



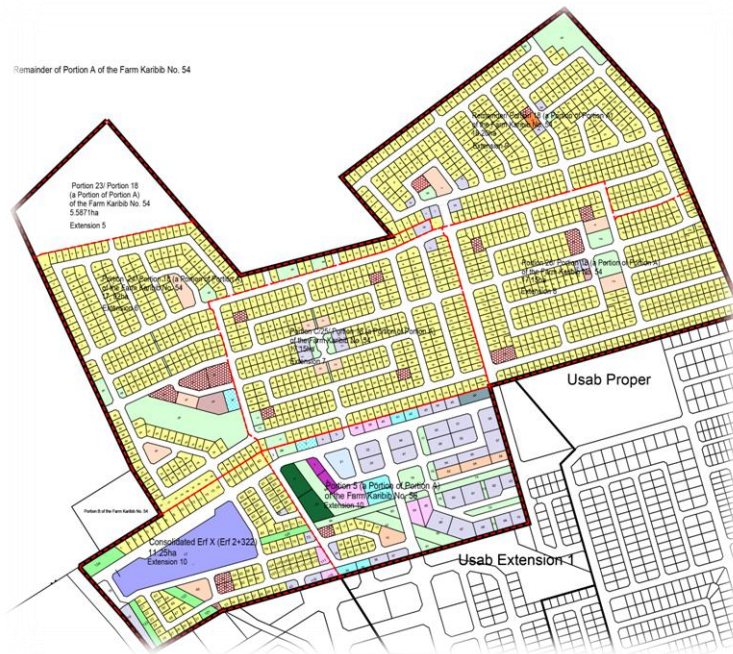
**URBAN  
DYNAMICS**




town and regional planners

JULY 2022  
REPORT NUMBER: APP-002578

# ENVIRONMENTAL MANAGEMENT PLAN:

**FOR THE ALIGNMENT AND CONSTRUCTION OF PUBLIC ROADS AND THE  
CONSTRUCTION OF INFRASTRUCTURE AS A RESULT OF TOWNSHIP  
ESTABLISHMENT WITHIN KARIBIB**



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**THE ENVIRONMENTAL SCREENING REPORT FOR TOWNSHIP ESTABLISHMENT AT KARIBIB, PREPARED BY**

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

<b>DESCRIPTOR:</b>	<b>LOCATION SPECIFICS:</b>
NATURE OF ACTIVITIES:	The construction of public roads and the creation of infrastructures through Establishments.
REGION:	Erongo Region
LOCAL AUTHORITY:	Karibibi Town Council
FALL WITHIN:	Within the Remainder of the Farm Karabib No. 54 and Farm Karabib No. 56
NEAREST TOWNS / CITY:	Karibib
SIZE OF PTN 23 OF PTN 18	5.5 ha
SIZE OF PTN 24 OF PTN 18	17.9 ha
SIZE OF PTN 25 OF PTN 18	17.1 ha
SIZE OF PTN 26 OF PTN 18	17.1 ha
SIZE OF REMAINDER OF PTN 18	18.2 ha
SIZE OF PTN 5 OF FARM KARIBIB NO. 56	13.6
ERF 332, USAB PROPER	6.7 ha
ERF 2, USAB PROPER	4.4 ha
LAND USE:	General Industrial
STRUCTURES:	Yes
HISTORICAL RESOURCE LISTINGS:	No
CEMETERY:	No
FLOODLINES:	Yes
ENVIRONMENTAL SIGNIFICANT AREA:	➤ Ephemeral rivers
LATITUDE:	-21.925465 S,
LONGITUDE:	15.855983 E
RELEVANT LISTED ACTIVITIES:	<p>The Environmental Management Act (Act 7 of 2007),</p> <p><b>Section 8.</b> Water Resource Developments;</p> <p>8.8. Construction and other activities in watercourses flood lines;</p> <p>8.9. Construction and other activities within a catchment</p> <p><b>Section 10.</b> Infrastructure:</p> <p>10.1. The construction of-</p> <p>(b) public roads;</p> <p>10.2. Route determination of roads and design of a physical infrastructure where-</p> <p>(a) public roads.</p>

<b>ABBREVIATION:</b>	<b>DESCRIPTION:</b>
am	ANTE MERIDIEM / BEFORE MIDDAY
BID	BACKGROUND INFORMATION DOCUMENT
EPP	EMERGENCY PREVENTION PLANS
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
FC/AC	FIBRE CEMENT/ASBESTOS CEMENT
HIV	HUMAN IMMUNODEFICIENCY VIRUS
i.e.	ID EST. / IN OTHER WORDS
I&APs	INTERESTED AND AFFECTED PARTIES
NHC	NAMIBIAN HEALTH CARE
NAMPAB	NAMIBIAN PLANNING ADVISORY BOARD
pm	POST MERIDIEM / AFTER MIDDAY
TMP	TREE MANAGEMENT PLAN
TB	TUBERCULOSIS
WMP	WASTE MANAGEMENT PLAN
<b>UNIT SYMBOL:</b>	<b>UNIT DESCRIPTION:</b>
0°	DEGREES CELSIUS
E	EAST
ha	HECTARES
Km	KILOMETRE
m	METER
mm	MILLIMETRE
m <sup>2</sup>	SQUARE METERS
%	PERCENTAGE

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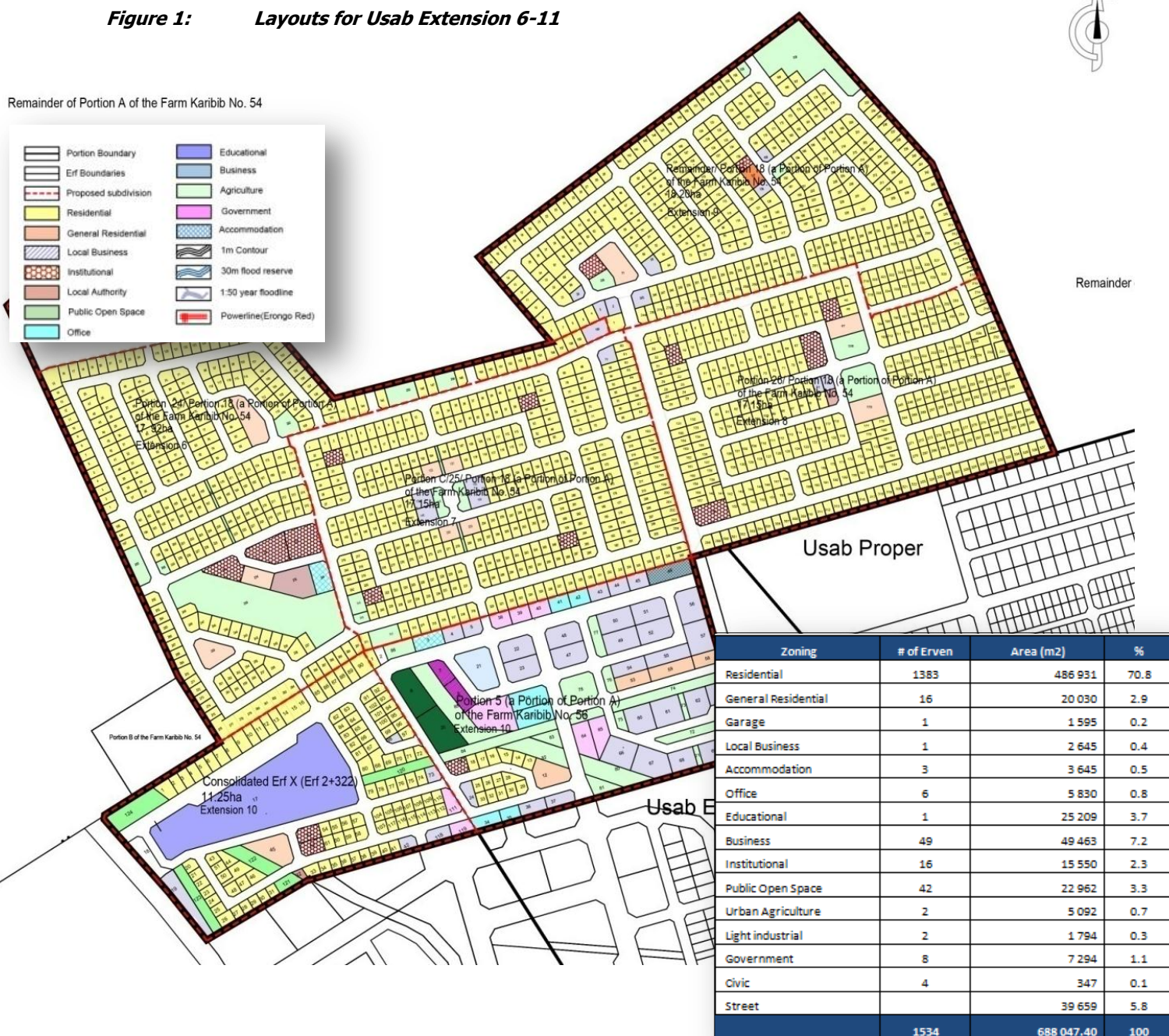


# 1 INTRODUCTION

The project portions will be developed into six new townships consisting of mixed-use neighbourhoods, meeting the rising demand for business, institutional plots and housing within Karibib. The proposed township layouts will include the alignment, construction of public roads and the construction of infrastructure in watercourses within floodlines.

The new portions will alter the current zoning from undetermined/industrial to include 1 383 residential, 16 General Residential, 1 Garage, 1 Local Business, 3 Accommodation, 6 Office, 1 Educational, 49 Business, 16 Institutional, 42 Public Open Spaces, 2 Urban Agriculture, 2 Light Industrials, 8 Government and 4 Civic. The erven shapes and sizes are illustrated in figure 1, Area 1.

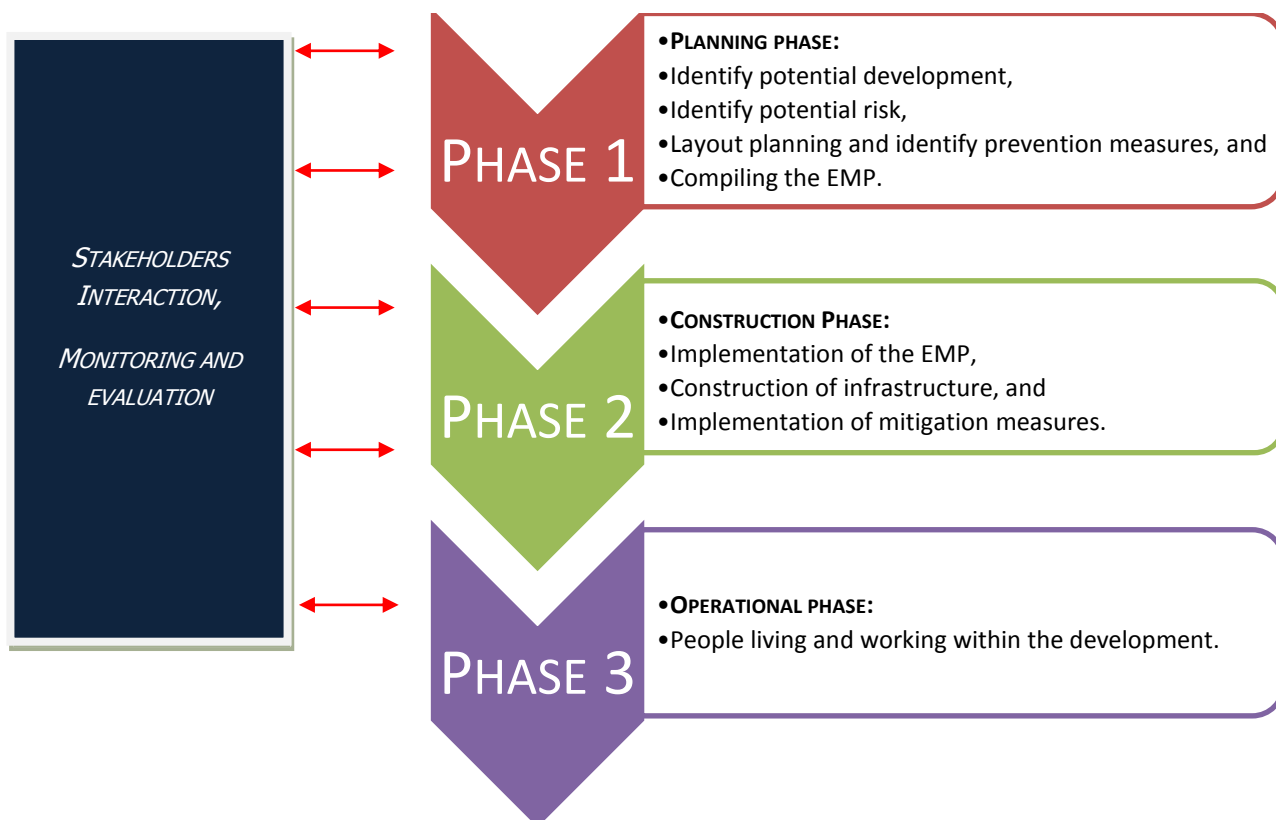
**Figure 1: Layouts for Usab Extension 6-11**



An EMP is an essential product of an Environmental Assessment (EA) process. An EMP synthesises all recommended mitigation and monitoring measures laid out according to the various stages of a project life cycle, with clearly defined follow-up actions and responsibility assigned to specific actors. This EMP has been drafted in accordance with the Namibian Environmental Management Act (No. 7 of 2007) and its 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**



## 2 RESPONSIBILITIES

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

Each role player's responsibilities are described below.

### ***EMPLOYERS REPRESENTATIVE (ER)***

The ER is appointed by the Developer to manage all contracts for work/services that are outsourced during the construction phase. Any competent employee or third-party organisation which possesses 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 necessary legal authorisations and permits have been obtained by the Contractor,
- ❖ 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 training in occupational safety and health 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 review of 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 Karibib 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) with regard to this EMP and matters incidental thereto;
- ❖ 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 is possible, in the employees' language of choice;
- ❖ Monthly inspection to verify if new personnel have received appropriate environmental, health and safety training and training for 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 the implementation, on-site monitoring and evaluation of 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.

### 3 RELEVANT LEGISLATION AND PERMIT REQUIREMENTS

The following table provides the legislative framework within which the EMP should be viewed:

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

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

<b>POLLUTION CONTROL AND WASTE MANAGEMENT BILL:</b>	<p><b><i>Pollution Control and Waste Management Bill:</i></b></p> <p>This bill aims to promote sustainable development and to prevent and regulate the discharge of pollutants into the environment.</p>	<p>Consider the risk of pollution as a result of the sewer infrastructure in the riverbed.</p>
<b>LABOUR:</b>	<p><b><i>Labour Act. 11 of 2007:</i></b></p> <p>This bill aims to protect workers and their environment which they work in.</p>	<p>Ensure the protection of workers' rights and safety in Namibia.</p>
<b>FORESTRY:</b>	<p><b><i>Forest Act. 12 of 2001:</i></b></p> <p>Protected tree species and any vegetation within 100m from a watercourse may not be removed without a permit from the Ministry of Agriculture, Water and Forestry.</p>	<p>Ensure that the necessary permits are obtained for the removal of the protected trees.</p>

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

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



## 4 CONSTRUCTION MITIGATION DETAIL

Table 3 provides a scale overview of all the major environmental management themes pertaining to both generic and site-specific construction mitigation detail. 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:
<b>WASTE MANAGEMENT:</b>	Minimise and avoid all waste pollution associated with construction.	<b>PLAN COMPONENT 1</b>	<b>YES</b>
<b>HEALTH AND SAFETY MANAGEMENT:</b>	Focusing on the wellbeing of the labourers on and the community near the construction.	<b>PLAN COMPONENT 2</b>	<b>YES</b>
<b>NOISE AND DUST MANAGEMENT:</b>	Minimise and avoid all noise and dust associated with construction.	<b>PLAN COMPONENT 3</b>	<b>YES</b>
<b>TRAFFIC MANAGEMENT:</b>	Minimise and avoid traffic impacts.	<b>PLAN COMPONENT 4</b>	<b>YES</b>
<b>ENVIRONMENTAL TRAINING AND AWARENESS:</b>	Awareness creation regarding the provisions of the EMP as well as the importance of safeguarding environmental resources.	<b>PLAN COMPONENT 5</b>	<b>YES</b>
<b>ENVIRONMENTAL CONSERVATION:</b>	Minimise the effect of the activity and protect the social environment in which it is happening.	<b>PLAN COMPONENT 6</b>	<b>YES</b>
<b>EMPLOYMENT /RECRUITMENT</b>	Ensure the protection of workers' rights and safety in Namibia.	<b>PLAN COMPONENT 7</b>	<b>YES</b>
<b>STAKEHOLDER COMMUNICATION:</b>	Provide a platform for stakeholders to raise grievances and receive feedback and hence, minimise negative conflict.	<b>PLAN COMPONENT 8</b>	<b>YES</b>
<b>SOCIO-ECONOMIC AND MISCELLANEOUS:</b>	Protecting cultural and general wellbeing of the affected.	<b>PLAN COMPONENT 9</b>	<b>N.A</b>

## 4.1 PLAN COMPONENT 1: WASTE MANAGEMENT

At the construction site, high importance shall be placed on waste management, and it needs to 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:

### 4.1.1 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 clearly 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,
- Due to its high alkalinity content, unbound cement (dry) in its raw state and cement-infused water from mixers are classified as hazardous waste. 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 will 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 must be provided for the use of 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 will end at the start of the operational phase. The responsibility to implement the EMP, on-site monitoring and evaluation of the EMP / WMP lies with the Contractor, ECO and the ER.

#### **4.1.2 OPERATIONAL WASTE MANAGEMENT:**

##### **GENERAL WASTE:**

- The development needs to provide efficient waste management infrastructure for household and business, which will include recycling infrastructure,
- The household and business waste needs to be collected by the Karibib Town Council or service provider, and
- Sewerage needs to be pumped through a closed system pipeline to the Karibib Town Council bulk sewerage lines.

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

## 4.2 PLAN COMPONENT 2: HEALTH AND SAFETY

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

### 4.2.1 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 will need to apply to the Labour Act. No. 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 and nearby residents on the site are 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 on-site during construction.

#### **ROAD SAFETY:**

- Vehicles' 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 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 at 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 needs to be removed regularly to an approved 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.

#### **4.2.2 OPERATIONAL PHASE HEALTH AND SAFETY MANAGEMENT:**

Four ephemeral streams flow through the project site. Drainage at the site is from northeast to north or east to northwest, towards lower areas. These streams are accommodated within public open spaces within the layout. This is to ensure that limited development takes place within the flood areas. Knight Piesold's mitigation measures to prevent any flood risk within the layout are as follows:

- Relocating the informal settlement on the southern side of the river 2 channel between "Start" and "Main Bridge" to create space for a channel with embankments,
- The Council should decide whether the 1 in 20-year flood mitigation measures will be acceptable, considering the lower cost and the low-risk overflow of the 1 in 50-year flood, which is estimated to result in less than 100mm flood depth throughout the township.
- The Council should clear away sand deposits obstructing the culverts before the next rainy season.



- Karibib Town Council should ensure all culverts are cleaned and inspected to ensure that there is no debris. Should the problem persist, a hydraulic assessment should be done to determine if their hydraulic capacity is sufficient.

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

### 4.3 PLAN COMPONENT 3: NOISE AND DUST

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

#### 4.3.1 NOISE PREVENTION:

Noise associated with construction and traffic activities will be heard from the site. Ongoing noise can cause stress and have a health impact on construction workers and nearby residents. However, mitigation measures need to be in place to prevent noise pollution within the area.

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, ECO of the development, and the Karibib Town Council.

#### 4.3.2 DUST PREVENTION:

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

Fugitive dust from the construction site can also cause poor visibility for road users. Mitigation measures must be put in place to prevent dust pollution.

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 the 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,
- Stockpiles of building material and earth material need to be kept moist, or the surfaces need to be kept stabilised. A nylon mesh cover which 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, ECO of the development, and the Karibib Town Council.

#### 4.4 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.

##### 4.4.1 TRAFFIC DURING THE CONSTRUCTION PHASE:

The following measures are provided to minimise traffic:

###### **TRAFFIC MITIGATION:**

- 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 will end 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 will lie with the Karibib Town Council after construction.

#### 4.5 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.

**During the training sessions**, an attendance register should be completed, including the names, positions 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.

#### 4.6 PLAN COMPONENT 6: ENVIRONMENTAL CONSERVATION

##### 4.6.1 TREE MANAGEMENT PLAN:

The layout was prepared in such a way 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 which 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.

#### 4.6.2 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 the implementation of the EMP lies with the Contractor, ER and ECO.

### 4.7 PLAN COMPONENT 7: EMPLOYMENT/RECRUITMENT

The construction of the development will take place over several years and will employ about up to a thousand (1000) workers. It is not clear at this stage which skill sets would be required, nor the extent to which employment opportunities could be created in the project area.

The benefits to the local community from jobs could be dependent on the extent of local recruitment and the measures put in place to ensure preferential local gender-based recruitment where possible.

#### 4.7.1 RECRUITMENT:

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

- A recruitment process whereby local residents shall be given preference shall be designed by the ER and the Contractor,
- 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.

#### 4.7.2 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.

## 4.8 PLAN COMPONENT 8: STAKEHOLDER COMMUNICATION

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

### 4.8.1 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 these stakeholders will 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.

### 4.8.2 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's list should be informed about the availability of the complaints register in writing by the ER prior to the commencement of construction activities.



**Table 4: Public Consultation Process**

<b>THE PROCESS:</b>	<b>DESCRIPTION OF THE PROCESS:</b>
<b>PLANNING PHASE:</b>	
<b>I&amp;APs IDENTIFICATION:</b>	Key Interested and Affected Parties (I&APs) were identified and included in a list of I&APs ( <b>Appendix D.2</b> ). The list included the Karibib Town Council.
<b>NEWSPAPER NOTICES:</b>	Notices were placed, for two consecutive weeks in two widely circulated newspapers, briefly describing the developments and their locality, inviting the public to register as I&APs ( <b>Appendix E.1</b> ).
<b>INFORMATION PROVISION:</b>	A Background Information Document (BID) was compiled that contained essential information about the project ( <b>Appendix D.3</b> ).
<b>MEETINGS:</b>	<ul style="list-style-type: none"> <li>- Urban Dynamics did advertise and requested that the public register as I&amp;APs for a public meeting.</li> <li>- The meeting date was the <b>28<sup>th</sup> of April 2021</b>.</li> <li>- Information was provided to stakeholders (of which one was the Karibib Town Council)(<b>Appendix A</b>)</li> </ul>
<b>PUBLIC COMMENTS PERIOD:</b>	The public comments period was from <b>12 April to 24 May 2020</b> .
<b>THE CONSTRUCTION PHASE:</b>	
<b>COMMUNICATION PLAN:</b>	<ul style="list-style-type: none"> <li>- The Contractor shall at every site meeting report on the status of the implementation of all provisions of the EMP.</li> <li>- 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.</li> <li>- The Communication Plan, once agreed upon by the Developer, shall be binding.</li> <li>- All communication with the stakeholders must take place through the ECO.</li> <li>- A copy of the EMP must be available at the site office and should be accessible to all stakeholders.</li> <li>- The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences.</li> <li>- A procedure should be put in place to ensure that concerns raised have been followed-up and addressed.</li> <li>- All people on the stakeholder's list should be informed about the availability of the complaints register in writing by the ER prior to the commencement of construction activities.</li> </ul>

## 4.9 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 boundary;
- Inspect 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 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.

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