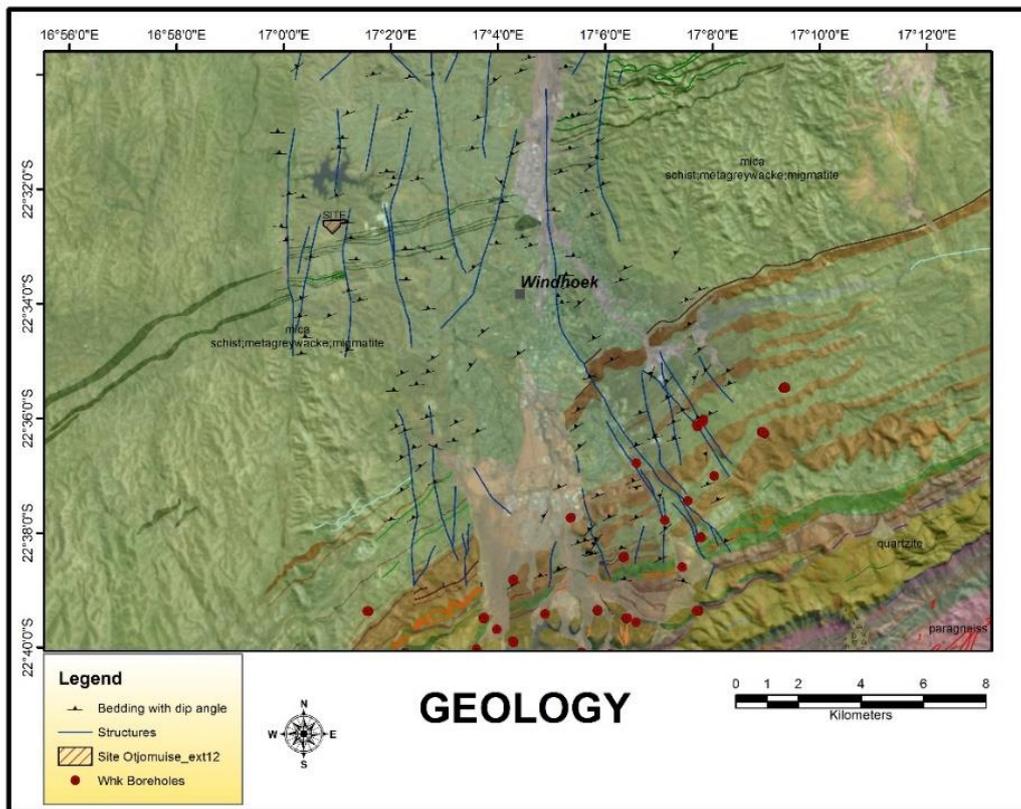
Map 2. Faults and flood potential areas at and around the site

2.4. Geology

Windhoek falls within the Southern Zone of the Neoproterozoic Damara Orogenic Belt, an orogenic belt formed about 542 Ma as a result of the collision of the Congo and the Kahlari cratons (Miller, 2008). Geology here is part of the Khomas Complex, characterized by lithologies of mixtite and pebble- or boulder bearing schists which are characteristic and distinguishing lithologies and may grade into or are closely associated with quartzite, schist, graphitic schist, sedimentary iron formation, conglomerate an impure marble or dolomite (Martin & Porada, 1977).

The northwestern area of Windhoek where the proposed Otjomuise Extension 12 is located, is geologically dominated by the Kuiseb Formation schist. Other geological

formations include the Matchless Amphibolite Belt, which appears about 1 km south of the site (Map 3). The quartzites which are the main lithology of the Windhoek Aquifer underlies this formation, and is exposed only on the southern part of the city. In terms of the geological structures, the lithologies on the site and surrounding areas are cut by NE trending faults.



Map 3. Geology of Windhoek

Khomas Complex

The Khomas Complex lithologies are the widely exposed rock in the Windhoek area. These comprise of the Matchless Amphibolite Suite, which represents the mid-oceanic ridge of the Khomas Sea. Other lithologies of the Khomas Complex include Kleine Kuppe Formation, Kuiseb Formation, Fahlwater Formation and Hureb Formation. The Kuiseb Formations is the main rock unit covering the proposed site location.

(i) Kleine Kuppe Formation

The Kleine Kuppe Formation occurs south of Windhoek. This Formation is characterised by quartzites (Figure 4a) that form discontinuous, well layered units between one metre and several hundred metres in thickness, which interfinger with coarse-grained mica schists of the Kuiseb Formation. Associated with these units are quartz schist, thin interbeds of mica schist and thin amphibolite bands. The lower quartzites are significantly more micaceous than the upper quartzites (Miller, 2008).

(ii) *Kuiseb Formation*

The Kuiseb Formation covers the entire proposed site, and is also the dominant Formation in the Windhoek area. According to Miller (2008), the Formation comprises mostly of sediments of graded, distal greywackes, as the now highly deformed rocks consist largely of alternating layers of intensely foliated semi-pelitic and pelitic schists (Figure 4b).

(iii) *Matchless Amphibolite Suite*

The Matchless Amphibolite Suite occurs as two closely spaced zones of amphibolite, which are interbedded with the Kuiseb schists that form a linear and almost unbroken, 1 to 3 km wide belt just south of the proposed site. The unit includes dark-green to black amphibolite interbedded with Kuiseb schists and extremely fine-grained and medium-grained metavolcanic rocks containing variable amounts of carbonate, local amphibolite breccias and locally highly deformed pillow lavas. Large, podiform bodies of metagabbro (Figure 4c), some differentiated with chlorite-actinolite or serpentine-talc-chlorite bases and plagioclase-rich upper parts, others undifferentiated, but with chilled, finer-grained margins, form sporadic intrusions of variable size (Miller, 2008).



Figure 4: (a) Klein Kuppe Massive Quartzite, (b) Metagabbro of the Matchless Amphibolite Suite, (c) Highly Foliated Biotite, Quartz Schist of the Kuiseb Formation.

3. SCOPE OF WORK

The proposed development involves a transformation of the virgin land of Otjomuise Extension 12 into a residential, business, education and recreational area. This particular scoping study focused on assessing the environmental and social impacts of the proposed development, taking into consideration all the technical aspects that will be involved. Scoping is considered as being a critical process of the EIA that identifies the major issues and impacts of concern, which will ultimately guide the decision making by the competent authority, whether an ECC for the project will be awarded 1 or not.

As indicated earlier, the proposed site is currently intact, hilly and is covered by vegetation; therefore it will be required that the vegetation in the area be first cleared in order to make space for the development. Further to that, the fact that the area will be used for multiple purposes (residential, business, education and recreation) necessitates zoning and fencing off the different zones. The construction will be done for the residential, educational, recreational and other businesses activities.

The development will further involve electrical supply, however, the source of electrical supply has not yet been identified at this stage. In addition, water will need to be supplied; for houses, and other general uses, especially at the recreational facilities. Furthermore, waste needs to be managed all over the site. Therefore, skip containers need to be placed at different construction sites, and be well maintained, to ensure safe storage and disposal of all waste that will be generated during the construction process, both general waste and building rubbles. It is important to note that more and larger quantities of mainly general and domestic waste are expected to be generated once the construction of the proposed facilities is completed. Thus it was essential for the scoping study to take a view into the management of activities and the potential impacts, as highlighted in this paragraph.

The assessment therefore aimed to establish the social and environmental impacts that may result from the development activities, both prior and during the project operation. As part of the assessment process, the public has informed about the project, and the main stakeholders have been identified. The most important part of the assessment is the EMP, which forms part of this report. The EMP documents the management actions for various aspects of concern with respect to the development.

Overall, this scoping study aimed to:

- Document the relevant information on the development/project which will be submitted to the Ministry of Environment and Tourism (MET);
- Comply with the Environmental Management Act No. 7 of 2007 and the EIA Regulations of 2012;
- Inform the public about the proposed development;
- Identify the main stakeholders to the proposed development;
- Identify and document the positive and negative impacts of the project;
- Determine the issues and impacts that would require further study;
- Document the concerns and values of the IAPs;

- Define the appropriate and practical alternatives to be considered; and
- Determine the boundaries for the Environmental Assessment in time, space and subject matter.

In summary, the aspects presented in Table 2 have been considered by this scoping study.

Table 2. Aspects of consideration during the scoping study

Focal Area	Aspect
Assessment	<ul style="list-style-type: none"> • Project justification • Project feasibility • Project alternatives
Project implementation	<ul style="list-style-type: none"> • Planning phase • Construction phases (4 phases) • Operation phase
Activities	<ul style="list-style-type: none"> • Project & non-project activities • Direct and indirect environmental & societal impacts • Cumulative impacts • Context
Factors	<ul style="list-style-type: none"> • Geographic • Environmental • Societal • Economic • Legal • Developmental • Temporal & permanent • Spatial

4. LEGAL REQUIREMENTS

This section presents the relevant legislations, policies and guiding frameworks to the proposed development. It further highlights specific provisions under some legislations that of relevance to the development are highlighted.

The Namibian Constitution is the fundamental law that has guided the formulation and implementation of the listed legislations. Specifically, Article 95 of the Constitution is promoting the welfare of the people, and has emphasized that “the state shall actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at:

- Ensuring that every citizen has a right to fair and reasonable access to public facilities and services in accordance with the law; and
- Maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future.”

Further to the Namibian Constitution, a policy framework for the long-term development of Namibia has been developed to improve the quality of life of all Namibians, with a goal to take the country to another level by the year 2030. Such a policy framework is referred to as Vision 2030, and is promoting the fair and equitable distribution of land among all users, based on a comprehensive land redistribution and resettlement program that aims to avoid confrontation and conflict, while preventing environmental degradation, and is promoting equity and cooperation amongst all stakeholders. Furthermore, Vision 2030 is promoting considerable poverty reduction through improved social service delivery to the poor; equitable income distribution through employment creation and small-scale enterprise development, and minimized disparity. It also seeks to ensure that rural and urban development is integrated to an advanced level, and that full national coverage of infrastructure is achieved. Overall, rural upliftment through implementing initiatives for poverty reduction is emphasized by this policy framework.

When it comes to addressing environmental issues in Namibia, there is a document known as "the Green Plan", that specifically deals with them. This document provides guidance regarding decision-making around environmental-related projects. Based on the Green Plan, EIAs should be conducted for major projects which can be detrimental to the environment. Furthermore, this plan aims to secure a safe and healthy environment for the present and future generations, while at the same time contributing positively to their economy.

Apart from the guiding documents highlighted above, there are a various of legislations and policies that have been identified to be of significance to the proposed development, which are listed below. In addition to those legislations, the international conventions of relevance to the proposed project have also been listed.

Table 3 below presents the relevant legislations.

Table 3: Relevant legislations to the proposed development

Law/Act	Description
Environmental Management Act No. 7 of 2007	<p>The Environmental Management Act No. 7 of 2007 was enacted "to promote the sustainable management of the environment and the use of natural resources by establishing principles for decision making on matters affecting the environment, to establish the Sustainable Development Advisory Council, to provide for the appointment of the Environmental Commissioner and environmental officers, to provide for a process of assessment and control of activities which may have significant effects on the environment, and to provide for incidental matters". The proposed development should seek to comply with this Act.</p> <p>The implementation of this Act is strengthened by the EIA Regulations of 2012, which have listed the activities that cannot be undertaken without an ECC. As part of the listed activities, land use and development activities for commercial use cannot be undertaken without ECCs. The proposed project is not an exception to this, hence this scoping study.</p>
Forestry Act No. 12 of	This Act has been enacted "to provide for the establishment of a Forest Council and the appointment of certain officials to consolidate the laws relating to the

2001	management and use of forests and forest produce, to provide for the protection of the environment and the control and management of forest fires, to repeal the Preservation of Bees and Honey Proclamation No. 1 of 1923, Preservation of Trees and Forests Ordinance No. 72 of 1968, and to deal with incidental matters". In the view of the proposed development, this Act is promoting the conservation of soil, biological diversity, and the natural environment at large, as clearing of forests for infrastructure development is a threat to the environment. Nevertheless, through the scoping study, the possible negative environmental impacts have been identified.
Soil Conservation Act No. 76 of 1969	The Soil Conservation Act has been enacted "to consolidate and amend the law relating to the combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation, and the protection of the water resources in Namibia, and to provide for matters incidental thereto". Under this Act, the prevention of soil erosion, disturbance of land, and destruction of vegetation that may possibly result from the development have been provided for.
Hazardous Substances Ordinance No. 14 of 1974	This ordinance was developed "to provide for the control of substances which may cause injury, or ill-health or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger, to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith". With reference to the proposed development, the use of hazardous substances, for example, paints, oils and cement, particularly during the construction operation should be controlled.
Public Health Act No. 36 of 1919	The Public Health Act provides for the control of anything that may affect public health. It emphasizes that no person shall cause nuisance or shall suffer to exist on any land or premises owned or occupied by him or her of which he is in charge of any nuisance or other condition liable to be injurious or dangerous to health. It is thus essential that the proposed development should not by any chance cause nuisance that may affect public health.
Water Resource Management Act No. 24 of 2004	This Act was enacted "to provide for the management, development, protection, conservation, and use of water resources, to establish the Water Advisory Council, the Water Regulatory Board, and to provide for incidental matters". Given the fact that the construction of the planned development will use a large amount of water, it is important that water is used sparingly, that the water resources should be protected, and that water pollution should be prevented, as guided by the Water Resource Management Act.
Nature Conservation Ordinance No. 4 of 1975	The Nature Conservation Ordinance was developed "to coordinate, amend the laws relating to the conservation of nature, the establishment of game parks and nature reserves, the control of problem animals, and to provide for matters incidental thereof". In the view of the proposed development, this ordinance is relevant when it comes to the conservation of the natural resources within the area where the envisaged development will take place. In case there are specially protected plants (indigenous species of community importance) at the construction site, recommendations will be made to shift the construction area, to ensure that such plants are not removed. This ordinance will guide the conservation of the natural environment at large.
Electricity Act No. 4 of 2007	This Act was enacted "to establish the Electricity Control Board, and provides for its powers and functions, to provide for the requirements and conditions for obtaining

	licenses for the provision of electricity, to provide for the powers and obligations of licenses and to provide for incidental matters". The supply of electricity for this development should therefore abide by the provisions made under this Act.
Local authorities Act No. 23 of 1992	This Act provides for the determination, purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters. A Local Authority Council has the power - to supply water, electricity, and public transport service; provide, maintain and carry on a system of sewerage and drainage for the benefit of the residents in its area, to the residents in its area for household, business or industrial purposes. It has further been enacted to provide, maintain and carry on services to such residents for the removal, destruction or disposal of rubbish, slop water, garden and stable litter, derelict vehicles, carcasses of dead animals and all other kinds of refuse or otherwise offensive or unhealthy matter, of which all these are of extreme importance since the area of development falls under the Windhoek city and the city is required to extend these services to this area.
National Housing Development Act No. 28 of 2000	This Act aims to establish a National Housing Advisory Committee and to define the powers, duties and functions of that committee; to provide for the establishment of Housing Revolving Funds by local authority councils and regional councils; to regulate the allocation of moneys to, and the administration of, Housing Revolving Funds; to provide for the establishment of Decentralised Build Together Committees and to define the powers, duties and functions thereof; and to provide for matters incidental thereto.
Pollution Control and Waste Management Bill	The Pollution Control and Waste Management Bill is still in preparation, however, it makes provision for a framework for governing the control of pollution as well as the management of the waste. It further makes provision for the prevention and regulation or the discharge of pollutants into the air, water and land. In addition, it is meant to regulate noise, dust and odor pollution. Of particular importance to the proposed development is the management of waste disposal on land. A significant amount of solid waste is likely to be generated during the construction, which will need to be well managed. Furthermore, waste (especially general) will be generated almost on a daily basis after the construction of all the proposed facilities. An effective approach to deal with such waste will therefore be necessary.

In addition to the legislations, there are a number of policies that are considered relevant to the proposed development, as listed in Table 4 below.

Table 4: Policies that are relevant to the proposed development

Policy	Description
Environmental Assessment Policy	The Environmental Assessment Policy emphasizes the importance of environmental assessments.
Land-use Planning Policy	The Land-use Planning Policy defines the land form, among which is the communal state land. It emphasizes the sustainability of the natural resources and essential ecological processes.
National Land	The National Land Policy promotes community involvement in environmentally sustainable land use practices.

Policy	
National Land Tenure Policy	The National Land Tenure Policy promotes sustainable utilization of land and other resources.
Regional Planning and Development Policy	The Regional Planning and Development Policy promotes soil conservation strategies.

The international law is integrated into domestic law as per Article 144 of the Namibian Constitution. In such respect, a few international laws that are considered as being of relevance to the development are listed in Table 5, as follows:

Table 5: Relevant international laws

International laws	Description
Convention on Biological Diversity (CBD)	The Convention on Biological Diversity is promoting the sustainable use of biodiversity components.
United Nations Framework Convention on Climate Change (UNFCCC)	This convention is promoting the avoidance of climate change to the point that sustainable development can be affected.
United Nations Convention to Combat Desertification (UNCCD)	This convention aims at combating desertification and its effects while at the same time contributing to sustainable development. This convention seeks to ensure public participation in relevant decision making processes.

5. PUBLIC CONSULTATION

The Environmental Management Act of 2007 is promoting the participation of all interested and affected parties (I & APs). Based on this Act, decisions to be made around any development should take into account the interest, needs and values of interested and affected parties. For this reason, this assessment was meant to involve a consultation with the public, particularly the residents from Windhoek, where Otjomuise is located. At its advanced stage this scoping report was shared with the Ministry of Urban and Rural Development (MURD), which accepted the finding of the assessment as they are, and could not provide any comments.

In efforts to engage the I & APs, the following was done:

- A document presenting the background information on the proposed project was compiled, and made available for distribution to the I & APs (Annex 1). Such a document is referred to as the Background Information Document (BID).
- A notice was placed on the New Era newspaper dated 21st and 28th of September 2021, informing the public on the proposed development, and giving clear guidance on how to ensure that their inputs are considered (Annex 2). As part of the notice, a call was made for the public to register as I & APs.
- A1 posters were placed at the City of Windhoek office, and at various places in Otjomuise, calling for public participation.
- A meeting with the affected stakeholders was scheduled to take place on the 5th of October, in order to obtain their views regarding the development. Unfortunately, no one turned up for the meeting after waiting for 2 hours. Figures 5 a - d show pictures of the projected presentation (5a), empty venue (5b), A1 poster and a blank attendance register.



Figure 5a. Projected presentation



Figure 5b. Meeting venue



Figure 5c. Presentation poster

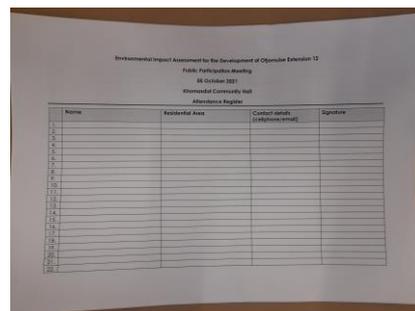


Figure 5d. Attendance register

6. IMPACT ANALYSIS AND MITIGATION MEASURES

This section describes the anticipated impacts of the proposed project on the environment and the possible mitigation measures been identified, both during the construction and the operation phases of the development. The potential impacts are categorized into three categories, namely: direct, indirect or cumulative. The Category 1 impacts are those impacts that will directly result from the development,

referred to as 'direct'. Category 2 impacts are the foreseeable impacts that will potentially result from the project, but will occur at a different time or place; and are referred to as 'indirect'. The third category of impacts, Category 3 impacts, are the individual impacts (two or more, direct or indirect), which when considered together may increase environmental impacts. Such impacts are referred to as 'cumulative'. For the proposed project in particular, the anticipated impacts are described in the sections below.

6.1. Land Environment

The development of Otjomuise Extension 12 will involve a lot of construction, i.e. houses, a school, businesses, recreation facilities and any other facility of necessity. The fact that the proposed area is currently in its natural state, and that the land has to be prepared prior construction, it is obvious that damage will be made to the land environment, which is a direct negative impact. Apart from the land damage, there will be loss of vegetation in the process of clearing the land for construction. Nevertheless, there will not be any loss of valuable plant species. Similarly, there will be no significant loss of faunal species (Irish, 2017). Furthermore, taking into consideration the fact that the area to be developed is rocky and hilly, there will be an alternation of the topography and geomorphology at the construction sites, as a result of land filling and leveling of the landscapes.

In addition to the direct impacts on the land environment, indirect impacts will be experienced too, as a result of the construction activities. It is anticipated that soil erosion will result due to vegetation and top soil removal, since the land has to be cleared before the actual construction commences. Moreover, land degradation could as well be an indirect consequence of land clearing. Furthermore, there will be a change of land-use from being an ecosystem to a multi-purpose urban area. However, the area mainly consists of **minimal r-selected species** i.e. those species that have a high growth rate and mature fast. This means they have the ability to recover after development. Noteworthy, no endangered species has been detected within the frame of the development.

The worst negative impacts of the development, both during the construction and the operational phases have to be avoided. For this reason, some mitigation measures for the potential impacts have been proposed, and are presented in Box 1. However, should those measures not be implemented, cumulative impacts such as soil erosion and land degradation are expected to result.

The identified impacts of the construction and operational activities on the land environment at Otjomuise Extension 12 are summarized in Table 6 below.

Table 6. Impacts of the construction and operational activities on the land environment at Otjomuise Extension 12

Construction Phase		
Direct Impacts	Indirect Impacts	Cumulative Impacts
Land damage	Soil erosion (increasing surface run off), land degradation	Land degradation
Loss of vegetation (insignificant)	<ul style="list-style-type: none"> Land degradation in the vicinity of the development site Soil erosion Land-use change 	Loss of natural beauty
Loss of fauna species (insignificant)	Loss of local faunal species diversity (however, not significant)	Loss of local faunal diversity
Alteration of the topography and geomorphology	Land-use change i.e. from an ecosystem to commercial area	Land degradation
Operational Phase		
None	Soil erosion	Land degradation

The identified impacts are all negative, however, they are considered to be of less significance, and can be rated as **moderate** to **low**. This can also be attributed to the fact that the area is of less conservation importance, as it is not functional at the ecosystem level.

Box 1. Mitigation measures for addressing the impacts of construction and operational activities on the land environment

- To mitigate increasing surface runoff, vegetation clearing must not go beyond the extent of the development. The remaining vegetation should be maintained.
- Further disturbance on the remaining vegetation in the close proximity of the development should be avoided or kept minimal after the construction.
- Site disruption must be avoided by minimising the movements of the earthmoving equipment or sticking to selected routes.
- A professional construction design must be in place and implemented by qualified builders and civil engineers.
- Erection of the buildings must comply with the National Building Regulations.
- Qualified engineers must be contracted to supervise the construction process, and ensure the application of environmentally sound principles.
- The removed top soil layer should be made good use of and should not be allowed to pile up.
- Due to its hilly nature, culverts must be constructed to allow an easy flow of water within the Suburb.

6.2. Biological Environment

Vegetation removal at the site is necessary for the purpose of land preparation before the actual construction commences. However, by removing all the plant species available at the site will directly contribute to the reduction of species diversity in the local area. The few trees at the construction site are all mainly naturally used for minimizing the impact of water runoff and natural beauty. Conservation measure shall be implemented to only remove trees which will directly prevent the erection of buildings and roads and save those lying outside such spaces.

It is however an advantage that the trees that will be removed from the area are already sparsely distributed and the construction site is not so densely populated, hence there is no significant reduction in these species. Overall, there will not be complete loss of indigenous tree species.

Nevertheless, it possible that the mini-fauna, lizards and small insects that use the present trees and the available thorn bush as their ecological habitats will be negatively impacted. Therefore, it is anticipated that many of them will die or find it difficult to survive in the process, while the fortunate and vigilant ones will migrate to the nearest available trees and shrubs. No large mammal or any other large animal has been observed or reported to be living permanently in the construction area. It is recommended that planting of more plants should be part of the long-term plan to renew the natural beauty after development of the site.

The anticipated indirect impacts of the construction activities on the biological environment may be soil erosion, as a result of vegetation removal. This will potentially result in land degradation in the long term. Given the fact that the removal of trees may result in the loss of the mini-fauna species, the construction activities might indirectly result in the reduction of local biodiversity. However, the direct and indirect impacts are **short-term**, and can be rated as **low**. Such impacts may potentially lead to land degradation in the long term. Nevertheless, the significance of this cumulative impact can be rated as **very low**. Advantages can be noted on the soil type of the construction site which is mainly rocky and difficult to erode especially if good construction standards and procedures have been followed through supervision by competent engineers. Table 7 below summarizes the anticipated direct, indirect and cumulative impacts of the construction and operational activities on the biological environment.

Table 7. Impacts of the construction and operational activities on the biological environment

Construction Phase		
Direct Impacts	Indirect Impacts	Cumulative Impacts
Loss of plant species	Soil erosion	<ul style="list-style-type: none"> • Land degradation • Loss of natural beauty • Loss of important ecological processes
Loss of mini-fauna species	Reduction of mini-fauna species richness and	Reduction of local species diversity

	diversity	
Operational Phase		
None	None	Land degradation

The proposed mitigation measures for the construction and operational activities impacts on the biological environment are presented in Box 2.

Box 2. Mitigation measures for addressing the impacts of construction and operational activities on the biological environment

- Plants that will not be directly affected by construction activities should not be removed.
- Disturbance of the existing vegetation around the site should be kept minimal.
- No animal (either reptiles or birds) within the construction should be killed during the land clearing / construction process.

6.3. Pollution, Solid Waste Generation and Disposal

There is no doubt that construction will result in environmental pollution. It is anticipated that four types of pollution will be experienced, namely: air pollution, water pollution, land pollution and noise pollution. There is a high possibility that these may have significant impact on the environment at the construction site, and in the surrounding areas. The different types of pollution that may result are described below.

6.3.1. Air Pollution

A number of activities that will be involved, such as land clearing, earthwork, operation of diesel earthmoving equipment, and working with toxic materials can potentially cause air pollution. Clearing of land, earthwork and concrete mixing in particular can generate dust, which can be carried over long distances, over a long period of time before it subsides. The type of dust generated from construction activities is classified as PM10, which is defined as particulate matter less than 10 microns in diameter. Such type of dust is invisible, and is said to have negative impacts on human bodies compared to other pollutants. It can cause damage on the respiratory and cardiovascular systems. In addition, air pollution as a result of dust (from sand and rocks) and smoke from construction vehicles will be experienced.

The proposed development is meant to serve the society in many ways, including provision of proper sanitation facilities and a reliable sewerage system. Nevertheless, it is an advantage that Otjomuise Extension 12 is very close to an already existing municipal sewerage system, therefore its system can potentially be connected to the main system. Given the fact that the sanitation and sewage facilities will be used both by the potential suburb inhabitants and visitors, there is a high possibility that air pollution will be experienced, as a result of odor accumulating from the ablution

facilities and connector points. Additionally, in cases of pipe blockage, accumulation of odor should be expected.

There is no doubt that, air pollution can have direct negative impacts on the general environment. To be specific, during the construction phase, air pollution can change the visibility, and can cause damage to the vegetation in the surrounding areas. Air pollution can also have direct impacts on human health, particularly those at the construction site, as well as those in the surrounding areas. Apart from the direct impacts, air pollution can indirectly affect people who may get into close contact with the already affected people, through transmission of diseases, particularly those related to the respiratory system (Table 8). It is therefore essential that mitigation measures be put into place, otherwise cumulative impacts such as psychological disorders and cardiovascular problems will result in the long-term.

In general, the direct impacts of air pollution can be considered as significant, while their significance can be rated as **moderate**. Fair enough, they are rather **short-term**, particularly because they are more likely to be experienced during the construction phase than the operational phase. Nevertheless, the fact remains that the direct impacts of the operational phase will last for the long-term, but can be rated as **low**. The indirect and cumulative impacts can be rated as **moderate**, and can have lasting impacts if no mitigation measures are implemented.

Table 8. Impacts of air pollution from the construction and during operational activities, on the environment and on human health

Construction Phase		
Direct Impacts	Indirect Impacts	Cumulative Impacts
Exposure to dust	<ul style="list-style-type: none"> • Eye irritation • Skin irritation • Dust inhalation (resulting in coughing and sneezing, hayfever and asthma attacks) • Lung infection and human respiratory diseases 	<ul style="list-style-type: none"> • Long term eye irritation • Allergies • Psychological and physiological disorders • Health risks for construction workers
Odour nuisance	<ul style="list-style-type: none"> • Quality of life impacts (discomfort) depending on the concentration • Eyes, nose, throat and lung irritation • Dizziness 	Human health problems
Human health problems		
Operational Phase		
Odor nuisance	Discomfort	None

The proposed mitigation measures for air pollution from the construction activities are presented in Box 3 below.

Box 3. Mitigation measures for air pollution impacts resulting from the construction activities

- Dust must be regularly settled using water during construction.
- The construction teams must be provided with dust masks, which are able to block dust particles.
- Open stockpiles of cement bags must be avoided, and must be covered at all times.
- The sewerage system should be regularly maintained to avoid smell nuisance from the septic tanks.
- No burning of waste should be done at the site or elsewhere.
- Construction should be stopped in days of heavy wind blows.
- Bitumen standard roads should be used on busy sections during the operational phase.

6.3.2. Water Pollution

There is no doubt that water will play an essential role throughout the construction process, as well as the operation phase of the proposed development. It is obvious that large amounts of water will be needed during the construction process, particularly to settle dust, for compaction, curing, mixing of concrete, and washing of construction equipment. In addition, water will be used site by workers for bathing, drinking and cooking; and for the routine activities at large. Equally important is sufficient water availability during the operation phase. Nevertheless, when used in an uncontrolled manner, water may result in pollution. Other sources of water pollution at the site may be diesel and oil from the construction equipment, paint, solvents, cleaning and other harmful chemicals, sewage as well as the construction materials.

Before the construction process commences, land needs to be cleared, which will involve top soil removal. As a consequence, continuous use of water at the site will presumably result in soil erosion, further leading to sedimentation. Therefore, when water is uncontrollably used, surface water run-off may have severe negative environmental impacts, as it can be contaminated by pollutants such as diesel and oil, toxic chemicals and building materials. Such pollutants can cause turbidity in the water run-off, and may contaminate the water sources, which often supply drinking water to animals, and to human in some cases; thus making it unsafe to drink. The same pollutants can also potentially infiltrate into the soil and pollute the ground water, which is the source of drinking water for animals and human. Furthermore, interaction between water and contaminated soil (by the same pollutants) may also result in water pollution.

Apart from the highlighted impacts of water pollution, there are others too, which could be direct or indirect, such as: plant deaths as a result of accumulating pollutants from the polluted water, absorption of pollutants by plants, which can be passed up the food chain, and acquisition of waterborne diseases (rashes, skin infections, cholera, damage to the nervous system, liver and kidney damage and many others). Consequently, mitigation measures need to be put in place and be implemented. If not, adverse impacts such as severe plant losses, animal and

human diseases and deaths may be the long-term impact. In terms of significance, the direct impact of water contamination can be rated as **moderate** to **low**. The same applies to the indirect and cumulative impacts, which can be rated **low**.

The anticipated impacts of water pollution from the construction activities are summarized in Table 9.

Table 9. Impacts of water pollution from the construction activities on the environment and on human, and during the operation phase

Construction Phase		
Direct Impacts	Indirect Impacts	Cumulative Impacts
Water contamination	<ul style="list-style-type: none"> • Plant deaths • Animal deaths • Waterborne diseases 	<ul style="list-style-type: none"> • Severe plant losses • Animal deaths • Human health problems and deaths • Reduction in biodiversity
Soil contamination	<ul style="list-style-type: none"> • Absorption of soil contaminants by plants (bioaccumulation) in the vicinity • Plant deaths 	Human health problems and deaths
Operational Phase		
<ul style="list-style-type: none"> • Water contamination • Soil contamination 	<ul style="list-style-type: none"> • Waterborne diseases • Human health problems • Animal health hazards 	Human and animal health problems

The proposed mitigation measures for water pollution impacts from the construction activities are listed in Box 4 below.

Box 4. Mitigation measures for water pollution impacts resulting from the construction activities

- Water should be used sparingly, and use of too much water unnecessarily during the construction must be avoided.
- The water used for curing should be sprayed on the concrete structures.
- Ponds should be constructed using cement and sand mortar to prevent water from flowing away from the surface while curing.
- Wastewater should not be allowed to spill on the open environment, but should be safely Disposed by channelling it through the existing municipal sewerage system.
- Paint and cleaning products must be safely disposed to prevent excessive water pollution.
- Potable water should not be allowed to get into contact with contaminated water from the recreational and business areas.
- Recreational water facilities use should be well managed and regularly disinfected to prevent the spread of infectious diseases among users.

6.3.3. Land Pollution

The biggest form of land pollution is solid waste, which will be generated both from the construction and operational activities. Of the solid waste to be generated, the largest volumes will be accumulated during soil excavation, which precedes the laying of foundation. With the numerous houses (and other infrastructure) to be constructed, solid waste in form of excavated soil will be generated in abundance, hence requiring sound management. Apart from soil excavation, other sources of land pollution or solid waste will be the construction materials, including: cement sacks, paint containers, oil containers and many other containers for the items to be used, and building rubbles.

Furthermore, procurement of materials and material handling are other sources of solid waste, both during the construction and operation phase. During the two phases a large number of packaging waste materials, papers and plastics are likely to be accumulated at various construction sites. Nonetheless, in spite of the identified sources, waste generation occurs at any stage of construction, with potentially **low** impact.

In addition to the waste that will be generated during the construction phase, more waste should be expected to be generated during the operation phase. It is very much likely that the biggest source of solid waste during the operation phase will be the procurement of stock, particularly in the business area, whereby the stock containers will end up being waste materials. Thus, a significant amount of solid waste in form of plastics, glasses, boxes, tins/cans and papers are likely to be accumulated during the operational phase. Moreover, at least 50% or more of the household waste will be solid waste, which will require proper and regular management.

Looking at the direct impacts of solid waste at the development sites, both during the construction and operation phases will mainly be soil and water contamination, as well as pollution of the land environment in many ways, including littering. As a consequence, such kind of pollution will alter the visual appeal, both at the sites and the surrounding areas. It is anticipated that the biggest negative impact of solid waste on the land environment will be reduced visual appeal / anaesthetic view. Soil contamination can further lead to deaths of soil inhabiting species. Further to the direct impacts, indirect impacts are anticipated too, which are likely to result when the solid waste such as paper and plastic containers get washed or blown away, causing the entire site and surrounding area to be less visually appealing. The wind-blown or washed-away waste will also presumably result in the contamination of water resources (creating breeding sites for mosquitoes) as well as pollution of the land environment in the close proximity of the development sites. It is also anticipated that solid waste can indirectly contribute to the loss of important ecological cycles.

In view of the cumulative impacts, land degradation is likely to result in the long-term if solid waste on the land environment is not well managed. Waste can also deplete

space in the landfill sites if waste carelessly disposed of. Reduced aesthetic views due to uncontrolled waste will further lead to the deterioration of landscapes and could tarnish the image of the environment in the long-term. If not controlled, it could further lead to a reduction of potential visitors to the suburb. More details on the management of waste are presented in the EMP.

Noteworthy, waste can have both positive and negative impacts on the economy. Looking at a broader picture, additional construction costs can be accrued as waste generation increases. This is particularly because some materials can be inappropriately used or end up being wasted, which can cause them to be replaced. According to some studies, the total cost of waste is made up by approximately 30% of the material cost. In addition to the negative impacts, waste can contribute positively to the economy, particularly through recycling. Recyclable waste materials can be re-used or sold to be renewed or used for another valuable purpose, bringing economic benefits in return.

Although solid waste is anticipated to be the biggest form of pollution on the land environment, liquid waste is likely to be experienced too. Liquid construction pollutants such as oils, paints, cement and detergents may be washed away/off, spill or leak, and may run off along with water during construction activities or other activities such as cleaning. This can even be worsened by rainfall.

Overall, the significance of the impacts of waste can be rated as **high**, as waste generation is inevitable, especially for this type of development.

The direct, indirect and cumulative impacts of waste both during the construction and operational phases are summarized in Table 10.

Table 10: Impacts of solid waste during the construction and operational phases on the environment

Construction Phase		
Direct Impacts	Indirect Impacts	Cumulative Impacts
<ul style="list-style-type: none"> Soil contamination Death of soil inhabiting species e.g. microorganisms and insects 	<ul style="list-style-type: none"> Water resources contamination Loss of important ecological cycles 	Land degradation
Water contamination	Land pollution	Land degradation
Destruction of the visual looks at the site	Destruction of visual looks in the neighboring areas	<ul style="list-style-type: none"> Deterioration of landscape/tarnished image of the environment Reduction of potential visitors
Accumulation of waste materials	Destruction of visual looks	Depletion of space in the landfill sites
Accumulation of waste	Accrual of construction costs	Need for increased budget
Recycling opportunities	Income generation	Long-term partnership with

		recycling companies
Operational Phase		
Destruction of the visual looks at the sites	Destruction of the visual looks in the neighboring areas	Land degradation
Soil contamination and water contamination	Land pollution	<ul style="list-style-type: none"> • Land degradation • Groundwater pollution • Biodiversity loss • Human health hazards
Accumulation of waste	Accrual of construction costs	Need for increased budget

It is anticipated that none of the listed impacts can be considered as a major risk to the development. Nevertheless, mitigation measures need to be implemented to avoid the long-term negative impacts.

Box 5 below presents the proposed mitigation measures for solid waste negative impacts on the environment.

Box 5. Mitigation measures for the solid waste impacts from the construction and operational activities

- Educate the contractors and the community on the basic waste management practices.
- Waste should be minimized as much as possible.
- Where possible, waste generation must be eliminated/avoided.
- Useful waste materials must be re-used.
- Unlawful deposit of waste on open land should be avoided.
- Enough and well distributed waste bins should be made available both during the construction and the operational phases.
- A temporary disposal site must be constructed to ensure safe disposal of waste.
- The existing disposal site at Kupferberg should be utilised during the operational phase to ensure safe disposal of waste.
- An environmentally sound sewage system e.g. eco-toilets for the construction workers should be constructed prior the actual construction.
- Recycling of waste materials should be promoted. All recyclable materials such as papers, cans, plastics and glasses can be separated and be placed in different well labelled containers, to be transported to the recycling companies within Windhoek.
- All household must be provided with refuse bins and awareness on waste segregation should be created as much as necessary for easy waste collection and recycling.

6.3.4. Noise Pollution

The proposed development, Otjomuise Extension 12, is located in Otjomuise sub-urb, just a few meters from the already developed residential areas. It is further situated in close proximity with the industrial area. For this reason, construction and operational activities are presumed to be some of the sources of noise pollution. It is anticipated that noise will be caused by the construction vehicles and earthmoving equipment, and will result from the actual construction, and from the people at the site. During the operation phase, the movement of vehicles to and from the development site and the use of recreational and sports facilities will potentially be the cause of noise.

Although noise pollution will have negative impacts on the environment, its significance is rated as **low**.

Table 11 below presents the impacts of noise pollution, both during the construction and the operational phases.

Table 11: Impacts of noise pollution during the construction and operational phases on the environment

Construction Phase		
Direct Impacts	Indirect Impacts	Cumulative Impacts
Noise disturbance	Increased stress	None
Operational Phase		
Noise disturbance	Increased stress Sleeping disturbance	None

Noise pollution from the development site is not considered as being significant. Nevertheless, the proposed mitigation measures for noise pollution are listed in Box 6 below.

Box 6. Mitigation measures for the noise pollution impacts from the construction and operational activities

- Night-time construction activities must be avoided. Construction should at least end at 18H00 to allow people to sleep without further disturbance.
- Speed limit to and from the construction sites should be set.
- Industrial business activities should not be permitted in the area.
- Late night activities must be minimised.
- Use of sport facilities should be announced to inhabitants directly affected whenever necessary.
- The use and timing of heavy construction machinery which may cause disturbing vibrations should be controlled and well managed.

6.4. Socio-economic Impacts

The proposed development is expected to make a positive contribution towards the socio-economic challenges currently facing Windhoek. These include: lack of affordable and decent houses, unemployment, limited business opportunities and limited access to basic facilities such as educational and recreational, and lack of public open market space for small/micro enterprises. Therefore, with all the proposed facilities in places, it is anticipated that access to basic needs such as houses, food, and all the other needs highlighted earlier, will be met. In essence, the fact that some services required people to travel some distance into the city will be brought closer to the residents of Otjomuise and neighbouring suburbs. This will save on travelling costs. Furthermore, this development is that it will attract people from all walks of life which are healthy ingredients for cultural integration within the city.

The National Housing Development Act No. 28 of 2000 has made provision for 'low cost residential accommodation', which refers to residential accommodation to low income groups of people, allowing them to be able to accommodate a single

family living in a building or part of building. Such houses can also be constructed in stages, for affordability purposes and will have total area of not more than 300 square meters. They can also be erected under a self-help scheme, with a total area of not more than 100 square meters. The proposed development will contribute to the delivery of new houses in Windhoek, in response to the urgent need to accelerate housing delivery through stakeholder involvement and development of alternative housing construction models, as identified in the Fifth National Development Plan (NDP5) and the Harambee Prosperity Plan (HPP). Through OMBA Holdings (PTY) Ltd, it is expected that affordable houses and accommodation units, with sizes ranging from 25m² to 71 m² will be constructed, and will be sold at low prices, such that even the low and middle income earners (N\$0 - N\$4,600.00 per annum) who currently do not qualify for housing loans will be able to afford them. Once the proposed development is approved, a significant contribution to the above-mentioned provision made by the National Housing Development Act will be made, which is at the same time a contribution to the national development at large.

Taking into consideration the magnitude of the proposed development, it is anticipated that the biggest socio-economic impact will be related to employment, especially during the construction phase. It is anticipated that up to 4 main companies might be contracted during the construction phase, and they will be expected to sub-contract other companies. Overall, approximately 300 people will be employed under the said contracts during the construction phase. These include the skilled, semi-skilled and unskilled people, depending on the nature of work to be done. Apart from the employment opportunities to be availed during the construction phase, approximately 140 job and entrepreneurship opportunities will be created during the operational phase. Employment through the proposed development should be acknowledged as a positive impact, particularly considering the current situation of high unemployment rate of 34% in Namibia (NSA, 2016). It should also be considered as a positive contribution to the national and international development frameworks such as Vision 2030, the Fifth National Development Programme (NDP 5), and the first Sustainable Development Goal (SDG 1), which are targeting poverty reduction.

In view of the impacts of the open market, local economic empowerment should be seen as the biggest positive impact. Generally, open markets should be viewed as both economic and social institutions that aim to achieve a wide variety of goals (EC, 2007). They play significant roles in the provision of access to quality food, better marketing opportunities, improvement of social interaction in urban neighbourhood, provision of employment opportunities to local communities, creation of entrepreneurship opportunities and enhancement of community economic development. In return, all such activities contribute to local economic empowerment. In addition, open markets have a high potential to make economic impacts associated with tourism, and can significantly contribute to the local economy.

In essence, any business can only succeed if it has a reliable number of customers, which can also be influenced by the geographical location. Therefore, if the location where the open market is found is small, it is possible that the customers will be few. However, in big towns like Windhoek, there is a high potential that the

customers or the supporters of businesses through open markets will be in reliable numbers.

Construction on its own has a high potential to positively impact on the performance of the local economy. Hence when it comes to the procurement of construction materials, as well as the items for the business stock, it is recommended that local suppliers should be used. The materials could be procured in Windhoek if available. This will in return contribute to the local economy.

Looking at the significance in particular, the impacts of the positive impacts of the development in the socio-economy can be rated as **high**. Although **short-term** during construction, it will be **long-term** during the operation phase.

The anticipated direct, indirect and cumulative socio-economic impacts of the construction and operational activities of the development are presented in Table 12.

Table 12: Socio-economic impacts of the construction and operational activities

Construction Phase		
Direct Impacts	Indirect Impacts	Cumulative Impacts
Employment creation	Local economic empowerment	Urban development
Operational Phase		
Employment creation	Local economy upliftment	Urban/city development
Entrepreneurship opportunities	Local community empowerment	Community economic development and sustainable development
Availability of affordable houses	Better living conditions	Sustainable development
Access to basic facilities (educational, recreational and business)	<ul style="list-style-type: none"> • Reduced pressure on income • Increased sources of income 	Sustainable development
Tourism opportunities	Income generation opportunities	Local economic upliftment
	Poverty reduction	Increase in local income generation

The proposed mitigation measures for the socio-economic impacts are presented in Box 7.

Box 7. Mitigation measures for the socio-economic impacts resulting from the construction and operational activities

- High priority should be given to Namibian companies in the following disciplines: architecture, civil engineering, structural engineering, electrical engineering, mechanical engineering, town planning, land surveying and quantity surveying to ensure the success of the proposed development.
- Namibian construction companies should be contracted to construct the houses and other infrastructure.
- Construction materials and all goods should be procured from Namibia, if possible Windhoek.
- The majority of the people to be employed both during the construction and the operational phases should be from Windhoek or at least from nearby areas. Where skill deficit exists, a few supporting (experienced) staff should be sourced externally, however, priority given to the local, then regional levels.

7. ALTERNATIVE TECHNOLOGIES

In this section, the available options and alternative materials and technologies that could be considered during construction and operation phases are presented.

7.1. Construction of houses and other infrastructure

With the increasing pressure on the environment, which results in detrimental effects such as climate change and land degradation, it is essential to consider environmental ethics in all forms of development. Therefore, as part of planning for the construction activities, it is essential that the proponent should consider placing the integrity of the environment as a priority. For this reason, it is recommended that the proponent should consider using environmental practices, and should if possible make use of materials and technologies that will contribute to environmental management and conservation. One of such practices is constructing what is referred to as 'green buildings', whereby the materials to be used should be environmental friendly. Furthermore, the proponent could consider using the available space sparingly, in such a way that up to 3 or 4 families can share an erf. This means that at least one erven can have one building complex that is divided into different apartments.

The following can therefore be put into practice:

- Making use of environmentally friendly building materials or recycled materials;
- Making use of non-toxic materials;
- Constructing different materials in one single erven;
- Using water efficiently during the construction and operation phases;
- Making use of energy efficient equipment;

- Making use of renewable energy; and
- Maximising construction activities during rainy seasons.

7.2. Waste Management

Generation of waste both during construction and the operation phases is inevitable. Considering its impacts as stated earlier, it is essential that waste should be effectively managed. For this reason, it is recommended that the technologies that will promote sound waste management should be considered throughout the construction phase, and during the operation phase. Below are some of the approaches or technologies that could be put into practice in efforts to ensure sound waste management.

- Re-using waste building materials / building rubbles and any other possible usable waste materials generated.
- Minimizing the construction waste through re-using and recycling of waste materials.
- Putting recycling into practice through developing a system of collecting the recyclable materials from the source.
- Taking away the disposable waste materials to approved disposal sites.
- Installing septic tanks for the purpose of managing sewage.
- Placing garbage bins and skip containers in various places within the development.

7.3. Energy Conservation

One of the environmental management practices is energy conservation. Such a practice entails placing significant efforts in the reduction of energy consumption through the efficient use of energy. When it comes to construction of mass houses, in many cases the sources of electricity are non-renewable (e.g. coal and nuclear energy), and often costly. However, for the long-term purpose of ensuring energy conservation in the planned buildings long term, it is essential to adopt energy efficient technologies that depend on renewable energy sources. Therefore, as a recommendation, the proposed development (especially the houses) should consider making use of alternative energy conservation technologies, such as use of the solar energy (including solar geysers) as much as necessary. In addition, energy saving LED bulbs are recommended to be installed in the houses, as they are considered to be energy efficient.

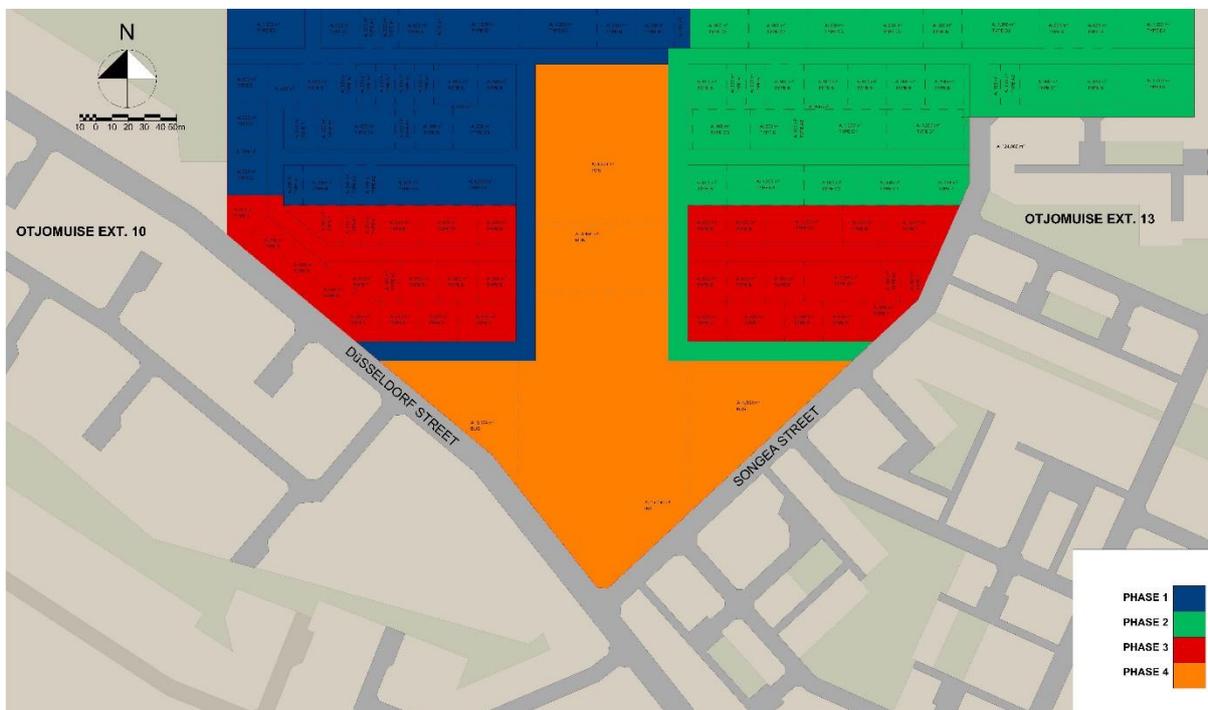
It is worthwhile to note that the increasing electricity tariffs in Namibia has led the Ministry of Mines and Energy (MME) to recommend the use of solar power. The solar energy supply technology is generated from a renewable energy source, and is environmental friendly. Noteworthy, Namibia has a sufficient source of solar supply. Nevertheless, the proponent should compare the costs of using the solar generated power and the other sources.

8. TECHNICAL SPECIFICATIONS

The proposed development will consist of a residential area, business area, a school, shop houses, public open space and a recreational area. These will provide services to new residents, local residents, neighbours, and road users, and visitors to the area,

including tourists. However, the envisaged development will be done in four (4) phases: Phases 1 – 3 will entirely be the construction of the residential areas while Phase 4 will be the construction of the business area, recreational facility, public place and the school (see Map 2). The overall construction will involve the following:

- Land preparation: clearing the vegetation to create space;
- Zoning of the area and fencing off according to the phases;
- Earthwork (filling) of the area (in phases);
- Construction according to the phases (houses (Phase 1, 2 & 3); businesses, recreation area, public place and a school (Phase 4));
- Installation of water pipes;
- Installation of electrical pipes;
- Erection of a transformer station or a solar power grid;
- Installation of street lights;
- Installation of sewage pipes and development of a sewerage system;
- Installation of waste bins along the streets; and
- Construction of roads



Map 2: Zonation of the proposed Extension 12 according to 4 development phases

9. POTENTIAL IMPACTS

The following are potential impacts, both positive and negative have been identified:

9.1. Positive impacts

- Aesthetic (visual) impact;
- Socio-economic;
- Urban development (including an increase in business activities);

- Increased access to services (housing, education, recreation, business retails at community's door steps);
- Purchase of new houses will benefit local banks;
- Expansion of residential and commercial facilities will benefit city revenue inflow; and
- Sales and income to be generation from the available services will boost tax revenue.

9.2. Negative impacts

- Environmental destruction / landscape damage;
- Biodiversity reduction (both local flora and fauna);
- Destruction of ecological balance;
- Possible impacts of activities associated with liquid, solid and air pollution;
- Increased noise pollution (especially from construction activities and vehicles on the road);
- Excessive use of water (a scarce commodity in Namibia);
- Increased possibility of water runoff (from road pavements);
- Increased solid waste pollution.

10. SUMMARY, CONCLUSION AND RECOMMENDATIONS

The assessment has anticipated both positive and negative impacts of the construction and operational activities on the environment and on the socio-economy. Along with the identified impacts, mitigation measures have been proposed to avoid the worst consequences. Further to that, alternative technologies have been recommended, which could contribute to the environmental integrity.

Looking at a broader picture, the proposed development is essential, and will be highly beneficial, considering the current socio-economic challenges facing Namibia at large, and Windhoek as a town. The overall positive impact of this development will be urban development, which includes employment creation and economic upliftment, availability of affordable houses, access to basic facilities, and increased tourism opportunities. However, the major socio-economic impact will mainly be felt in the operational phase.

Despite the positive impacts, there are anticipated negative environmental impacts, which if mitigated will not have worse consequences. The envisaged development will bring about a transformation in Windhoek, as it will expand the residential area in Otjomuise region, making more houses available to those currently in need. In other words, it will take Windhoek to another level of economic development.

The land environment will be negatively impacted by land degradation as a consequence of land clearing, which will cause a reduction of plant and animal species (min-fauna) diversity in the area. Nevertheless, there is a high possibility for plants to grow in the area, as the area is nominated by species with high growth rate. Good enough, no endangered species are found in the area. Most importantly, mitigation measures have been proposed, which should be

implemented by all means. Overall, the direct and indirect impacts are short-term, and of low significance.

Pollution is inevitable, especially during the construction phase. Air pollution, water pollution, land pollution and noise pollution are anticipated to be experienced during the construction phase to a greater extent, and minimally during the operation phase. All types of pollution have negative consequences, including health and environmental impacts, hence their effects need to be mitigated by all means. The direct impacts of air pollution are considered to be significantly moderate, however, short term during the construction phase. Similarly, they are likely to be moderate during the operation phase, but may have long-term impacts if not mitigated. In the same vein, water pollution is anticipated to have moderate to low impacts, both during the construction and operation phases. In terms of land pollution, the anticipated impact is likely to be low during the construction phase and high during the operation phase. Nevertheless, it needs to be mitigated to avoid the worst consequences in the long term. Positive impacts of waste have been identified, as it can contribute to economic development, hence the recommended need to invest in waste management. Apart from the rest of the type of pollution been discussed earlier, noise pollution is likely to be experienced, however, with low significance.

The proposed development will not only have negative impacts, it will have positive impacts too. Through this development, major socio-economic challenges such as lack of affordable and decent houses, unemployment, limited business opportunities and limited access to basic facilities such as educational and recreational, and lack of public open market space for small/micro enterprises will be partly addressed. The development will also make a significant contribution to the attainment of various development frameworks, such as the HPP, NDP 5, Vision 2030 and the SDGs. In terms of impacts, the contribution of the proposed development to the socio-economy will be high, and long-term during the operation phase. Moreover, depending on affordability, in order to contribute to the environmental integrity, the use of alternative technologies is highly recommended.

Although the development will have negative impacts on the environment, some of which may be significantly moderate, it is strongly recommended that the proposed mitigation measures be implemented. However, looking at socio-economic impacts, the benefits of the development can already be confirmed, meaning it will be highly beneficial to the Otjomuise community, and to Windhoek at large. It is therefore strongly recommended that an ECC should be awarded for the proposed development to go ahead. This scoping assessment has not recommended a full EIA, as there will be no need for specialist studies. For that reason, this scoping report is accompanied by an EMP.

11. ANNEXURE

11.1. Background Information Document

1. PURPOSE OF THE BACKGROUND INFORMATION DOCUMENT

The purpose of this Background Information Document (BID) is to provide the interested and affected parties (IAPs) with information on the proposed project. It has briefly provided information on the following:

- Background information on the proposed development of Otjomuise Extension 12;
- Environmental Impact Assessment (EIA) process to be undertaken; and
- Registration for the public as I & APs, and how to participate in the EIA process.

2. INTRODUCTION

OMBA Holdings Pty (Ltd) would like to transform the virgin land of Otjomuise Extension 12 into a multiple-use area, comprising of residential areas, educational facilities, recreational facilities, business facilities and facilities for public use. The whole idea has been motivated by the major and urgent housing need in Windhoek, and the fact that there are countless number of people who are not in positions to afford to buy houses. Consequently, OMBA Holdings has planned to invest resources in the construction of affordable houses in the said area. Along with the houses will be other facilities, namely: educational, recreational, businesses and open markets.

The nature of the proposed development requires that an EIA is/be conducted, to ensure that the possible environmental and social impacts of the proposed activities are identified, and that possible mitigation measures are in place/identified. This is in line with the provisions in the Environmental Management Act No. 7 of 2007 and its regulations of 2012, which emphasize that land use and developmental activities for commercial purposes cannot be undertaken without an Environmental Clearance Certificate (ECC).

Given the above background, OMBA Holdings has appointed Integrated Environmental Management Solutions (IEMS) to conduct an EIA for the proposed development. The overall aim is to identify the potential impacts of the Otjomuise Extension 12 Development Project. The EIA will take into consideration the positive and negative impacts associated with the development of the proposed area. It will pay particular attention to all the activities that will be involved, both during the construction, and the operational phases, and their associated impacts.

3. PROJECT AREA DESCRIPTION

Covering a surface area of approximately 124,059.85 m², the proposed development site, Otjomuise Extension 12 is located west of Windhoek, adjacent to Otjomuise Extension 10, the residential area that is currently in the development

process, with some houses already been constructed. It is further situated in close proximity of an industrial area indicated in the map (Map 1).



Map 1: Map of Otjomuise suburb indicating the proposed site (highlighted in red/maroon)

The proposed development site is currently pristine, and is covered by vegetation; predominantly grass, shrubs and bushes; and has never been developed for any use before. As a result, the development of such a site will require a wide range of expertise from various disciplines (urban planners, civil engineers, quantity surveyors, land surveyors, electrical engineers, water engineers, biodiversity specialists, hydrologists and builders among others) before it can be transformed into a habitable area.

Although located in a mountainous area, the surface area of Otjomuise Extension 12 is relatively flat to rough, with shallow hills on the periphery. Therefore, given its rough nature, the landscape within the site has created storm water runoff streams. Nevertheless, the area has been estimated to accommodate over 100 different-sized houses, a sport field for a school and the public, a school, shop houses and several facilities for retail and business.



Figure 1: Architectural design for the proposed development in Otjomuise Extension 12

4. TECHNICAL SPECIFICATIONS

- The intended development of Otjomuise Extension 12 will entail the construction of various facilities, as follows: different sized houses, a sport field, open space for the public, shops, schools and business area. To ensure success of this project, the following will be taken into consideration:
- Land planning (urban planning);
- Land surveying and quantity surveying;
- Land preparation (transformation of virgin land into a habitable area);
- Fencing off the construction zones (operating in 4 different phases);
- Construction of the facilities (in phases: houses, sports field, business complex, shops and schools);
- Water supply (including connection of Otjomuise Extension 12 to the Windhoek municipal water system);
- Electrical supply and electrical engineering);
- Development of the sewerage system and getting it connected to the main sewer line of the municipality;
- Waste management (solid waste-integrating Otjomuise Extension 12 in the Windhoek municipality collection schedule, liquid waste and air pollution);
- Construction of roads (civil engineering).

5. THE EIA PROCESS

The Environmental Management Act No. 7 of 2007 and the EIA Regulations of 2012 require environmental assessments to be conducted for all activities that may potentially impact the environment and the society at large. As it is the case with any environmental assessment, the EIA process for development of Otjomuise Extension 12 will involve the following steps.

- Identification of IAPs;
- Undertaking an environmental scoping study to identify environmental and social issues of concern and assess their significance;
- Undertaking a full EIA to assess the possible environmental and social impacts;
- Proposal of possible mitigation measures for negative environmental impacts; and
- Compilation of an Environmental Management Plan (EMP).

6. POTENTIAL IMPACTS

The following are the potential impacts of the development:

6.1. Positive impacts

- Aesthetic (visual) impact;
- Socio-economic (employment creation; affordable houses, income generation opportunities etc.);
- Urban development (including an increase in business activities);
- Increased access to services (housing, education, recreation, business retails at community's door steps);

- Purchase of new houses will benefit local banks;
- Expansion of residential and commercial facilities will benefit city revenue inflow;
- Sales and income to be generated from the available services will boost tax revenue; and
- Community empowerment.

6.2. Negative impacts

- Environmental destruction / landscape damage;
- Soil surface alternation;
- Biodiversity reduction (loss of both local flora and fauna);
- Destruction of ecological balance;
- Possible impacts of activities associated with liquid, solid and air pollution;
- Increased noise pollution (especially from construction activities and vehicles on the road);
- Excessive use of water (a scarce commodity in Namibia); and
- Increased possibility of water runoff (from road pavements).

7. PUBLIC CONSULTATION PROCESS

The Environmental Management Act of 2007 and the EIA Regulations of 2012 require that the public / IAPs should be involved in the EIA process. The aim is to provide the public / IAPs an opportunity to:

- raise any issues of concern regarding the proposed project/development;
- provide essential information and opinions that should be considered during the EIA process;
- identify relevant IAPs;
- support or appeal against the proposed development;
- propose possible mitigation measures for the potential negative environmental and social impacts; and
- recommend alternative project sites or other options of consideration.

As a requirement by the Environmental Management Act No. 7 of 2007, public/stakeholder consultation should be conducted in order to ensure transparency in the EIA process. The public can be consulted through one-on-one meetings, focus group meetings, or through public meetings to obtain people's views regarding the development. The information gathered through public consultation should in all cases be taken into consideration, and should therefore be included in the scoping and in the final EIA reports. Such reports should be shared with the public for comments and further input.

Further to the scoping and full EIA report, an EMP will be developed, presenting possible mitigation measures for the identified negative environmental impacts. The public is also expected to identify/propose possible mitigation measures, which should be included in the EMP.

The public is hereby invited to register as IAPs, by completing the form below.

11.2. Environmental Practitioners

OMBA Holdings Ltd appointed Integrated Environmental Management Solutions (IEMS) cc (2015/10614) to facilitate the application for an Environmental Clearance Certificate (ECC) with the Ministry of Environment, Forestry and Tourism (MEFT), to be issued upon approval of the EIA Report. IEMS is represented by **Dr. Raili Hasheela** as the team leader and consultant, and two other consultants: **Ms. Epfania Sheyavali** and **Mr. Lineekela Haipinge**.

Raili Hasheela is the Co-Director for Integrated Environmental Management Solutions CC. She has a strong background on environmental management and development, while her areas of expertise are research and project management. Raili holds a PhD in Environmental Management from Azteca University, a Masters Degree in Development Studies with specialization in Environmental Management, from the University of the Free State; an Honours Degree in Zoology from Rhodes University, a B.Sc Degree from the University of Namibia, a Postgraduate Diploma in Environment and Development from the University of KwaZulu Natal, and a Postgraduate Certificate in Environmental Engineering from the Cape Peninsula University of Technology.

For her professional background, Raili started working as a Warden (researcher) at the Ministry of Environment and Tourism (MET), after which she was promoted as a Conservation Scientist. While working as a Conservation Scientist, she was seconded to a project called Strengthening the Protected Areas System Strengthening Network (SPAN), where she was a Deputy Protect Coordinator, and assisted with the preparation for the full phase of the project. She then left the MET to work as a Project Manager for a project called Distance Learning and Information Sharing Tool (DLIST) that was implemented by EcoAfrica Environmental Consultants, where she

also worked as a researcher. After leaving EcoAfrica, Raili worked as a Programme Officer under the Energy and Environment Unit for the United Nations Development Programme (UNDP), after which she joined the Namibian Coast Conservation and Management (NACOMA) Project as a Monitoring and Technical Specialist, a project that was implemented by the MET. She then later joined another MET project called Protected Areas System Strengthening (PASS), as a Technical Advisor. Raili also worked as a Programme Analyst under the Sustainable Environmental Management and Enhanced Resilience to shocks (SEMER) portfolio.

Overall, Raili has a strong interest in integrated environmental management and sustainable development. She has conducted extensive research in the areas of knowledge management, protected area management, community-based natural resource management (CBNRM), biodiversity conservation, climate change, waste management, water resource management and coastal management. She has a very strong interest in integrated environmental management and sustainable development. Furthermore, Raili has experience in environmental assessment, review of ESIA reports and other reports, development of Environmental Management Plans (EMPs), proposal writing, report writing, development of policies and action plans, and many more documents. Her goal is to make

a significant contribution to environmental management and sustainable development at large.

Epfania Sheyavali holds a Masters of Science, Environmental and Resource Management (ERM) from Brandenburg University of Technology (BTU) in Germany. She also holds a Bachelor of Science with specialization in Environmental, Molecular and Physiological Biology from the University of Namibia.

Epfania has worked as a Researcher at the Desert Research Foundation of Namibia (DRFN), where she also worked as a Student Coordinator and Logistics Support. Furthermore, Epfania worked as a Regional Coordinator, Scaling up community resilience to Climate Change - Northern Namibia (SCORE) under the MEFT. She also worked as a translator for the development of the Northern Crop Livestock Master Plan that was supported by the Japan International Cooperation Agency. Furthermore, she worked as a translator for various projects at the Institute for Socio Ecological and Research. At the moment Epfania is the Supervisor for the Waste Management Division under the Municipality of Otjiwarongo. She also a Technical Consultant at IEMS CC.

Epfania's areas of expertise are mainly on Environmental and Resource Management aspects, including water resources management, pollution control (water, land and atmosphere) and waste management, ecology and biodiversity conservation, EIA, environmental law, land use and protection to name a few. As part of her experience, Epfania has been

involved in various project development and implementation in the field of renewable energy, water resource management such as the CuveWaters Project and the IWRM project in the CUVELAI basin, climate change and conservation agriculture. She has also been involved in conducting stakeholder analysis of different projects, documenting lessons learned from various projects of land, water conservation, and climate change. Furthermore, she has valuable experience in research, project management (planning, implementation, monitoring & evaluation), as well as in workshop preparations and facilitation, report writing and public presentations. She also coordinated various student environmental projects towards pollution control, land use and conservation.

Lineekela Haiping hold a B.Sc Degree in Environmental Science from the JSS University in India. He also holds an Advanced Certificate in Education from the University of NorthWest, and a Basic Education Teachers Diploma from Ongwediva College of Education. Lineekela also holds an Advanced Diploma in Intellectual Property and Competition Law and Business Law. He is further certified in ISO 1400:2015 (Environmental Management System), in ISO 9001:2015 (Quality Management Systems) and in ISO 45001: 2018 (Principles of occupational Health and Safety Management Systems. Lineekela also has a Diploma in Legal Studies (Law), a Diploma in Project Management Practice, a Diploma in Workplace Safety and Health, Occupational Health and Industrial Hygiene, and an Advanced Diploma

in Legal studies and Business (Business Law),

Lineekela has valuable experience in research, environmental assessment, environmental and resource management, editing, design, environmental education, curriculum development and education management. While at JSS University, Lineekela did an internship at Karnataka State Control Board where he did a project on advanced water treatment column design. Lineekela has worked as a teacher, an environmental consultant and Marketing manager at IEMS, and as a Lecturer for Occupational Health and Safety at Atlantic Training Institution. At the moment, he is the Head of Department at the Occupational Health and Safety Department at Atlantic Training Institution. Lineekela also works as a part time Safety Officer at SUSPECO Trading CC/Jiangsu Zhengtai Construction Group PTY.

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