URBAN DYNAMICS
town and regional planners

APPLICATION FOR ENVIRONMENTAL CLEARANCE:

SCOPING ASSESSMENT

FOR THE CONSTRUCTION OF ROADS, AND ASSOCIATED INFRASTRUCTURE THROUGH THE FORMALISATION OF ONAWA EXT 1 TO 7 OSHANA REGION

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DOCUMENT INFORMATION

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

1 INTRODUCTION

The Oshakati Town Council is undertaking the formalisation and establishment of new townships within the Onawa area of Oshakati, Oshana Region. This initiative forms part of the Council's mandate to ensure orderly urban growth, address housing demand, and improve access to essential services.

To comply with the Environmental Management Act (Act No. 7 of 2007) and its Regulations, the project requires an Environmental Clearance Certificate (ECC) before implementation, due to the construction of bulk infrastructure and public roads associated with the township development.

Urban Dynamics Africa (Pty) Ltd. has been appointed by Oshakati Town Council as the Environmental Assessment Practitioner (EAP) to facilitate the environmental authorisation process. This report presents the baseline information, project description, identified potential impacts, and proposed mitigation measures for consideration by the Environmental Commissioner in accordance with Section 33 of the Environmental Management Act.

2 BACKGROUND

The Onawa layouts were designed in 2015. Over the years, the Oshakati Town Council surveyed these layouts and allocated erven to residents as per the surveyed plans. Basic services such as water and electricity have already been extended to parts of the area.

Initially, Council resolved to formalise Onawa Extensions 1–3 (Portions 129–131). Following public consultation, the scope was expanded to include Onawa Extensions 4–7 (Portions 132–135). These portion numbers were formally reserved by the Surveyor General's Office at the Ministry of Agriculture, Water and Land Reform.

The project is considered a strategic urban expansion initiative, ensuring the structured growth of Oshakati while addressing the housing backlog and promoting formal property ownership.

3 PURPOSE OF THE PROJECT

The purpose of the proposed project is to formalise and establish residential townships in the Onawa area of Oshakati to ensure orderly urban expansion and address the town's housing demand. The initiative will provide secure property ownership to existing residents, reduce informal settlement growth, and enable the provision of essential bulk services such as water, sewerage, electricity, and roads.

By formalising the Onawa Extensions 1–7, the Oshakati Town Council seeks to support the planned growth of the town, improve service delivery, and promote sustainable urban development in line with national housing and planning priorities.

4 NATURE OF THE ACTIVITY

Township establishment, in itself, is not a listed activity under the Environmental Management Act (Act No. 7 of 2007) and its Regulations. However, the construction of bulk infrastructure and public roads required for the township development are listed activities in terms of the Environmental Impact Assessment Regulations, GN No. 30 of 2012. These works therefore require an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MEFT).

The following listed activities are triggered under Section 10: Infrastructure of the Regulations:

- 10.1 The construction of –
  - (b) Public roads.
- 10.2 Route determination of roads and design of associated physical infrastructure where –
  - (a) it is a public road.

In addition, depending on the alignment of bulk pipelines and drainage works, the following activities under Section 8: Water Resource Developments may apply if works fall within sensitive areas such as oshana's, flood lines, or catchment areas:

- 8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems;
- 8.8 Construction and other activities in watercourses within flood lines;
- 8.9 Construction and other activities within a catchment area.

This application therefore focuses on the formalisation of Onawa Extensions 1–7 and the associated bulk service infrastructure that legally requires environmental authorisation.

Key Project Activities

- **Township Formalisation**
  Regularisation of surveyed layouts (originally designed in 2015) to establish legally recognised extensions and secure property ownership for existing and future residents.
- **Bulk Infrastructure Provision**
  Installation of water supply pipelines, sewer networks, and electricity distribution systems to service the newly created erven. These may include pipelines traversing low-lying areas or flood lines.
- **Road Infrastructure Development**
  Construction of access and internal public roads, including route determination and design of associated physical infrastructure.
- **Urban Service Delivery**
  Strengthening and expansion of essential services, including potable water and electricity, which have already been partially extended to the Onawa areas by the Oshakati Town Council.

5 LEGISLATION

The following table provides the legislative framework against which this application should be assessed. It outlines the key statutes, their relevant provisions, and the specific project implications for the proposed formalisation of Onawa Extensions 1–7.

Table 1: Legislative Framework

Statute / Policy	Relevant Provisions	Project Implications
The Constitution of the Republic of Namibia, 1990	Article 95(l) – The State shall promote sustainable resource management and biodiversity. Article 16 – All persons shall have the right to acquire, own and dispose of property; State must promote secure tenure.	Ensures ecological sustainability in development and supports secure property ownership/tenure rights for Onawa residents through township formalisation.
Environmental Management Act No. 7 of 2007 and EIA Regulations (GN No. 30 of 2012, GN 57/2007)	Sections 10.1 & 10.2 – Construction of public roads, bulk pipelines, and associated infrastructure are listed activities. Sections 8.8, 8.10, 8.11 – Activities in watercourses, flood lines, and wetlands require clearance.	Requires Environmental Clearance Certificate (ECC). Determines alignment of streets, risk of flooding, wastewater pipeline design, and mitigation of ecological risks.
Water Resources Management Act, 2013 (Act 11 of 2013)	Section 100 – Development in riparian zones requires a permit. Section 102 – No activity may block natural flows of wetlands or oshanas. Section 141 – Restrictions on excavating, filling, or erecting structures within riparian zones.	Township must avoid altering oshanas/floodplains. If unavoidable, permits must be obtained from Ministry of Agriculture, Water & Land Reform.
Forestry Act, 2001 (Act No. 12 of 2001)	Protects certain tree species; removal of protected or listed trees requires a permit.	Where mature or listed trees (e.g., fruit trees, Makalani palms) are affected, permits must be obtained from Directorate of Forestry and trees incorporated into layout where possible.
Public Health Act, 1919 (Act No. 36 of 1919, as amended) and Health & Safety Regulations	Prevents nuisances such as waste, litter, unsafe sanitation, or dust that can harm public health.	Construction and operation must include sanitation, dust suppression, and proper waste management to avoid public health risks.
Labour Act, 2007 (Act No. 11 of 2007)	Provides for fair labour practices, health and safety at workplaces, and use of local labour.	Construction contractors must comply with health & safety standards, ensure fair labour conditions, and promote local employment.
Cabinet Compensation Policy Guidelines for Communal Land (as amended, 2020)	Provides procedures for compensating people for relocation, homesteads, fruit trees, and cultivated fields in communal areas.	Where fields or structures are displaced, Oshakati Town Council must compensate affected owners in line with this policy.
Urban and Regional Planning Act, 2018 (Act No. 5 of 2018)	Governs township establishment, subdivision, and zoning. Requires layouts to comply with approved zoning schemes and national standards.	Township layout must comply with the Oshakati Zoning Scheme and be approved by the Urban and Regional Planning Board (URPB).

Statute / Policy	Relevant Provisions	Project Implications
Oshakati Town Planning and Zoning Scheme	Provides local planning controls and zoning standards for land use, erven size, road hierarchy, and public open space.	Ensures that Onawa Extensions 1–7 formalisation aligns with Oshakati's urban growth strategy and zoning framework.

6 METHODOLOGY

The methodology followed by Urban Dynamics Africa (UDA) in this Scoping Assessment was designed to assess the site conditions, identify potential environmental sensitivities, and ensure that the planning approach supports sustainable development. The assessment considered the strengths, weaknesses, opportunities, and threats (SWOT) of the project site, with the aim of harnessing strengths, mitigating weaknesses, utilising opportunities, and avoiding or minimising threats. Both the natural and social environments within which the project is set were reviewed.

6.1 SITE INFORMATION AND TOPOGRAPHY

UDA conducted comprehensive site analysis in August 2015, prior to preparing the settlement layout, to establish a baseline understanding of existing conditions. Subsequently, UDA undertook site visits in May and July 2025 to identify the existing structures, infrastructure, topography, land uses, and how the settlement is currently functioning. The council surveyed these erven and allowed residents of the settlements on the surveyed erven.

6.2 PUBLIC CONSULTATION

Urban Dynamics launched a public consultation campaign to ensure that any person interested in the project will have an opportunity to register as a stakeholder. Newspaper notices were placed in two separate newspapers simultaneously for two successive weeks, and a notice of intent was placed at the site. The advertisements that were placed are attached under Appendix "C". Representatives of Urban Dynamics and the Oshakati Town Council, held a community meeting on the 22nd May 2025 at Onawa.

Figure 1: Community Meeting

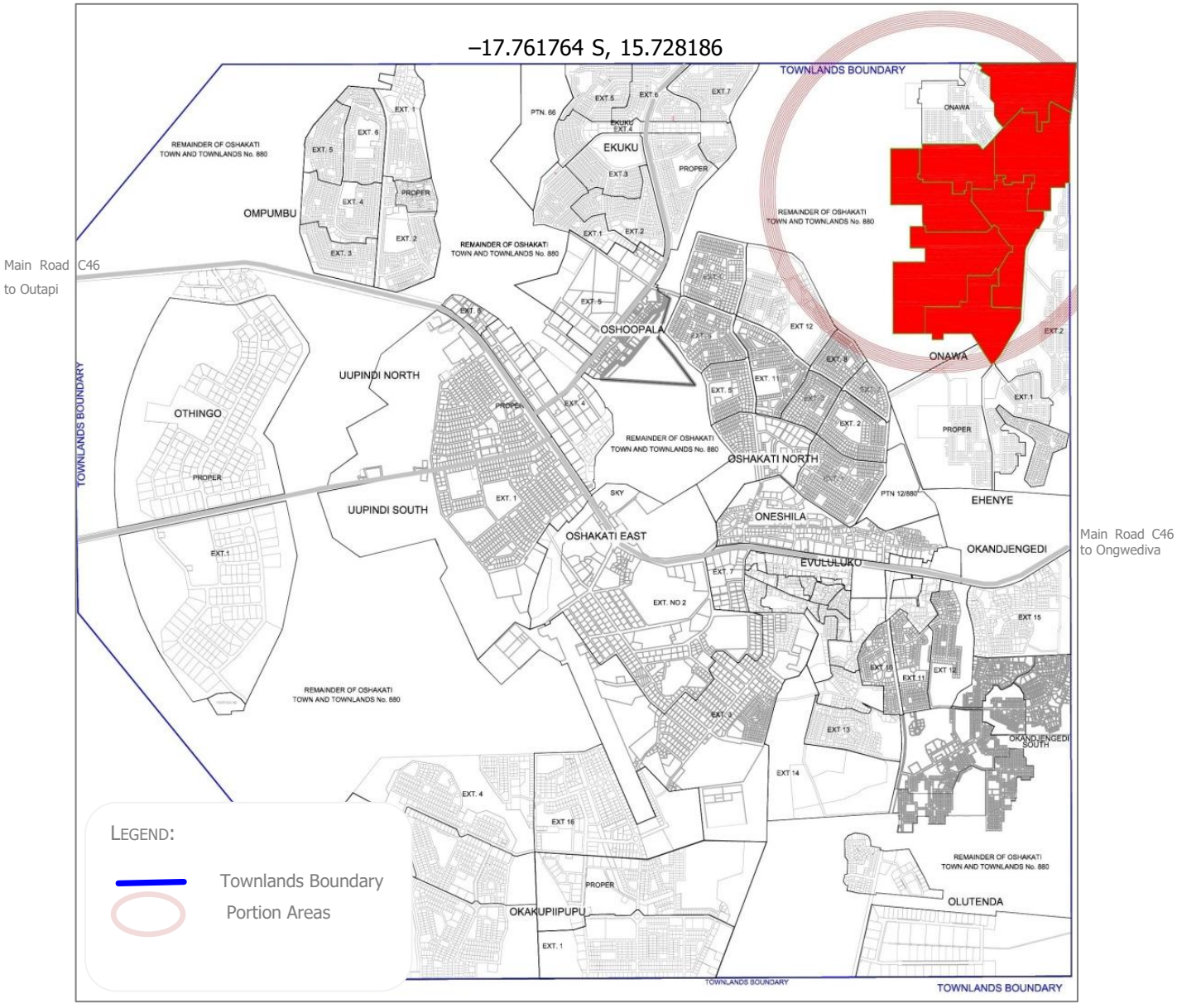
7 DESCRIPTION OF THE SITE

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

7.1 LOCATION OF THE SITES

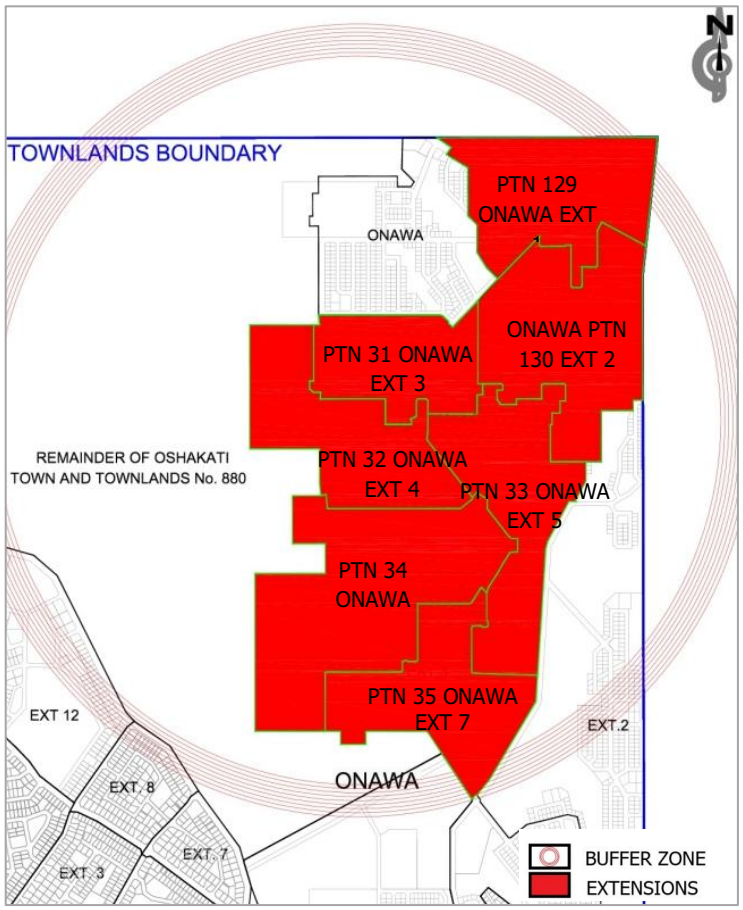
The proposed development is located in Onawa on Portions 129 to 135 of the Remainder of Oshakati Town and Townlands No. 880, within the Oshana Region under Registration Division A. The sites lie to the south of the D3671 Okatana–Ongwediva District Road at geographic coordinates –17.761764 S, 15.728186 E. A locality plan is provided in Appendix B and illustrated in Figure 2.

Figure 2: Locality of the Project Area



7.2 OWNERSHIP, SIZE, AND SHAPE OF THE PORTION

Figure 3: Shape of the Portion



The proposed development is located in Onawa on Portions 129 to 135 of the Remainder of Oshakati Town and Townlands No. 880 (to be known as Extension 1 to 7 Onawa), within the Oshana Region under Registration Division A. The sites are situated south of the D3671 District Road linking Okatana and Ongwediva, at geographic coordinates –17.761764 S, 15.728186 E. A locality plan is provided in Appendix B and illustrated in Figure 3.

The land forms part of the Oshakati Townlands, with Oshakati Town Council as the registered legal owner. Existing homesteads have been incorporated into the township layout, thereby minimising displacement of residents. Compensation requirements are therefore limited to mahangu fields that remain in cultivation and will be addressed in line with the applicable Compensation Policy.

The project sites collectively cover an area of approximately 236 hectares, with individual extents as follows: Portion 129 (21.5 ha), Portion 130 (38.1 ha), Portion 131 (30.4 ha), Portion 132 (27.8 ha), Portion 133 (32.8 ha), Portion 134 (50.9 ha) and Portion 135 (34.9 ha). The overall layout is irregular in shape, as illustrated in Figure 3 and summarised in Table 2.

Table 2: Portion Size

PORTIONS/ EXTENSIONS	AREA (HA)	ZONING
Portion 129 (Ext 1)	21.5	Undetermined
Portion 130 (Ext 2)	38.1	Undetermined
Portion 131 (Ext 3)	30.4	Undetermined
Portion 132 (Ext 4)	27.8	Undetermined
Portion 133 (Ext 5)	32.8	Undetermined
Portion 134 (Ext 6)	50.9	Undetermined
Portion 135 (Ext 7)	34.9	Undetermined

7.3 LAND USE ACTIVITIES

The site is currently occupied by cultivated muhango fields and existing structures, which include both permanent and temporary homesteads. Road tracks traverse the land and some open areas are used for grazing livestock. Residents are aware that they are within the Oshakati Townlands and will be impacted by future development. The township layout accommodates homesteads within planned erven in order to minimise resettlement and compensation requirements by the Town Council. Figure 4 illustrates the existing land use activities.

Figure 4: Land Use Activities

7.4 ACCESS AND UTILITY SERVICES

The following access and utility services are available at the project site and will be upgraded or extended as part of the township formalisation process:

7.4.1 Road Access

The Onawa Extensions are connected to Oshakati's broader road system through the D3671 District Road, which links Okatana in the west with Ongwediva in the east. This corridor provides the primary external access to the project area.

Within the site, a hierarchical road network has already been established in accordance with the 2015 layout prepared by Urban Dynamics Africa. The layout's entry points connect to surrounding neighbourhood roads, ensuring integration with Oshakati's transport system.

The internal network consists of:

- **20m distributor roads** serving as the primary access routes;
- **15m distributor roads** feeding neighbourhoods into the 20m system;
- **18m distributor roads** providing intermediate circulation;
- **13m access and collector roads** linking erven to the higher-order roads.

As part of the road construction, stormwater drainage measures were incorporated, including culverts at key crossing points, to channel seasonal floodwaters from the oshanas and prevent road washouts. These provisions are illustrated in Figure 5.

Figure 5: Drainage Features

7.4.2 Water Connection

Bulk water to Onawa is supplied by NamWater in coordination with the Rural Water Supply Division of the Ministry of Agriculture, Water and Land Reform. Oshakati's reticulated water system has already been extended to parts of the area, with additional connections planned to provide full coverage to all erven.

7.4.3 Electrical Supply

Electricity to the Onawa Extensions is provided through Oshakati Premier Electric. A number of erven are already connected to the grid, and cabling infrastructure has been installed in parts of the site. However, not all erven are yet serviced. Full reticulation across the entire development will be implemented as part of the township formalisation process.

Figure 6: Existing On-site Pit Latrines and Electrical Network

7.4.4 Sewerage

Formal Oshakati is serviced by a sewerage reticulation network and pump station. In Onawa, however, households that are not yet connected to the sewer network continue to rely on on-site sanitation systems such as pit latrines. The township establishment project will extend sewerage reticulation to cover all erven, thereby phasing out reliance on pit latrines.

7.4.5 Communication

The area is covered by national telecommunications networks and has access to mobile phone services, radio, television, and other media.

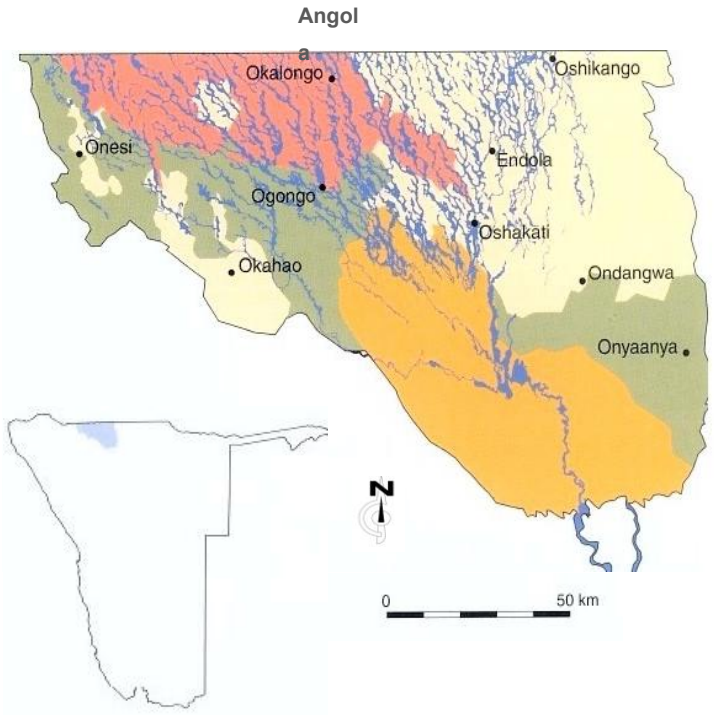
7.5 CULTURAL RESOURCES

No cultural or historical heritage resources of significance were identified within the project area. The land has already been settled and partly developed with permanent and temporary structures, road networks, and cultivation fields, which has altered its original condition. As such, no impacts on archaeological or heritage sites are anticipated.

7.6 ENVIRONMENTAL CHARACTERISTICS AND TOPOGRAPHY

7.6.1 Natural Environment

Figure 6: Vegetation within the Cuvelai Delta



Source Mendelsohn et al., 2002

Onawa Portion 129 to 135 is situated within the Oshana Region within the Cuvelai Delta. The Cuvelai Delta forms a network of drainage channels known as oshanas. Oshanas periodically carry water after local rain or good fall in higher areas 300 km from the north, forming the Cuvelai Drainage System, which spread across southern Angola, exists in the Etosha Pan (Mendelsohn et al., 2002).

LEGEND:

- MOPANI SCRUBLAND AND CUVELAI OSHANA
- MOPANI WOODLAND AND CUVELAI OSHANA
- OPONONO SALINE GRASSLANDS
- OSHANA-KALAHARI MOSAIC

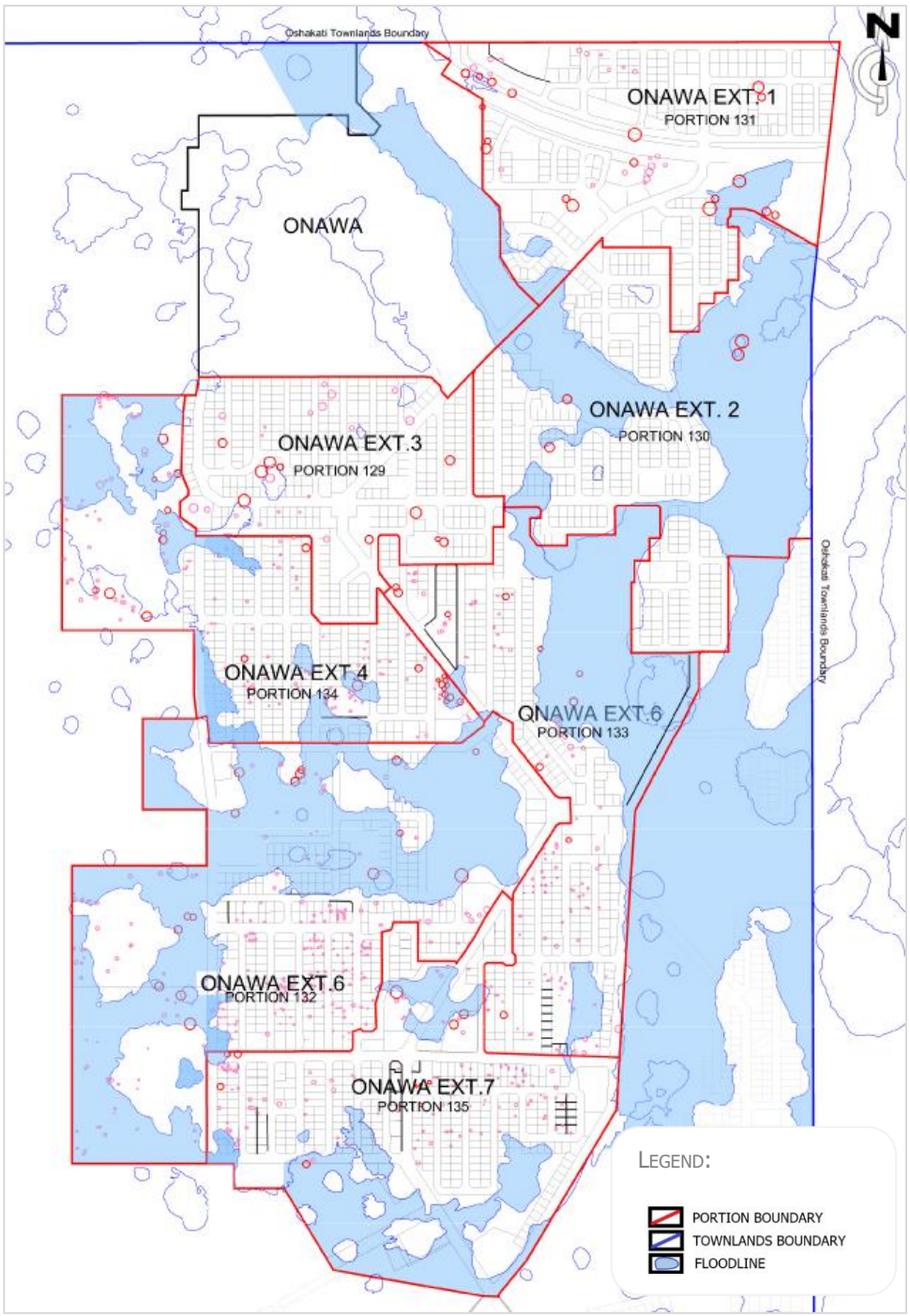
7.6.2 Topography and Flooding

The project site is generally flat with a gentle slope towards the south and east. The topography is typical of the Cuvelai floodplain, characterised by broad sandy surfaces interspersed with shallow depressions (oshana channels) that retain water during the rainy season.

Land situated below the 1,095 m elevation line is considered flood-prone. Within the Onawa Extensions, these low-lying areas have been mapped and incorporated into the layout design primarily as public open space in order to limit development risks.

However, a small number of erven are located within or adjacent to these depressions. In such cases, filling and ground-raising measures will be required to ensure that building platforms are above seasonal flood levels. The use of culverts and stormwater channels within the planned road network will further assist in directing floodwaters safely through the township and reduce the risk of localised flooding. Figure 7 shows the flooded areas within the site.

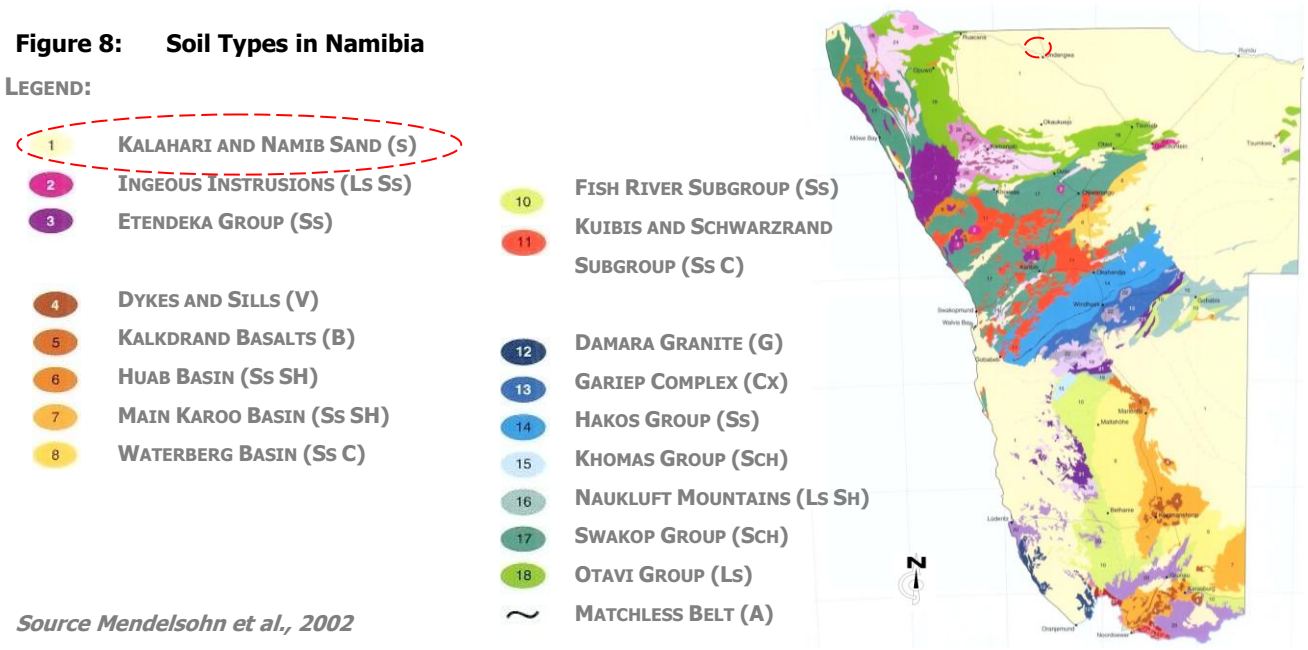
Figure 7: 1095 m Flood Line



7.6.3 Soil Conditions

Surface soils across the region are sand-dominated, with some areas covered by the Otavi Group. Figure 8 indicates that Onawa is situated within the Kalahari and Namib Sand area of Namibia (Mendelsohn et al., 2002). The image below shows the sandy soil surface at the site.

Figure 8: Soil Types in Namibia



Source Mendelsohn et al., 2002

Figure 9: Soil Conditions at the Site

7.6.4 Vegetation Conditions

Figure 10: Fruit Trees

Onawa's vegetation consists of the Oshana-Kalahari Mosaic (Mendelsohn et al., 2002). Trees on the site include Makalani Palm Trees (Hyphaene petersiana), Jackalberry Trees (Diospyros mespiliformis) and the Manketti Trees (Schinziophyton Reatanenii), i.e.

As indicated in Figure 10**,** large trees, shrubs, and grass vegetation form

clusters on the site. Due to already existing structures on the portions, the development site has low green vegetation biomass.

During the site's planning and construction phases, emphasis should be placed on protecting fruit, and large trees.

Figure 11: Clusters of Vegetation

7.6.5 Habitats on Site

The natural landscape traditionally comprises a mosaic of shallow drainage channels locally known as oshanas, interspersed with islands of higher ground. These oshanas form critical seasonal wetland habitats that support diverse flora and fauna adapted to periodic flooding regimes. However, the rapid expansion of human settlements, associated infrastructure such as roads and land clearance for development has extensively modified these natural systems.

The pre-existing layout of the area has resulted in significant ecological degradation, rendering the ecosystem no longer pristine or fully functional at the ecosystem level. Anthropogenic activities have fractured the natural habitat patches, greatly diminishing indigenous vegetation cover and habitat complexity, and consequently reducing ecological resilience and biodiversity function. Given the area's setting within the flood-prone Cuvelai system, the remaining habitat patches are fragmented and experience altered hydrological regimes due to drainage and land use changes, which further limits their environmental functionality.

Furthermore, this ecological deterioration stems from cumulative pressures, notably the proliferation of other informal and formal settlements within the area. Collectively, these factors have resulted in soil disruption and general decline biodiversity.

This disturbed landscaped may be best described as an impacted ecosystem, where the interplay of settlement growth, hydrological alterations, and land clearance have reduced the integrity of natural habitats and ecosystem services. Conservation or restoration efforts in such contexts must consider

the residual ecological values of fragmented patches and hydrological connectivity that sustains these semi-arid wetland environments.

7.6.6 Climate, Wind Directions, and Rainfall

Namibia is a hot and dry country, and due to low levels of humidity in the air, the country experiences low levels of cloud cover and rain and extremely high rates of evaporation. The average monthly temperature at Onawa ranges from 17°C in July to 36°C in December. The fewest hours of sunshine experienced per day is about 7 hours in January when there is a lot of cloud cover, and the area receives the most rain. From May to September, Oshakati has about 10 hours of sunlight each day.

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

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

7.7 STATUS OF PROTECTED AREA

The site itself has no protected status. However, the oshanas/watercourses, fruit-, large trees, and clusters of trees are environmentally sensitive areas within the development site and should be considered.

7.8 SUMMARY OF THE HABITATION ON SITE

Due to prior settlement and land-use activities, the ecological condition of the site has been extensively modified. The land can best be described as an impacted ecosystem, no longer pristine and with reduced biodiversity and ecological functionality.

Key features include:

- The project covers Onawa Extensions 1–7 (Portions 129–135 of the Remainder of Oshakati Town and Townlands No. 880), situated at coordinates –17.761764 S, 15.728186 E, south of the D3671 road between Okatana and Ongwediva.

- Provision is made for 1,265 erven, of which 1,175 are zoned residential, with additional general residential, institutional, business, and public open space erven.
- The area lies within the Cuvelai Delta, characterised by seasonal flooding and oshanas/watercourses crossing the site. To mitigate flood risk, erven in low-lying areas will require filling to elevate them above seasonal water levels.
- Vegetation is typical of the Oshana-Kalahari Mosaic, including Makalani Palm (Hyphaene petersiana), Jackalberry (Diospyros mespiliformis), and Manketti Tree (Schinziophyton rautanenii).
- Scattered larger trees remain, but low-level vegetation is limited due to cultivation and settlement. No large wild mammals are resident within the site.

The environmental screening found no significant biodiversity concerns requiring further ecological assessment. However, the layout must accommodate oshanas, watercourses, and mature trees. Where removal of listed trees is unavoidable, permits must be obtained from the Directorate of Forestry.

7.9 ADJACENT ACTIVITIES

The Onawa Extensions border mixed-use neighbourhoods, including Onawa Proper, Ehenye Proper, and Ehenye Extensions 1 and 2, with a predominantly residential character. To the north, the site is bounded by the D3671 road and open, undeveloped Oshakati Townlands (Farm No. 880).

Currently, no large-scale construction is taking place in the immediate surroundings. However, further roadworks and bulk infrastructure servicing are anticipated as part of phased township development in Onawa and nearby extensions.

7.10 PROJECT AREA OF INFLUENCE

The Area of Influence extends beyond the township boundaries to include:

- Directly affected land parcels within Onawa Extensions 1–7;
- Neighbouring communities in Onawa Proper, Ehenye Proper, and Ehenye Extensions 1–2; and
- Associated infrastructure corridors, including sewer pipelines, road alignments, and drainage channels.

The AoI encompasses both direct environmental impacts (e.g., flooding, vegetation clearance, construction disturbance) and indirect social impacts (e.g., dust, noise, vibration, traffic disruptions).

Positive impacts expected across the AoI include:

- Provision of urgently needed serviced land;
- Formalisation of land tenure and reduction of informal settlement pressures;

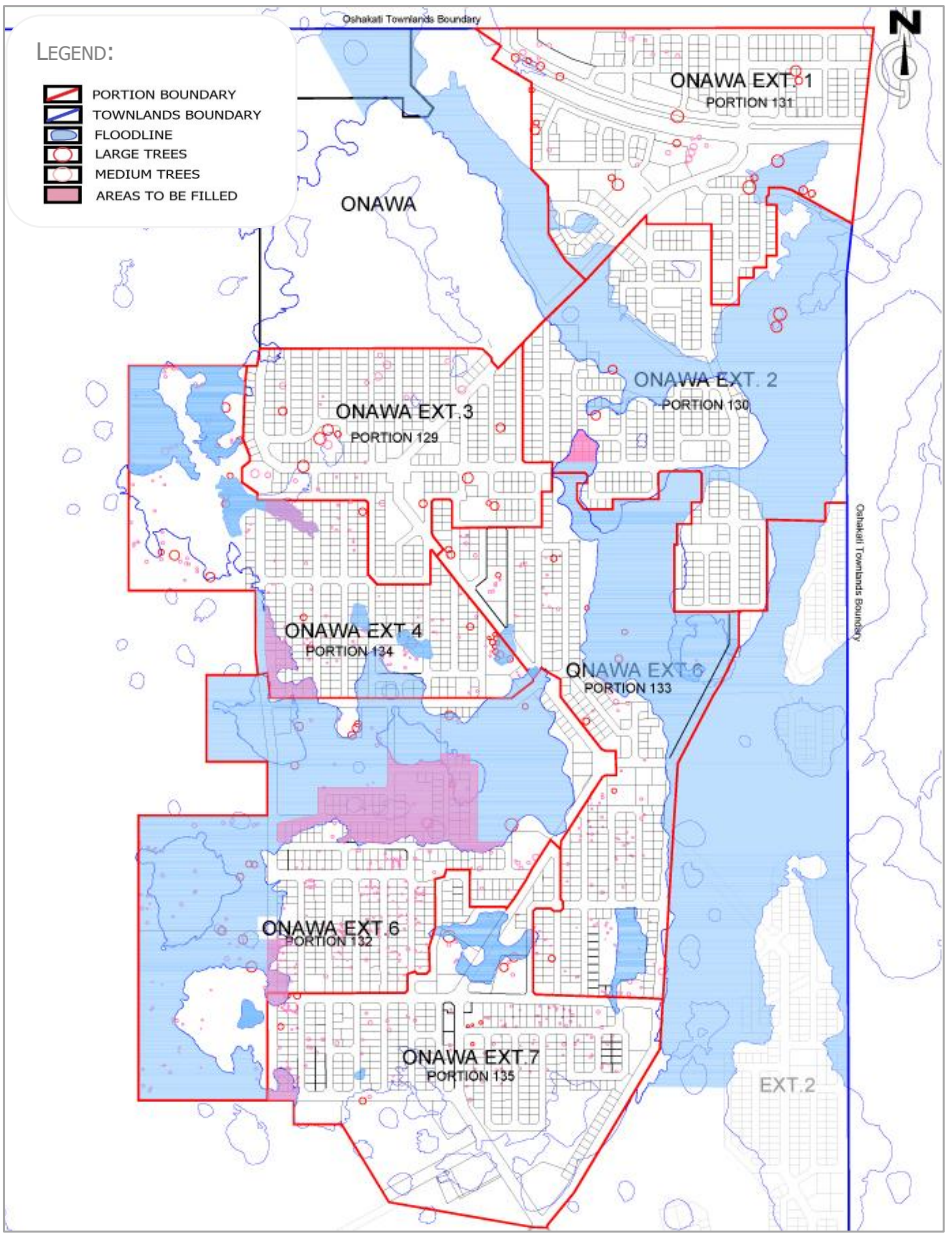
- Short-term construction employment and local SME opportunities; and
- Long-term council, regional, and national economic benefits through taxes, service charges, and economic activity.

7.11 SUMMARY OF THE PLANNING CONSTRAINTS

As indicated on Figure 12, the following constraints must be considered in the township layout:

- Clusters of mature/fruit trees, which require conservation or permits for removal under the Forestry Act;
- Oshanas and seasonal flood lines, which constrain development and must be reserved as Public Open Space or incorporated into stormwater drainage planning,
- Erven within flooded areas.

Figure 12: Planning Constraints



8 THE FORMALISATION PROJECT

The Oshakati Town Council intends to formalise Portions 129–135 of Oshakati Town and Townlands No. 880, covering Onawa Extensions 1–7. The project seeks to transform the area into fully serviced mixed-use neighbourhoods that address the growing housing demand in Oshakati while providing opportunities for business, institutional, and community facilities. The project also aims to secure tenure for existing residents and ensure sustainable urban growth in line with the Oshakati Zoning Scheme.

8.1 LAYOUT DETAIL

The proposed layout rezones the portions from Undetermined to a mix of Residential, General Residential, Business, Institutional, Civic, Recreational, and Public Open Space (POS). Existing homesteads have been incorporated into planned erven wherever possible, thereby minimising displacement. Figure 12: Planning Constraints shows the UDA 2015 layout.

Table 3: Erf Sizes and Zonings

Zoning	# Erven	Area (m²)	% of Total
Residential	**1,973**	**694,740**	**29%**
General Residential	**68**	**168,666**	**7%**
Business	**48**	**43,950**	**2%**
Institutional	**15**	**213,510**	**9%**
Civic	**2**	**5,583**	**<1%**
Recreational	**1**	**38,113**	**2%**
Public Open Space	**43**	**606,805**	**29%**
Remainder/Streets	**–**	**594,253**	**25%**
TOTAL	**2,150**	**2,365,620**	**100%**

Note: A portion of the designated Public Open Space (POS) corresponds to flood-prone areas identified below the 1,095 m contour line.

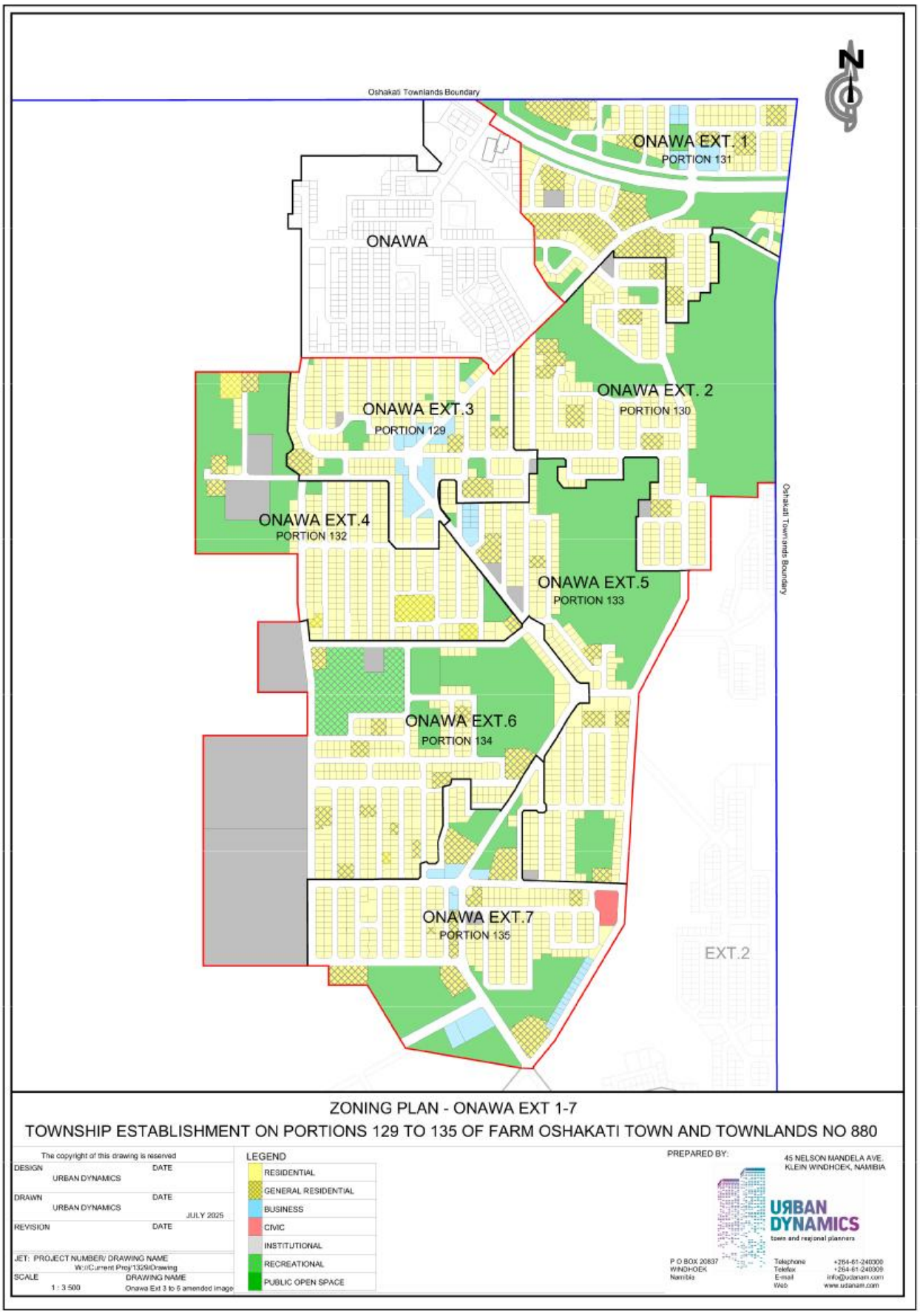
8.1.1 The Street Layout

The street system connects with the wider Oshakati road network via the D3671 district road. A hierarchical road layout ensures accessibility and circulation within the township:

- **20 m distributor roads** serve as primary access routes.
- **15 m distributor roads** connect neighbourhoods into the main routes.
- **18 m distributor roads** provide intermediate links.
- **13 m access/collector roads** provide direct access to erven.

Stormwater culverts are incorporated at crossing points to facilitate drainage and prevent washouts.

Figure 13: The Proposed Layout



8.1.2 Planned Bulk Infrastructure

The township is serviced with the following bulk infrastructure:

- **Roads:** A gravel road network ranging from 13–20 m in width.
- **Water Supply:** Extension of NamWater/Oshakati connections to ensure coverage to all erven.
- **Sewerage:** A pump station and closed reticulation system to replace reliance on pit latrines.
- **Electricity:** Distribution and reticulation through Oshakati Premier Electric, including transformer bases and streetlights.
- **Stormwater Drainage:** Channels and culverts designed to accommodate seasonal flows along oshanas.

8.1.3 Construction Activities

The construction phase will involve:

- Light bush clearing and removal of informal waste.
- Earthworks (levelling, trenching, backfilling).
- Installation of roads, pipelines, sewer lines, and electrical infrastructure.
- Erection of streetlights, transformer bases, and electrical poles.
- Connection of bulk infrastructure to municipal systems.
- Placement of safety signage, fencing, and traffic barriers.

Construction equipment will include excavators, graders, water trucks, tipper trucks, compactors, trenchers, and hand tools.

9 POTENTIAL IMPACTS

During the preparation of the Onawa layout, the planning team continuously assessed both positive and negative environmental and social impacts. Where possible, the design was adapted to avoid or reduce risks, integrate natural features, and enhance project benefits. This section therefore provides a preliminary assessment of potential impacts and highlights the preventative design measures already integrated into the layout.

It is important to note that detailed mitigation and management measures will be set out in the Environmental Management Plan (Annexure 6), which will guide implementation during both the construction and operational phases.

9.1 SUMMARY OF POTENTIAL IMPACTS

The formalisation of Onawa Extensions 1–7, combined with upgrading of bulk infrastructure and road systems, presents a range of potential environmental and social impacts:

9.1.1 Benefits of the Project

- Provision of fully serviced erven.
- Formalisation of land tenure, reducing informal settlement pressures.
- Stimulation of economic activity and employment opportunities.
- Improved health, safety and wellness through access to services and better circulation.

9.1.2 Potential Negative Impacts during Construction

- Vegetation removal and tree loss.
- Dust and air pollution.
- Noise from construction machinery.
- Increased traffic and safety risks.
- Health and safety risks to workers and residents.
- Construction waste generation.

9.1.3 Potential Negative Impacts during Operations

- Risk of flooding in low-lying areas.
- Waste generation and pollution if not properly managed

9.2 DETAILED POTENTIAL IMPACTS

9.2.1 Project Benefits

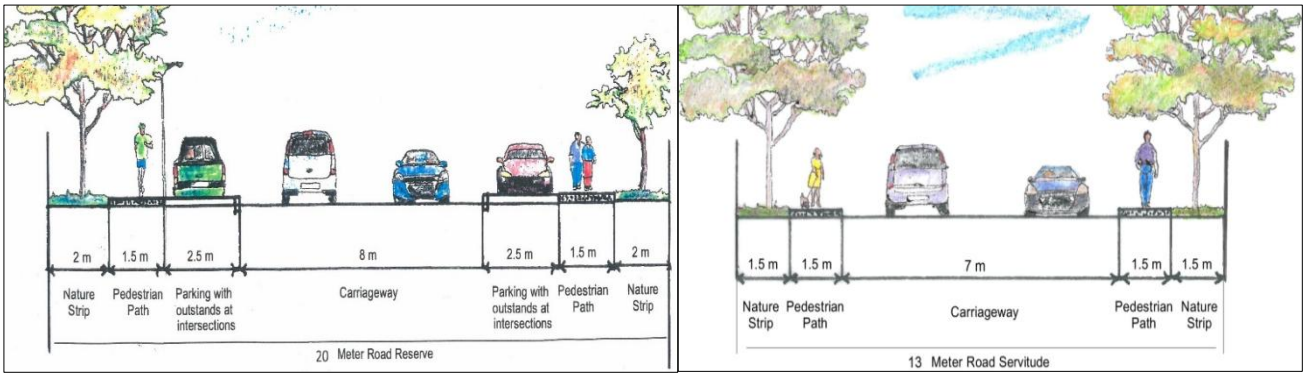
The project benefits are as follows:

- **Provide for serviced erven.** The provision of fully serviced erven with delineated boundaries facilitates formal and permanent land tenure for communities, thereby enhancing tenure security for residents. The formalisation of the layout establishes a regulated development framework that restricts unplanned settlement growth and enables effective management of existing informal settlements.

- **Stimulate employment creation and local economic development.** The development will lead to employment creation during the construction and operation phases. By providing for additional business erven, the project will render services within the formal economy of Onawa, employ staff, contribute to rates and taxes, and spend money within the same economy.

- **Stimulate health and wellness within the Onawa Townlands.** The layout provides much-needed service connections that are safe and in line with the layout. It will also create properly aligned roads which will ease traffic circulation within the township. Clearly defined routes will allow for the provision of pedestrian infrastructure, creating a safe walking environment.

Figure 14: Provision for Pedestrians



9.2.2 Negative Impacts during Construction

The project impacts during construction are:

- **Vegetation removal and tree loss.** As this development constitutes a brownfield site, the planning layout has been meticulously designed to conserve the majority of existing vegetation. Under typical circumstances, no tree removal is anticipated; however, should the removal of specific trees become indispensable to facilitate essential construction activities, such removals will be strictly limited and conducted with careful consideration

of environmental impacts. The layout prioritises the retention of mature and large trees while simultaneously accommodating the functional requirements of the proposed road networks and associated infrastructure.

- **Impact on traffic flow during construction.** Construction vehicles would need to haul the excavated soil to a disposal site and provide building material and other supplies (i.e. fuel etc.) to the construction site, most of which could be delivered by truck. Construction vehicles are most likely to pass near erven and disrupt traffic flow (although the exact access routes to the site are yet to be defined).

- **Impact of dust.** The movement of construction vehicles on bare soil will cause excessive dust, exposing the community and workers to dust pollution and affecting their health. Preventative measures should be put in place to prevent excessive dust.

- **Impact of potential construction noise.** Construction machinery creates substantial noise, and this will impact the surrounding community. Constant noise can cause stress and health impacts on nearby residents.

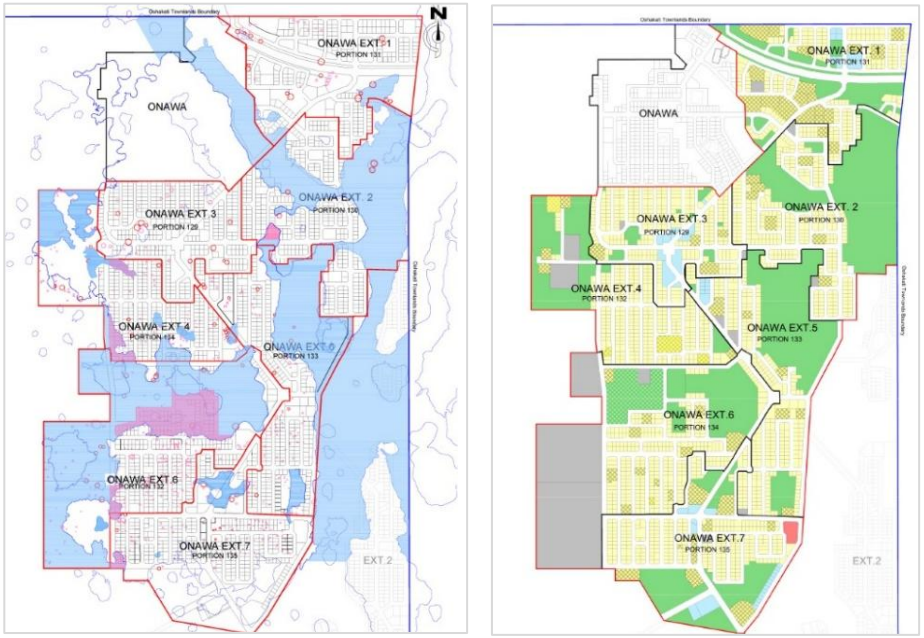
- **Impact of construction waste.** Solid waste is the expected significant source of waste at the construction site. If no waste management plan is in place to address general and hazardous waste disposal, it can lead to water and soil pollution on the site and/or within the water areas.

- **Impact on the health and safety of workers and nearby residents.** Construction activities always have potential risks for workers and nearby residents. Inadequate site management measures can expose workers and residents living near the site to hazardous chemicals, dust, and noise. A lack of notices and signs within the area where deep excavation work is done can put the lives of residents and workers in danger.

9.2.3 Potential Negative Impacts during Operations

- **Impact of flooding.** The proposed development incorporates designated water areas within its design. The layout has been carefully prepared to accommodate low-lying primarily within public open spaces. It is anticipated that some pockets of these low-lying areas may require infill to facilitate development activities, ensuring functional integration with the overall site planning objectives.

Figure 15: Accommodating Flood Areas



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

9.3 DEALING WITH RESIDUAL IMPACTS

9.3.1 Residual Social Impacts

Most existing homesteads within Onawa have been incorporated into the formal township layout, thereby minimising the need for relocation or demolition of permanent structures. However, a number of cultivated fields remain within the development area. Where such fields are directly affected by township servicing or road reserves, compensation will be provided in line with the Cabinet Compensation Policy Guidelines for Communal Land Provisions, administered by the Oshakati Town Council. This ensures that land users are fairly compensated for loss of use, while also securing the legal rights of township residents following formalisation.

9.3.2 Residual Environmental Impacts

Despite careful planning, some residual impacts will remain. These include:

- Localised dust and noise during construction, even with controls in place.
- Increased traffic during construction, which may inconvenience residents.
- The need to remove a limited number of mature trees where unavoidable.
- Ongoing flood risk in low-lying erven, even after filling.
- Waste generation during construction and operation.

10 PROJECT IMPACTS, AVOIDANCE MEASURES AND RESIDUAL IMPACTS

This section summarises the potential impacts of the Onawa Extensions 1–7 formalisation project, together with the avoidance and mitigation measures incorporated into the planning and proposed in the EMP. It distinguishes between construction-phase and operational-phase impacts, noting which impacts have been addressed through planning design and which require management during implementation.

Avoidance measures have already been built into the township layout, such as accommodating existing homesteads within erven, zoning flood-prone areas as Public Open Space (POS) and retaining large trees. Mitigation measures will further reduce impacts during construction and operation. Residual impacts refer to the effects that will remain even after avoidance and mitigation have been applied.

A colour-coded impact matrix is provided in Table 4 to highlight the significance of impacts, avoidance, mitigation, and responsible parties.

Table 4: Colour-Coded Impact Matrix

Impact	Avoidance (Built into Layout/Planning)	Mitigation (EMP)	Residual Impact	Responsible Party
Provision of serviced erven (Positive)	Layout formalises erven and integrates bulk services.	Implementation of reticulation and service connections.	Long-term positive socio-economic benefits (🟢).	Oshakati Town Council
Employment & economic development (Positive)	Inclusion of business erven in layout.	Prioritise local labour and SMEs.	Local jobs and economic growth (🟢).	Contractor & Town Council
Tree removal / vegetation loss	Most mature trees retained in erven, POS and road reserves.	Forestry permits for listed trees; Tree Management Plan.	Limited removal; low impact if managed (🟡 → 🟢).	Contractor & Town Council
Dust during construction	N/A	Phased clearing, watering, soil stabilisation.	Short-term nuisance (🟡).	Contractor

Impact	Avoidance (Built into Layout/Planning)	Mitigation (EMP)	Residual Impact	Responsible Party
Noise during construction	N/A	Restrict working hours (07h00–18h00).	Temporary disturbance (🟡).	Contractor
Traffic during construction	Layout integrated with distributor roads.	Traffic management plan; restrict heavy vehicles to daylight.	Short-term inconvenience (🟡).	Contractor & Engineer
Health & safety (workers & residents)	Layout accommodates safe access routes.	PPE, signage, site demarcation, training.	Minor residual risk (🟡).	Contractor & ECO
Flooding risk	Low-lying areas zoned as POS.	Filling of erven; stormwater culverts.	Residual flood risk in heavy rains (🔴 → 🟡).	Engineer & Town Council
Construction waste	N/A	Construction WMP; proper disposal.	Temporary, manageable impacts (🟡).	Contractor
Operational waste	N/A	Integration into Oshakati waste system.	Limited impacts if system maintained (🟡).	Town Council
Loss of fields / structures	Most homesteads incorporated into layout.	Compensation for mahangu fields & affected structures.	Addressed via Cabinet Policy (🔴 → 🟢).	Town Council

11 APPLICATION FOR ENVIRONMENTAL CLEARANCE

Based on the scoping study findings, the formalisation of Onawa Extensions 1–7 is anticipated to generate significant positive socio-economic benefits, including the provision of serviced erven, security of tenure, and stimulation of local economic activity.

Potential negative impacts such as dust, noise, traffic disruptions, vegetation loss, waste generation, and localised flood risk have been identified. Where possible, avoidance measures have been incorporated into the township layout, while additional mitigation measures will be implemented through the Environmental Management Plan (Annexure 6). Residual impacts are expected to be of low to moderate significance and are considered manageable under the provisions of the EMP.

The proposed development therefore meets the requirements of the Environmental Management Act (No. 7 of 2007) and its Regulations, specifically Articles 33 and 34, which provide for the granting of Environmental Clearance based on a Scoping Report.

It is recommended that the Environmental Commissioner issues an Environmental Clearance Certificate (ECC) for the project, subject to compliance with the Environmental Management Plan and applicable permitting requirements.