



ENVIRONMENTAL MANAGEMENT PLAN:

FOR THE ALIGNMENT AND CONSTRUCTION OF PUBLIC ROADS AND THE
CONSTRUCTION OF INFRASTRUCTURE AS A RESULT OF TOWNSHIP
ESTABLISHMENT (TO BE KNOWN AS HAMAKARI PROPER AND EXTENSION 1) AT
OKAKARARA, IN THE OTJOZONDJUPA REGION

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THE ENVIRONMENTAL MANAGEMENT PLAN FOR THE ESTABLISHMENT OF TOWNSHIPS AT OKAKARARA PREPARED BY

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GENERAL LOCATION DESCRIPTION OF THE DEVELOPMENT AREA:

DESCRIPTOR:	LOCATION SPECIFICS:
NATURE OF ACTIVITIES:	Construction of public roads and infrastructure through township establish
REGION:	Otjzondjupa Region
LOCAL AUTHORITY:	Okakarara Town Council
FALL WITHIN:	Within the Remainder of Farm Okakarara Townlands No. 517
NEAREST TOWNS / CITY:	Okakarara
SIZE OF PTN. 17	235 231 sqm / 23.5 ha.
SIZE OF PTN. 18	167 519 sqm / 16.7 ha
LAND USE:	Undetermined
STRUCTURES:	No Structures
HISTORICAL RESOURCES:	No Historical Resources
CEMETERY:	No Cemetery
FLOODLINES:	No Floodlines
ENVIRONMENTAL SIGNIFICANT ASPECTS:	➤ Potential Removal of Protected Trees
LATITUDE:	-20°60'83.48"S,
LONGITUDE:	17°45'32.29"E.
RELEVANT LISTED ACTIVITIES:	<p>The Environmental Management Act (Act 7 of 2007),</p> <p>Section 10: Infrastructure:</p> <p>10.1. The construction of-</p> <p>(b) public roads;</p> <p>10.2. Route determination of roads and design of associate physical infrastructure where-</p> <p>(a) public roads.</p>

ABBREVIATION:	DESCRIPTION:
am	ANTE MERIDIEM / BEFORE MIDDAY
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
HIV	HUMAN IMMUNODEFICIENCY VIRUS
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
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°	DEGREES CELSIUS
E	EAST
ha	HECTARES
Km	KILOMETRE
m	METER
mm	MILLIMETRE
S	SOUTH
m ²	SQUARE METERS
%	PERCENTAGE

TABLE OF CONTENTS

1 INTRODUCTION 1

2 BACKGROUND 1

3 RESPONSIBILITIES 3

4 RELEVANT LEGISLATION AND PERMIT REQUIREMENTS 5

5 CONSTRUCTION MITIGATION DETAIL 2

5.1 PLAN COMPONENT 1: WASTE MANAGEMENT 3

5.1.1 Construction Waste Management: 3

5.1.2 Waste Management During the Operational Phase: 4

5.2 PLAN COMPONENT 2: HEALTH AND SAFETY 5

5.2.1 Health and Safety Management: 5

5.2.2 Operational Phase Health and Safety Management: 6

5.3 PLAN COMPONENT 3: NOISE AND DUST 7

5.3.1 Noise Prevention: 7

5.3.2 Dust Prevention: 8

5.4 PLAN COMPONENT 4: TRAFFIC MANAGEMENT 9

5.4.1 Traffic during the Construction Phase: 9

5.5 PLAN COMPONENT 5: ENVIRONMENTAL TRAINING AND AWARENESS 9

5.6 PLAN COMPONENT 6: ENVIRONMENTAL CONSERVATION 10

5.6.1 Tree Management Plan: 10

5.6.2 Materials Camp and Lay-Down Areas: 10

5.7 PLAN COMPONENT 7: EMPLOYMENT/RECRUITMENT 11

5.7.1 Recruitment: 11

5.7.2 Legislation: 11

5.8 PLAN COMPONENT 8: STAKEHOLDER COMMUNICATION 12

5.8.1 Communication Plan: 12

5.8.2 General Communication: 12

5.9 PLAN COMPONENT 9: SOCIO-ECONOMIC AND MISCELLANEOUS 14

LIST OF TABLES

TABLE 1:	PROJECT PHASES.....	2
TABLE 2:	MANAGEMENT REQUIREMENTS FOR THE PLANNING AND DESIGN PHASE.....	1
TABLE 3:	GENERIC AND SITE-SPECIFIC ENVIRONMENTAL MANAGEMENT ACTIONS:	2
TABLE 6:	PUBLIC CONSULTATION PROCESS	13

ANNEXURES

ANNEXURE 1:	FORM 1 APPLICATION FOR AN ENVIRONMENTAL CLEARANCE CERTIFICATE (SECTION 32)
ANNEXURE 2:	CV (OF THE EAP)
ANNEXURE 3:	CONTACT DETAIL OF THE PROPONENT
ANNEXURE 4:	CONTACT DETAIL OF THE CONSULTANT
ANNEXURE 5:	ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX

APPENDIX A:	CONSENT FROM MURD
APPENDIX B:	LOCALITY PLAN
APPENDIX C:	PUBLIC CONSULTATION PROCESS
APPENDIX C.1:	NOTES AND ADVERTISEMENTS
APPENDIX C.2:	BID DOCUMENT
APPENDIX C.3:	COPY OF THE STAKEHOLDERS LIST
APPENDIX E:	MEETING MINUTES WITH THE ENVIRONMENTAL COMMISSIONER

1 INTRODUCTION

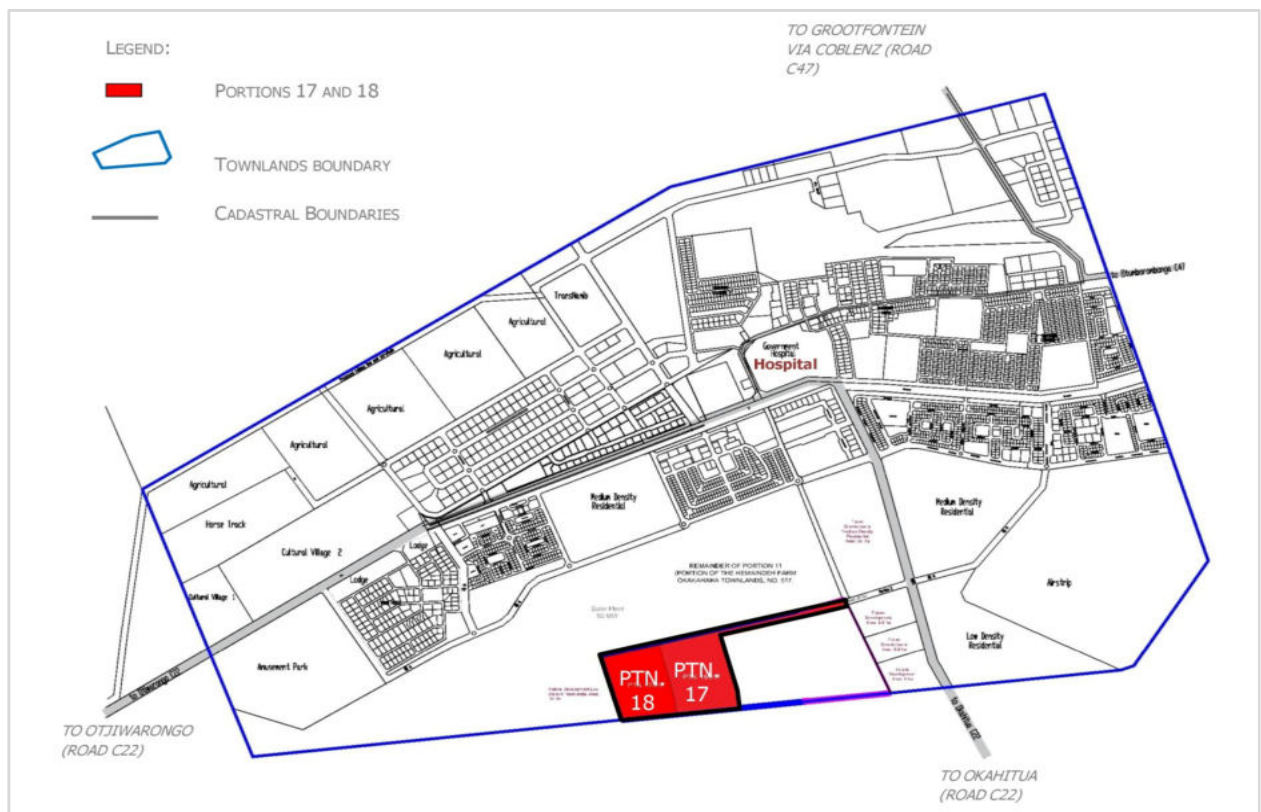
Okakarara Town Council, in partnership with the Development Workshop of Namibia (DWN), appointed Urban Dynamics to prepare an Environmental Management Plan (EMP) for the alignment and construction of public roads and the construction of infrastructure through township establishment at Okakarara (to be known as Hamakari Proper and Extension 1) in the Otjozondjupa Region.

2 BACKGROUND

The client intends to establish two new townships on Portion 17 and 18 of the Okakarara Townlands No. 517. The townships will consist of mixed-use neighbourhoods, meeting the rising demand for housing and business plots within Okakarara and the Otjozondjupa Region.

The Okakarara Town Council is the registered owner of the two portions. The development site is south of Okakarara Proper and west of the C22 to Okahitua, at - 20°60'83.48"S, 17°45'32.29"E. The portions zoning are "Undetermined". The project site measures approximately 40.2 ha in extent. **Figure 1** illustrates the shape of the portions.

Figure 1: Locality and Shape of the Development Sites



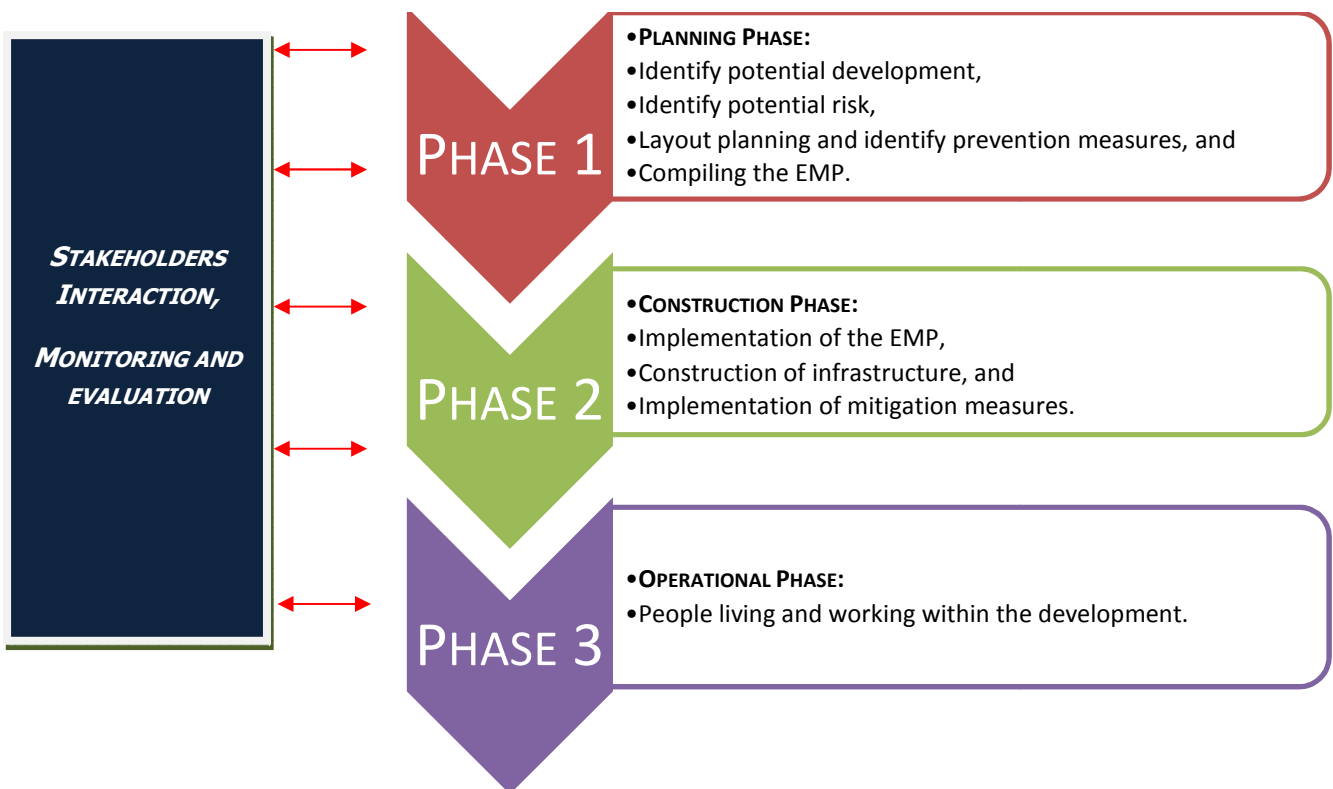
The development includes land servicing and development activities that will include:

- The development of Portion 17 includes two hundred and twelve (212) Single Residential-, three (3) General Residential-, seven (7) Business-, three (3) Institutional- and one (1) Civic erven and (4) four Public Open Space.
- The development of Portion 18 includes two hundred and Nineteen (219) Single Residential-, two (2) General Residential-, seven (7) Business-, two (2) Institutional- and one (1) Civic erven and five (5) Public Open Space.
- The alignment and construction of an internal road network and infrastructure.

An Environmental Management Plan is an essential product of an Environmental Assessment (EA) process. An EMP synthesises all recommended mitigation and monitoring measures according to the various stages of a project life cycle, with clearly defined follow-up actions and responsibilities assigned to specific actors. This EMP has been drafted in accordance with the Namibian Environmental Management Act (No. 7 of 2007) and it's Environmental Impact Assessment Regulations (2012). This plan describes the mitigation and monitoring measures to be implemented during the following phases of the development:

- ❖ Construction and
- ❖ Operation

Table 1: Project Phases



3 RESPONSIBILITIES

Implementation of the EMP is ultimately the Developer's responsibility (Okakarara Town Council and Development Workshop of Namibia), the development administrator after construction and the Okakarara Town Council. Due to the project's magnitude, it may be necessary to outsource certain functions to manage all aspects of the development process. When implementing the EMP, the following roles and responsibilities apply.

Each role player's responsibilities are described below.

EMPLOYERS REPRESENTATIVE (ER)

The Developer appoints the ER to manage all contracts for work/services outsourced during construction. Any competent employee or third-party organisation with the appropriate experience may fill this position. Any official communication regarding work agreements is delivered through this person/organisation.

The ER shall assist the Environmental Control Officer (ECO) where necessary and will have the following responsibilities regarding the implementation of this Environmental Management Plan (EMP):

- ❖ Ensuring that the Contractor has obtained the necessary legal authorisations and permits,
- ❖ Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where appropriate,
- ❖ Warning and ordering the removal of individuals and/or equipment not complying with the EMP,
- ❖ Issuing fines for the transgression of site rules and penalties for contravention of the EMP, and
- ❖ Providing input into the ECO's ongoing internal review of the EMP. This review report should be submitted on a monthly basis to the Developer.

ENVIRONMENTAL CONTROL OFFICER (ECO)

The ECO should be a competent person appointed by the ER. If the ECO has no occupational safety and health training on a construction site, they should be sent for such training. The ECO is the ER's on-site representative primarily responsible for the monitoring and reviewing on-site environmental management and implementation of the EMP by the Contractor(s). If no ECO is appointed, the duties of the ECO fall upon the ER. The Okakarara Town Council should, with the commencement of the project, monitor the implementation of the EMP on-site on an ad hoc basis.

The ECO's duties include the following:

- ❖ Assisting the ER in ensuring that the necessary legal authorisations have been obtained;

- ❖ Maintaining open and direct lines of communication between the ER, Developer, Contractor, and Interested and Affected Parties (I&APs) concerning this EMP and matters incidental to that;
- ❖ Monthly site inspection of all construction areas with regard to compliance with this EMP;
- ❖ Monitor and verify adherence to the EMP (audit the implementation of the EMP) and verify that environmental impacts are kept to a minimum;
- ❖ Taking appropriate action if the specifications for the EMP are not adhered to;
- ❖ Assisting the Contractor in finding environmentally responsible solutions to problems;
- ❖ Training of all construction personnel with regard to the construction and operation mitigation measures of this EMP and continually promoting awareness of these;
- ❖ Ensure that all contractors shall provide adequate environmental awareness training (see Plan Component 5) of senior site personnel by the ECO and that all construction workers and newcomers receive an induction presentation on the importance and implications of this EMP. The presentation shall be conducted, as far as possible, in the employees' language of choice;
- ❖ Monthly inspection to verify if new personnel have received appropriate environmental, health and safety training and training those who have not;
- ❖ Advising on the removal of person(s) and/or equipment not complying with the specifications of the EMP in consultation with the ER;
- ❖ Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP; and
- ❖ Undertaking a monthly-month review of the EMP and recommending additions and/or changes to the document.

CONTRACTOR

The Contractor is responsible for implementing, on-site monitoring and evaluating the EMP. In order to ensure sound environmental management, the relevant sections of this EMP should be incorporated operation in all contracts of work outsourced, thus legally binding all appointed contractors.

The Contractor must keep records of all environmental training sessions, including names, dates and the information presented for inspection and reporting by the ER and ECO at all times.

4 RELEVANT LEGISLATION AND PERMIT REQUIREMENTS

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

THEME	LEGISLATION	PROVISION	PROJECT IMPLICATIONS
	The Constitution of the Republic of Namibia First Amendment Act 34 of 1998	<ul style="list-style-type: none"> ❖ Article 16 (1) guarantees all persons the right to acquire, own and dispose of property as an individual or in association with others. ❖ Article 95 (i) The state shall actively promote and maintain the welfare of the people by adopting, inter-alia, policies aimed at managing the ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all. 	<p>The project makes provision for freehold title ownership.</p> <p>The project should protect the ecological integrity of the area's ecosystems and social environment.</p>
Environmental	Environmental Management Act 7 of 2007	<ul style="list-style-type: none"> ❖ Section 27 requires that projects with significant environmental impacts are subject to an environmental assessment process. ❖ Section 2(b-c)) requires adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project. ❖ Section 10(1), construction of (b) public roads and Section 10.2 route determination of roads and design of associate physical infrastructure (a) public road whereby the Minister of Environment, Forestry and Tourism or in a manner prescribed by the Minister. ❖ - Details principles which are to guide all EIAs 	This Act and its regulations should inform and guide this EIA process to ensure that Environmental Clearance is obtained.
	EIA Regulations GN 57/2007 (GG 3812)	<ul style="list-style-type: none"> ❖ Section 21 details the requirement for public consultation within a given environmental assessment process. 	

		<ul style="list-style-type: none"> ❖ Prescribes the procedures to be followed for authorisation of the project (i.e. Environmental clearance certificate). 	
Forestry	Forestry Act 12 of 2001	<ul style="list-style-type: none"> ❖ Section 22(1) states that tree species and any vegetation within 100m of a Watercourse may not be removed without a permit. ❖ Provision for the protection of various plant species. 	<p>Plant species protected under Annexure A of the Regulations should be protected through planning the layout and construction of services.</p> <p>A Tree Management Plan should be compiled on the site to identify protected species before construction comments.</p>
	Forest Regulations GN 170/ 2015 (GG 5801)	<ul style="list-style-type: none"> ❖ Section 13.2 states that no protected species should be removed unless special permission is granted. The plant or species declared protected species are listed in Annexure A of the Regulations. 	<p>Permits should be obtained from the Ministry of Environment, Forestry, and Tourism (Department of Forestry) to remove any protected species that are unable to be protected.</p>
Water	Water Act No. 54 of 1956	<ul style="list-style-type: none"> ❖ Section 23(1) deals with the prohibition of pollution of underground and surface water bodies. 	<p>Necessary steps should be in place to prevent the pollution of water resources during the construction phase of the project.</p>
Health and Safety	Labour Act 11 of 2007	<ul style="list-style-type: none"> ❖ Chapter 2 details the fundamental rights and protections of employees ❖ Chapter 3 deals with the basic conditions of employment. 	<p>Employment opportunities presented by the development and compliance with labour law are essential.</p>

	Public and Environmental Health Act of 2015 (GG 5740)	<ul style="list-style-type: none"> ❖ This Act provides a framework for Namibia's structured, uniform public and environmental health system. It covers notification, prevention and control of diseases and sexually transmitted infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. 	Development contractors must comply with these legal requirements of the Act. by preventing activities that can impact the health and safety of the public and employees.
Atmospheric Pollution	Atmospheric Pollution Prevention Ordinance No 45 of 1965	<ul style="list-style-type: none"> ❖ Part II - control of noxious or offensive gases, ❖ Part III - atmospheric pollution by smoke, ❖ Part IV - dust control, and ❖ Part V - air pollution by fumes emitted by vehicles. 	The development should consider the provisions outlined in the Act. The proponent should apply for an Air Emissions permit from the Ministry of Health and Social Services (if needed).
Archaeology	National Heritage Act 27 of 2004	<ul style="list-style-type: none"> ❖ Section 48(1) states that " A person may apply to the (Heritage) Council for a permit to carry out works or activities concerning a protected place protected object" 	When archaeological material (e.g., graves) is discovered, the National Heritage Council should be informed immediately.
	Burial Place Ordinance 27 of 1966	<ul style="list-style-type: none"> ❖ The Ordinance prohibits the desecration or disturbance of graves and regulates matters relating to the removal or disposal of dead bodies. 	The Ordinance regulates the exhumation of graves.
Soil	Soil Conservation Act 76 of 1969	<ul style="list-style-type: none"> ❖ The Act regulates combating and preventing soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources. 	Measures should be in place to ensure that soil erosion and pollution are avoided during the construction and operational phases.

Land Use	The Urban and Regional Planning Act 7 of 2018	❖ The Act regulates the establishment of townships, amendment of layout, subdivisions and consolidation, and land rezoning.	The proposed township and layout should be approved by the Ministry of Urban and Rural Development in accordance with the Act.
	Okakarara Zoning Scheme	❖ The Okakarara Zoning Scheme provides for various land use and activities allowed within the Okakarara Town Council’s jurisdiction.	The development should be in accordance with the Okakarara Zoning Scheme.
Services and Infrastructure	Road Ordinance 17 of 1979	<ul style="list-style-type: none"> ❖ Section 3(1) the width of proclaimed roads and roads receive boundaries. ❖ Section 27(1) the control of traffic during construction activities on the trunk and main roads. ❖ Section 37(1) infringement and obstructions on and interference with proclaimed roads ❖ Section 38 distance from proclaimed roads at which fences are erected. 	The proponent should ensure that the construction of public roads and infrastructure through township development and the operational phase do not affect major nearby roads.

PLANNING AND DESIGN PHASE**Table 2: Management Requirements for the Planning and Design Phase**

ASPECT	MANAGEMENT REQUIREMENTS
Natural Building Material	All building materials (sand and gravel) must only be sourced from a local registered borrow pit. Road building material (G4, G5, etc.) must be sourced in collaboration from approved borrow pits within the townlands. If suitable material can only be sourced from untouched land to create a new borrow pit, then that is legally subject to an EIA by the Okakarara Town Council.
EMP Implementation	Relevant sections of this EMP should be included in the tender documents for all construction so that tenderers can implement the EMP.
Financial Provisions	<ul style="list-style-type: none"> • Financial provision for the facilitation of an induction programme for senior, temporary construction personnel and subcontractors and associated personnel should be included as a cost item within tenders concerning the construction and/or operation and maintenance of the proposed development. • Financial provision for a Tree Management Plan compilation should be included as a cost item within construction tender documents.
Recruitment	<ul style="list-style-type: none"> • Provisions designed to maximise the use of local labour should be included within tenders concerning the construction of bulk and reticulation services. • A provision stating that all unskilled labour should be sourced locally should be included in tenders concerning the construction of all development services. • Specific recruitment procedures ensuring local firms enjoy preference during tender adjudication should be included in tenders concerning the construction of the development's bulk services. • Provisions promoting gender equality pertaining to recruitment should be included in tenders concerning the construction of the township services. • Women should be given preference for specific jobs (e.g. those jobs that require relatively less physical strength).

5 CONSTRUCTION MITIGATION DETAIL

Table 3 provides a scale overview of all the major environmental management themes pertaining to generic and site-specific construction mitigation details. This table serves as a quick reference for the mitigation detail that follows subsequently for each theme. This is done to simplify the implementation of the construction component of this EMP.

Table 3: Generic and Site-Specific Environmental Management Actions:

THEME:	OBJECTIVE:	MITIGATION DETAIL:	
		GENERIC:	SITE-SPECIFIC:
WASTE MANAGEMENT:	Minimise and avoid all waste pollution associated with construction.	PLAN COMPONENT 1	YES
HEALTH AND SAFETY MANAGEMENT:	Focusing on the well-being of the labourers and the community near the construction.	PLAN COMPONENT 2	YES
NOISE AND DUST MANAGEMENT:	Minimise and avoid all noise and dust associated with construction.	PLAN COMPONENT 3	YES
TRAFFIC MANAGEMENT:	Minimise and avoid traffic impacts.	PLAN COMPONENT 4	YES
ENVIRONMENTAL TRAINING AND AWARENESS:	Awareness creation regarding the provisions of the EMP as well as the importance of safeguarding environmental resources.	PLAN COMPONENT 5	YES
ENVIRONMENTAL CONSERVATION:	Minimise the effect of the activity and protect the social environment in which it is happening.	PLAN COMPONENT 6	YES
EMPLOYMENT /RECRUITMENT	Ensure the protection of workers' rights and safety in Namibia.	PLAN COMPONENT 7	YES
STAKEHOLDER COMMUNICATION:	Provide a platform for stakeholders to raise grievances and receive feedback and hence, minimise negative conflict.	PLAN COMPONENT 8	YES
SOCIO-ECONOMIC AND MISCELLANEOUS:	Protecting cultural and general well-being of the affected.	PLAN COMPONENT 9	NA

5.1 PLAN COMPONENT 1: WASTE MANAGEMENT

At the Hamakari Proper and Extension 1 construction site, high importance should be placed on waste management, which should be performed daily. Solid waste is the expected major source of waste at the construction site; therefore, a *Waste Management Plan (WMP)* must be compiled. The WMP must address measures for the use and disposal of general waste and hazardous waste at the site, as indicated below:

5.1.1 CONSTRUCTION WASTE MANAGEMENT:

GENERAL WASTE:

- The construction site should be kept tidy at all times. All general construction waste produced should be cleaned and contained daily,
- No waste may be buried or burned,
- No waste may be dumped in any watercourse in and around the project area,
- A sufficient number of separate waste containers (bins) for hazardous and domestic/general waste must be provided on-site. These should be marked as such, and
- Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter.

HAZARDOUS WASTE:

- All heavy construction vehicles and large fuel-powered equipment on the site should be provided with a drip tray,
 - If the vehicle used is suspected of having an oil leakage, drip trays are to be transported with vehicles wherever they go on-site.
 - Drip trays should be cleaned daily, and spillage handled, stored, and disposed of as hazardous waste.
- Spilled concrete (wet) should be treated as waste and disposed of by the end of each day in the appropriate waste containers,
- Unbound cement (dry) in its raw state and cement-infused water from mixers are classified as hazardous waste due to their high alkalinity content. Treatment would be the same as for hazardous waste, and disposal of such should take place in the appropriate labelled hazardous waste containers,

- A hazardous waste spill clean-up kit should be kept on-site, and its stock replenished as needed. The kit should consist of the following items (with the numbers of each item is up to the discretion of the ER):
 - Medium-sized shovels, strong plastic bags, drip trays, dust masks, heavy-duty gloves, and a biodegradable hand wash (degreasing) agent.
- A storage location should be provided for all hazardous substances (e.g. fuel etc.) or chemicals. The storage area must be of an impermeable surface; this is bonded, awaiting use and disposal afterwards.

The duration of the phase is short-term (0-5 years) and ends at the start of the operational phase. The responsibility to implement the EMP, on-site monitoring and evaluation of the EMP and the WMP lies with the Contractor, ECO and the ER.

5.1.2 WASTE MANAGEMENT DURING THE OPERATIONAL PHASE:

GENERAL WASTE:

- Hamakari Proper and Extension 1 should include efficient waste management infrastructure for households and businesses, which should include recycling infrastructure,
- The household and business waste needs to be collected by the Okakarara Town Council or service provider, and
- Sewerage should be pumped through a closed system pipeline to the Okakarara Town Council's bulk sewerage lines.

The timeframe of the actions mentioned above is long-term. The responsibility and monitoring lie with the Okakarara Town Council, responsible for maintaining the sewerage pipelines after construction and the solid waste removal.

5.2 PLAN COMPONENT 2: HEALTH AND SAFETY

The health and safety aspect of the workspace cannot be understated, considering that unexpected severe events can occur at any given moment.

5.2.1 HEALTH AND SAFETY MANAGEMENT:

The construction industry is fraught with hazards; therefore, careful planning and prevention measures are necessary to reduce the risk of serious injuries while on duty.

The Contractor must apply to the Labour Act. Nr. 11 of 2007 in conjunction with Regulation 156, 'Regulations which describe the health and safety of employees at work'. Measures to mitigate the health and safety of workers on the site and nearby residents should be included in the EMP.

HIV/AIDS AND TB TRAINING:

The Contractor should approach the Ministry of Health and Social Services to appoint a health officer to facilitate HIV/AIDS and TB education programmes periodically on-site during the construction phase.

ROAD SAFETY:

- Vehicle contents/consignments should be adequately secured to avoid items falling off the vehicle.
- All trucks carrying sand or fine material loads should be covered with a shade net cover to prevent these materials from being blown off onto approaching vehicles from both directions.
- No construction vehicle may be used to transport personnel to and from the construction site. This is an offence and is punishable by law due to the extreme safety risk involved.

SAFETY AROUND EXCAVATED AND WORK AREAS:

- A meeting with the neighbouring community shall be held, and the safety precautions of the construction area explained,
- Excavations should be left open for an absolute minimum time only,
- Excavate short lengths of trenches and box areas for services or foundations in such a way that the trench will not be left unattended for more than 24 hours,
- Demarcate the following areas with danger tape or orange demarcation netting:
 - All excavation works;

- Soil and other building material stockpiles; and
- Temporary waste stockpiles.
- Provide additional warning signage in areas of movement and in "no person allowed" areas where workers are not active,
- Work areas must be set out and isolated with danger tape on a daily basis,
- All building materials and equipment are to be stored only within set out and demarcated work areas,
- Only construction personnel will be allowed within these demarcated work areas, and
- Two dry chemical powder fire extinguishers should be available in fuel storage areas, the workshop area, and the site office.

ABLUTIONS:

- Separate ablutions (toilet) should be available for men and women and should clearly be indicated as such,
- Portable toilets (i.e. easily transportable) should be available at every construction site:
 - 1 toilet for every 25 females.
 - 1 toilet for every 50 males.
- Sewage waste should be removed regularly to an approved (municipal) sewage disposal site. Alternatively, pump it into sealable containers and store it until it can be removed, and
- Workers responsible for cleaning the toilets should be provided with latex gloves and masks.

5.2.2 OPERATIONAL PHASE HEALTH AND SAFETY MANAGEMENT:

The Hamakari Proper and Extension 1 do not include low-lying areas known for rainwater accumulation during the rainy season. Nevertheless, mitigation measures should be implemented to prevent any flood risk within the extensions.

FLOOD RISK IMPACT PREVENTION:

- All services (power and sewer lines) must be placed in the evaluated road reserve to prevent it from being influenced during rainy seasons.

- The sewerage network needs to link up with the nearby sewer line which runs through the area. The system should be incorporated with the nearest extensions sewerage network, which flows to the oxidation ponds located north of the town.
- The Residents / Contractor should inform the Town Council's sewer or electrical department if they have problems with the sewer or electrical network.
- The culverts need to be maintained.

The timeframe of the actions mentioned above is continuous, and the responsibility and monitoring lie with the Okakarara Town Council, the owners of the new and existing erven.

5.3 PLAN COMPONENT 3: NOISE AND DUST

Noise and dust can cause stress and health impacts on nearby residents and construction workers. Therefore, high priority should be placed on mitigation measures to manage noise and dust pollution within the area.

5.3.1 NOISE PREVENTION:

Noise associated with construction and traffic activities will be heard from the site. The following measures are provided below to minimise noise:

- No noisy activities on-site between 17:00 and 07:00,
- Construction activities on Saturday shall be between 08:00 and 13:00,
- Sunday and public holidays - no noisy activities on-site, and
- In the event that work is necessary outside the designated working hours, all receptors (residents or businesses within 500 m from the work areas) need to be notified at least two days in advance.

The duration of the actions mentioned above is short-term, and the impact ceases after the operational phase starts. The responsibility for monitoring lies with the Contractor, the ECO of the development, and the Okakarara Town Council.

5.3.2 DUST PREVENTION:

The movement of construction vehicles on bare soil will cause excessive dust, exposing nearby residents and workers to dust pollution. Fugitive dust from construction sites can spread crystalline silica, impacting nearby residents' and site workers' health.

Fugitive dust from the construction site can also cause poor visibility for road users.

The following measures are provided below to minimise dust:

- Provide a suitable screen/panels surrounding the construction site to reduce the spread of dust from the site,
- Dust palliatives need to be applied to road surfaces to prevent dust clouds,
- A watering truck with semi-purified water should be used on gravel roads with the most vehicle movement, especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought and applicable seasons,
- Building and earth material stockpiles need to be kept moist, or the surfaces need to be stabilised. A nylon mesh cover that reduces dust lift with $\pm 50\%$ can be an alternative option,
- Limit the size of stockpiles of large quantities of soil, topsoil and other fine material,
- Dust protection masks should be issued to all workers exposed to dust on the site, and
- Improve awareness of ambient air quality and consideration regarding wind speed and direction when undertaking dust-generating activities.

The duration of the actions mentioned above is short-term, and the impact ceases after the operational phase starts. The responsibility for implementation and monitoring lies with the Contractor, the ECO of the development, and the Okakarara Town Council.

5.4 PLAN COMPONENT 4: TRAFFIC MANAGEMENT

The construction of the infrastructure will have a disruptive impact on the surrounding traffic. Mitigation measures should be in place to minimise the anticipated disruption of the surrounding traffic during the construction of the infrastructure upgrade.

5.4.1 TRAFFIC DURING THE CONSTRUCTION PHASE:

TRAFFIC MITIGATION:

The following measures are provided to minimise traffic:

- Develop a **Traffic Plan** to reduce traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service.
- Schedule operations, affecting traffic for off-peak hours. Minimise obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
- Construction vehicles should be restricted during peak hours, between 07:00-08:00 and 17:00-18:30.
- Appropriate advance road warning signage needs to be used.

The duration of the actions mentioned above is short-term and ends when the operation phase commences. The responsibility for implementation and monitoring lies with the Contractor. However, the road infrastructure will become permanent, and the responsibility for maintaining the streets lies with the Okakarara Town Council after construction.

5.5 PLAN COMPONENT 5: ENVIRONMENTAL TRAINING AND AWARENESS

All construction workers at the development site are to undergo environmental training and awareness programs. The following aspects should be included:

- Explanation of the importance of complying with the EMP.
- Discussion of the potential environmental impacts of construction activities.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when particular workgroups carry out their respective activities.
- Explanation of the specific mitigation measures within this EMP, especially unfamiliar provisions.

An attendance register should be completed during the training sessions, including the names, position designations, and signatures of everyone who attended the training and kept on file for auditing purposes. Thereby, all the training sessions prior to it being conducted must be approved by the ECO.

5.6 PLAN COMPONENT 6: ENVIRONMENTAL CONSERVATION

5.6.1 TREE MANAGEMENT PLAN:

The layout was prepared in such a way as to avoid the removal of trees. The trees in the project site will remain intact as far as possible during development. Trees need to be accommodated on individual erven and along the road in such a manner as to allow the positioning and construction of residential buildings and construction of the road without necessitating removal.

A **Tree Management Plan** shall be implemented, which should include the following content at the minimum level:

- All protected trees should be surveyed,
- Permits shall be obtained before the removal of protected trees by the ECO.
- Protected trees that are removed shall be replaced and used within the landscaping of the development, and
- Indigenous plants and trees can be obtained at a commercial nursery. The forestry officers can also direct to nearby nurseries where additional trees may be bought.

The duration of the actions mentioned above is short-term. The responsibility for the implementation of the **Tree Management Plan** lies with the Developer and Contractor.

5.6.2 MATERIALS CAMP AND LAY-DOWN AREAS:

A suitable location for the **materials camp and lay-down** areas should be identified with the assistance of the ER, and the following should be considered in selecting these sites:

- The areas designated for the proposed services infrastructure should be used as far as possible, and
- Sensitive areas should be avoided (e.g. watercourses).

The duration of the actions mentioned above is short-term. The responsibility for implementing the EMP lies with the Contractor, ER and ECO.

5.7 PLAN COMPONENT 7: EMPLOYMENT/RECRUITMENT

The development construction will take place over several years and will employ up to a thousand (1000) workers. At this stage, it is unclear which skill sets would be required or how employment opportunities could be created in the project area.

The benefits to the local community from jobs could depend on the extent of local recruitment and the measures to ensure preferential local gender-based recruitment where possible.

5.7.1 RECRUITMENT:

The formal recruitment process should be compiled and shall include the following minimum provisions:

- The ER and the Contractor shall design a recruitment process whereby local residents shall be given preference,
- Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the agreed-upon process,
- Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those from the project area and only then look to surrounding towns, and
- Clearly explain to all job-seekers the terms and conditions of their respective employment contract (e.g. period of employment, etc.) – make use of interpreters when required.

5.7.2 LEGISLATION:

The Contractor needs to adhere to the legal provisions in the Labour Act (Labour Act. 11 of 2007) for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc.) in the contract.

5.8 PLAN COMPONENT 8: STAKEHOLDER COMMUNICATION

Within the construction phase, the Developer should draft a *Communication Plan*. In collaboration with the Developer, the ER must appoint an ECO to liaise between the Contractor, stakeholders, Developer, and consultants. The appointed Contractor shall appoint a person from the construction team to take responsibility for implementing all provisions of this EMP.

5.8.1 COMMUNICATION PLAN:

In addition, the plan shall specify:

- How stakeholders, who require ongoing communication for the duration of the construction period, will be identified and recorded and who will manage and update these records,
- How will stakeholders be consulted on an ongoing basis, and
- How grievances shall be handled – i.e. how concerns can/ will be lodged/ recorded and how feedback will be delivered, as well as further steps of arbitration in the event that feedback is deemed unsatisfactory.

5.8.2 GENERAL COMMUNICATION:

- The Contractor shall, at every site meeting, report on the status of the implementation of all provisions of the EMP,
- The ECO must list the stakeholders of the project and their contact details with whom ongoing communication would be required for the duration of the contract. This list, together with the **Communication Plan**, must be agreed upon and given to the ER before construction commences,
- The Communication Plan, once agreed upon by the Developer, shall be binding,
- All communication with the stakeholders must take place through the ECO,
- A copy of the EMP must be available at the site office and should be accessible to all stakeholders,
- The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences,
- A procedure should be put in place to ensure that concerns raised have been followed-up and addressed, and
- All people on the stakeholder list should be informed about the availability of the complaints register in writing by the ER before the commencement of construction activities.

Table 4: Public Consultation Process

THE PROCESS:	DESCRIPTION OF THE PROCESS:
DURING THE PLANNING PHASE:	
I&APs Identification:	Key Interested and Affected Parties (I&APs) were identified at Hamakari and included in a list of I&APs. The list included the Okakarara Town Council.
Newspaper Notices:	For two consecutive weeks, notices were placed in two widely circulated newspapers, briefly describing the developments and their locality, inviting the public to register as I&APs (Appendix C.1).
Information Provision:	A Background Information Document (BID) was compiled that contained essential information about the project (Appendix C.3).
Meetings:	<ul style="list-style-type: none"> – Urban Dynamics advertised the public meeting. – The meeting date was 20 March 2023. – Information was provided to stakeholders (of which one was the Okakarara Town Council).
Public Comments Period:	Between 8 March to 3 April 2023
DURING THE CONSTRUCTION PHASE:	
Communication Plan:	<ul style="list-style-type: none"> – At every site meeting, the Contractor should report on the status of the implementation of all provisions of the EMP. – The ECO must list the stakeholders of the project and their contact details with whom ongoing communication would be required for the duration of the contract. Together with the Communication Plan, this list must be agreed upon and given to the ER before construction commences. – Once the Developer agrees upon the Communication Plan shall be binding. – All communication with the stakeholders must take place through the ECO. – A copy of the EMP must be available at the site office and accessible to all stakeholders. – The Contractor should liaise with the Developer regarding all community consultation and negotiation issues before construction commences. – A procedure should be implemented to ensure that concerns raised have been followed up and addressed. – All people on the stakeholder list should be informed about the availability of the complaints register in writing by the ER before the commencement of construction activities.

5.9 PLAN COMPONENT 9: SOCIO-ECONOMIC AND MISCELLANEOUS

No heritage or archaeological sites were found in the area. However, the EMP's standard procedures for heritage or archaeological sites are still included in this plan. No formal survey for archaeological remains was conducted during the field studies of the site, therefore, the possibility of it containing some or the other form of remnants cannot be ruled out, especially when excavations are done.

Heritage or Archaeological Sites

In the case where a heritage or archaeological site is uncovered or discovered during the construction phase of the development, a 'chance find' procedure should be applied as follows:

- If operating machinery or equipment to stop work immediately;
- Demarcate the site with danger tape;
- Determine GPS position if possible;
- Report findings to foreman;
- Cease any works in the immediate vicinity;
- Visit the site and determine whether the work can proceed without damage to the findings;
- Determine and demarcate exclusion boundaries;
- Inspect the site and confirm the exact location.
- Advise the National Heritage Council (NHC) and request written permission to remove findings from the work area; and
- Recovery, packaging and labelling of findings for transfer to the National Museum.

Should human remains be found, the following actions will be required:

- Apply the 'chance find' procedure as formerly described;
- Schedule a field inspection with an archaeologist to confirm that the remains are human;
- Advise and liaise with the NHC and Police; and
- Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.

Suppose it is found that the construction site is on a heritage site or an archaeological site. In that case, the Developer will need to apply for a permit from the National Heritage Council to carry out works in a protected place as indicated in the National Heritage Act 27 of 2004.