Environment Management Plan to The Proposed Renovation and Upgrading Project

at Vaagali in South Kaafu Atoll

September 2020

Proposed by: Vaagali Investment Pvt. Ltd.
Consultant: Abdul Awwal Ahmed Nizar

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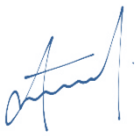
Consultants Declaration

I certify that the statements made in this Environment Management Plan to the proposed Renovation & Upgrading Project at Vaagali in South Kaafu Atoll, is complete and correct to the best of my knowledge and it is in accordance with EIA Regulation 2012 and subsequent amendments.



Abdul Awwal Ahmed Nizar
Lead Consultant
Registration No: EIA P05/2020

Vaagali
Investment Private Limited

بسم الله الرحمن الرحيم

Wednesday, September 23,2020

Mr. Ibrahim Naeem
Director General
Environmental Protection Agency
3rd Floor, Green Building
Han'dhuvaree Hingun,
Malé
Rep. of Maldives

Dear Mr. Ibrahim Naeem

Sub: Proponent declaration and Commitment letter for the proposed renovation and Upgrading project at Vaagali, South Malé Atoll.

As the proponent of the project (proposed renovation and upgrading project at Vaagali in South Kaafu Atoll), we conform that we have read all information in this EMP and to the best of our knowledge, all the information relevant to this project description, project construction works and operational aspects provided here are accurate and complete.

As the Proponent of the project; we assure you our commitment to undertake the proposed mitigation measures and management plan given in the report.

Thank you

Yours Sincerely,

Vaagali
Investment Private Limited
C - 0981 / 2017

Hussain Shareef
Managing Director

H. Palm Beach, Kaalafaanu Hingun, Male' 20076 – Rep of Maldives.
Phone: 3317528 Fax 3317529 Email: info@vaagaliinvestment.com

1. Introduction

This Environment Management Plan (EMP) is an evaluation of the potential environmental impacts from the proposed renovation and upgrading project at Vaagali in South Kaafu Atoll. This EMP provides the background to the proposed project components and assessment of their likely environmental impacts. Furthermore, the EMP will look at the justifications for undertaking the proposed project components and various components or activities in terms of location, design and environmental considerations would be suggested. The proposed enhancement and mitigation measures are outlined where ever necessary.

1.1 Purpose of this EMP

This Environment Management Plan (EMP) has been prepared in order to meet the requirements of the regulation number 2012/R-27 (Regulation on the preparation of environmental impact assessment) and its amendments. Environmental Protection Agency (EPA) issued screen decision statement for the project on 26th August 2020 (reference number 203-ECA/PRIV/2020/40).

1.2 Project Title

The project is called the Renovation and Upgrading Project at Vaagali in South Kaafu Atoll.

1.3 Project Proponent

The proponent of this project is the Vaagali Investment Pvt. Ltd.
Address: H. Palm Beach
Malé
Republic of Maldives
Email: operations@vaagaliinvestment.com

1.4 Project background

The island was previously used as a picnic island. Recently island was leased to Vaagali Investment Privet Limited for resort development. Since Vaagali is a naturally beautiful island, with a wonderful beach, the existing 5 rooms and facilities will be renovated and improved, focusing on the mid-range tourism with adequate facilities, making a perfect holiday destination for international tourist as well as for the locals.

1.5 Project Aims and Objectives

Considering the size and rich marine environment around the island the developer/lease decides to renovate and improve the existing facilities enhancing the services of this private island. Primary objective of this project is to convert the picnic island into a small private resort island.

To meet the regulatory requirement and to operate as a resort all existing facilities need to be upgraded and refurbished.

The major activities of the project include;

1. Renovation of the existing five (5) guest rooms,
2. Renovation of the existing restaurant and main kitchen
3. Upgrading the existing powerhouse, desalination plant, sewage system and fire safety system.
4. Maintenance of the existing staff accommodation building, mosque and other support structures.

Since the proposed project involves mainly upgrading of existing structures and services, the rationale behind the project is to bring the island to operational capacity providing a safe sound stay in the island to visiting tourists and locals.

1.6 Project Aims and Objectives

The main scope of this report is to develop an Environmental Management Plan to the proposed renovation and upgrading of K.Vaagali. the report will identify the main environmental impacts that are associated with the proposed development and address necessary environment mitigation and management measures that need to be taken into consideration during renovation and operation phase of the project. This document also addresses the existing environmental condition of the surveyed area and identifies the ways in which potential environmental impacts will be managed and mitigated.

The key objectives of the report are;

- Describe the proposed project in detail
- Identify the need and justification for the proposed project
- Describe the existing environmental condition of the island based on the findings undertaken during the site visits
- Identify, assess and predict potential impacts on the environment of the proposed project
- Develop a Environmental Management Plan relevant to the proposed project activities

1.7 Task already Undertaken

No project task has been undertaken yet.

1.8 Team Members

The EMP team members are;

- Abdul Awwal Ahmed Nizar (Registered Environment Consultant)
- Mariyam Zunaanath (Registered Architect)

2. Project Description

2.1 Project location

Vaagali is an uninhabited island located on the western periphery of South Kaafu Atoll with the geographic coordinates of 3° 56’ 54.80’’ N and 73° 21’ 21.09’’ E (Figure 1). Land area of the island is approximately 6,653.998 sqm in size. Length of the island is roughly 120m and average width of the island is 55m. Island has an average elevation of 1-2 m above mean sea level. Previously island was utilised as a picnic island.

Figure 1 K.Vaagali (Source: Google Maps)

2.2 General Context of the Study

The island has limited vegetation with few coconut palms, and is surrounded by a white sandy beach that moves around the island with the monsoons. The island has an extensive encircling house reef with a shallow beautiful lagoon, housing various corals and fishes.

The island is currently being used as a picnic island. To cater needs of picnicker’s, island was developed with minimum facilities which includes;

1. Arrival jetty
2. 5 changing room
3. Reception area
4. Shop
5. Power house with desalination plant
6. Mosque
7. Main complex (staff accommodation, kitchen, food serving area etc.)

Figure 2 K.Vaagali (Source: Google Maps)

2.3 Project boundary and impact zone

Project boundary is restricted to the allocated island, Vaagali (Kaafu Atoll) and lagoon area within legal boundary of the island. Hence, an environmental study for this EMP is restricted for this location (Figure 2).

2.4 The Project

2.4.1 Project Outline and Project Site Plan

Since Vaagali was utilised for a picnic island and there are exiting facilities, to transform the island and existing facilities to accommodate international and local tourists, the existing facilities need to be renovated and upgraded. Also, the island should have running water, electricity and a working sewerage system so that the visiting tourists can enjoy the stay with amenities of the guest room.

The project mainly involves the renovation and upgrading of the existing facilities. The proposed project includes the following main components:

- Renovation of the existing five (5) guest rooms
- Renovation of the existing restaurant and main kitchen

- Upgrading the existing powerhouse, desalination plant, sewage system and fire safety system.
- Maintenance of the existing staff accommodation building, mosque and other support structures.

The project is approved by the Ministry of Tourism on Tuesday, July 07th, 2020 with the letter number 88-DS/PRIV/2020/956. Letter and approved project site plan are annexed in the appendix of this report.

2.4.1.1 Renovation of the Existing Five Guest Rooms

No changes will be done to the footprint of the existing structures. The existing interior and exterior wall framing and facades will be removed and redone with changes to the interior design of all the guest rooms. Internal wiring and plumbing will be renewed. Flooring will be refurbished and the furniture will be replaced.

2.4.1.2 Renovation of the Existing Restaurant and Kitchen

The existing restaurant and kitchen setup will be stripped out, re-designed and re-fitted with upgraded kitchen appliances and counter tops. The dining area will be changed to offer all day dinning with a beach bar counter top. Beach bar will be used as a main dining area for the guests. To avoid congestion and keep minimum operational facilities, all the staff meals, tea coffee and refreshment will be prepared in the main kitchen and served at the staff mess hall.

2.4.1.3 Upgrading of the Existing Powerhouse, Desalination Plant, Sewage System and Fire Safety System

Existing structures will be renovated and upgraded to cater the needs. No new structure will be constructed. However, minor changes will be brought to the floor plan of the existing structures. The whole facility will be upgraded as per the current MEA, EPA and MNDF regulation. Details changes are given below;

The floor layout of the power house will be changed within the existing boundary and two 75kW generator sets will be installed with a synchronising panel. Existing electricity distribution cables will be replaced with new cables and distribution boxes.

A new 20TPD RO plant will be installed within the footprint of existing service structure. Also, two 10,000 litters storage tanks (syntax) will be installed nearby the building. The existing sea water intake line from the lagoon will be replaced and the existing water network pipe throughout the island will be replaced. A brine outfall line will be renewed.

A small-scale sewerage treatment plant (STP) with outfall pump will be established within the existing service structure. The existing sewage pipe line network will be replaced with new pipes and fittings while the existing catchpits will be replaced with new ones. A sewerage outfall line will be renewed.

Water and sewer network layout has been annexed.

All guest rooms and staff accommodations will be retrofitted with smoke detectors which is synced to a fire alarm system. All guest rooms and staff accommodations will have standard CO_2 and water fire extinguishers. Additional to CO_2 and water fire extinguishers, Class B fire extinguishers will be placed in Kitchen and restaurant area. Similarly, the class B and class C fire extinguishers will be placed in the power house area. A portable fire pump with firehoses will be placed in the island, in case sea water pumping is required.

All services will be upgraded accordingly to the technical specifications of MEA, EPA and MNDF.

2.4.1.4 Maintenance Work of the Existing Staff Accommodation Building, Mosque and other Service Structures

All the back of the house building including staff accommodation, mosque, and other outlets will be renovated without major changes to the floor area. Since the island is smaller in size and the developer has no interest to develop any other facilities soon, all the common facilities will be used by the guests as well as the staffs (to cater minimum 30 staff).

2.5 Project duration and schedule

The project is expected to be carried out in one year according to the schedule once the EMP clearance is given.

Table 1 project schedule.

#	Task details	Duration (months, 2020)											
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Approval of concept												
2	Environmental clearance												
3	Construction permit												
4	Mobilization												
5	Construction work												
6	Demobilization												
7	Launching of the resort												

2.5.1 Detailed Project Execution

This project mainly involves, preparation temporary storage area, equipment/material transport, renovation and upgrading works of the existing building.

2.5.1.1 Project Management

The project will be manged by the Project Manager. The project manager will manage the upgrading and renovation works accordingly to the schedule and monitor the project as it progresses.

2.5.1.2 Workforce Management

Workforce management is one of the essential part for successful delivery of a project. For the proposed project it is expected to recruit 18 staff including labourers, engineers and site supervisors. All off the project staffs will be accommodated within island using existing structures. All staff will report to the project manager.

No.	Description	Quantity
1	Project Manager	1
2	Engineer	1
3	Site Supervisor	1
4	Operator	1
5	Labourer	12
6	Chef	2

2.5.1.3 Site Preparation

Since this project does not involves construction of any new buildings no vegetation will be cleared during any of the project activities. The site preparation mainly includes fixing or dedication of a place to storage equipment and material. One of the existing rooms will be utilized for temporary storage, till new storage room is allocated within the existing service structures.

2.5.1.4 Mobilization of the Equipment and Materials

Mobilization of the equipment and materials involve transportation of the workforce, materials and the equipment required for the project to the project site (Vaagali). The mode of transportation for the material/equipment is via sea transport to the island and to the project site by hand or using wheelbarrow. No heavy machinery will be used for the project.

2.5.1.5 Management of Waste

The main types of waste expected to be generated for this project include material waste and packing material waste. However, these wastes are expected to be in small quantities. Waste that generate will be sorted and stored for incineration or to take it for final disposal site K.

Thilafushi. Existing waste management room will be used during construction and operation of the island. Since all project activities are within island, waste that could be handled easily will be managed in the in-house waste management room. Larger construction debris and demolition waste such as wood, concrete, tiles, plastic etc. will be transferred to Thilafushi once a month.

2.5.1.6 Health and Safety

Health and safety of the workers is indispensable for execution of a successful project. The contractor of the project holds the prime responsibility to ensure that precaution measures are taken by the workers. One of the most important aspect will be to use the Personal Protection Equipment (PPE). Appropriate PPE shall be worn at all times. This will typically include hard hats, eye protection, protective trousers, gloves and reflective clothing. Hearing protection, masks and wet weather clothing will be available for use where necessary. In addition, first aid kit shall be available on the site at all times. Proper construction signages and warning marks must be posted at relevant locations. All workers on site shall be trained to use different fire extinguishers to fight different type of fires.

2.5.1.7 Site Accommodation and Food

Workers will be accommodated in existing accommodation buildings. Food will be prepared onsite by chefs and severed in the existing staff mess. Other existing facilities will be used as alternate for the accommodation building, kitchen, and staff mess during the renovation of those structures.

2.5.1.8 Fuel Storage and Handling

Fuel should be stored in proper containers with a proper mechanism of refuelling the day tank of the generator. Absorbent mats and soak kits shall be available to clean accidental spillage during refuelling. The contractor does not require to have a separate fuel tank as existing onsite fuel tanks can be used to store fuel sourced and transported to the island.

2.5.1.9 Noise and Vibration

Since the project does not use heavy machinery, noise level is not expected to be high from the work done in the project. An average noise level during renovation hours will be between 50-70dbA. Generally, noise levels over 65dbA are considered as nuisance to the immediate vicinity of the work site. There will be negligible amount of vibrations during some operations of the project.

2.5.1.10 Potential Accidents and Emergency Plan

Construction work sites are prone to accidents. There should be an emergency plan for such unfortunate events which all workers are made aware. In cases of accidents that require site evacuation based on the severity of the injuries, work should be halted and other workers must assist in preparing the injured and site for evacuation.

2.5.1.11 Risks Associated with the Project

There is minimal financial, environmental and safety risk associated with the project since the project is majorly undertaking the upgrading and renovation works of the existing structures and services. The most significant risk is not finishing the project within the scheduled duration. This could be caused due to changes in weather conditions, delays in obtaining the material for construction and financial restrictions. The risk factors could be minimized by proper planning of the activities taking into account the changes in the weather and management of the financial situations.

2.5.1.12 Emergency Response Plan

All staff and visitors should be made aware of response procedures in case of emergencies. Emergency evacuation plan must be formulated kept on display in adequate locations. Evacuation drills should be conducted periodically during the course of the projects to ensure that everyone is familiar with the plan.

2.6 Project Inputs and Outputs

Major inputs of this project are human resource, natural resource and machinery input. Main output of the project is the economic and other indirect benefits to the developer. Following Table 2 and Table 3 summarize the input and outputs.

Table 2 Project inputs.

Input	Method of obtaining resource
Construction workers	Hired by proponent/contractor
Construction Materials – Cement, wood steel, electrical equipment sand and aggregates, PVC conduits, varnish, diesel, petrol etc.	Imported or purchased locally where available by proponent
Maintenance material	Imported or purchased locally where available
Water supply for construction	Desalinated water from the resort RO plant
Electricity/Energy for construction	Proponent during construction
Machinery such as concreate machine, electronic equipment etc.	Provided by proponent/contractor
Fuel (e.g. Diesel, petrol etc.)	Locally purchased by proponent
Food and accommodation	Provided by the proponent/contractor
Health and safety	Fire extinguishers, safety equipment and first aid provided by the proponent

Table 3 Project outputs.

Products and waste materials	Estimated quantities	Method of disposal
Oil and lubricants from machinery	Minimal	Reused or stock to transfer or Thilafushi
Construction waste (cement and concrete debris)	Considerable amount	Managed by in-house waste management centre or disposed to Thilafushi
Green waste	Minimal	Stocked and naturally decomposed
Solid waste	Major	Managed by in-house waste management centre or disposed to Thilafushi
Recyclable waste	Major/moderate	Reduced, reused or recycled or dealt with waste management
Hazardous waste	Moderate	Dealt at the designated land fill
Air Pollution	Minor emissions from the onsite generator	Unavoidable, but will be localised to the project area
Noise Pollution	Minimal	Unavoidable during construction phase, localised to the project area

3. Applicable Policies, laws and regulations

3.1 Overview

This project will be carried out in the context of the Maldivian laws and regulations. This section outlines the environmental regulations which are related to this project. All the activities during both development and implementation stage of the proposed project will be carried out in accordance to the legislations, policies and laws outlined below. Table 4 provides the applicable policies laws and regulations.

Table 4 Applicable policies laws and regulation.

#	Applicable policies laws and regulations	Description
1	Maldives Tourism Act – 2/99	As per the Maldives Tourism Act all tourism development must be approved by the Ministry of Tourism prior to the commencement of the project activities. This project was approved by the Ministry of Tourism on July 07th, 2020 from the letter number 88-DS/PRIV/2020/956, subjected to submit e environmental clearance from Environmental Protection Agency (EPA). Appendix B will provide the conditional approval.
2	Environmental impact assessment regulation 2012/R-27 and 1st - 5th Amendment	An environmental impact assessment regulation was issued by the Ministry of Environment on 2012. Regulation provides all necessary steps to develop EIA/EMP report from project proposal to final EIA/EMP report. A screening process to determine if an EIA or EMP is needed or not. Based on the proposed project activities EPA issued screening decision statement on August 26th, 2020 from the letter number 203-ECA/PRIV/2020/401, stating that need to submit an Environmental Management Plan. Appendix D will provide the screening decision.
3	Resort Environment Management Regulation	This regulation was issued by the Ministry of Tourism in 2006 to preserve and protect natural environment of the resort boundary. Under this regulation every resort must have in-house waste management machines in operation. The in-house waste management Centre must have and operate, incinerator, bottle crusher, compactor etc.

4. Methodology

Baseline environmental surveys to assess the physical and biological environment of the project area has been undertaken on by registered EIA consultant from 18-19th September 2020. The project area has been studied and surveyed using scientific methods. The following surveys were undertaken to determine the bassline condition.

4.1 Shoreline Mapping

Shoreline mapping was undertaken in GNSS RTK positioning method by using Comnav T300 GPS. During the survey the horizontal accuracy was maintained at ±0.02m whereas the vertical accuracy at 0.015m. GPS base station was set over a survey mark which has a reduced level relative to MSL. Shoreline was estimated to be the visually distinguishable mid line between the HWL and LWL. HWL is the elevated slope edge formed towards the inland by the pounding waves. LWL is the lower slope edge of the shore, seen towards the lagoon compared to HWL.

4.2 Tree Survey

Tree survey was conducted by recording the positioning of the significant large trees in the island using GNSS RTK positioning method by using Comnav T300. The trees were identified using a plant guide and recorded.

4.3 Marine Survey

There is no significant activity proposed in the marine environment. Hence, it is not relevant for the report.

5. Existing Environment

This section, existing environment relevant to the proposed project is discussed for the understanding the bassline conditions of the project site. Bassline conditions is essential for environmental monitoring since it provides comparative analysis. Major area looked under this section is the physical and biological environment of the proposed project area.

5.1 Coastal Environment

Since Vaagali is very small island compared to other islands of Maldives, it is of upmost importance that a bassline of the costal shorelines is determined. The existing shoreline was mapped including the natural coastal features.

Figure 3 K.Vaagali Coastal Environment

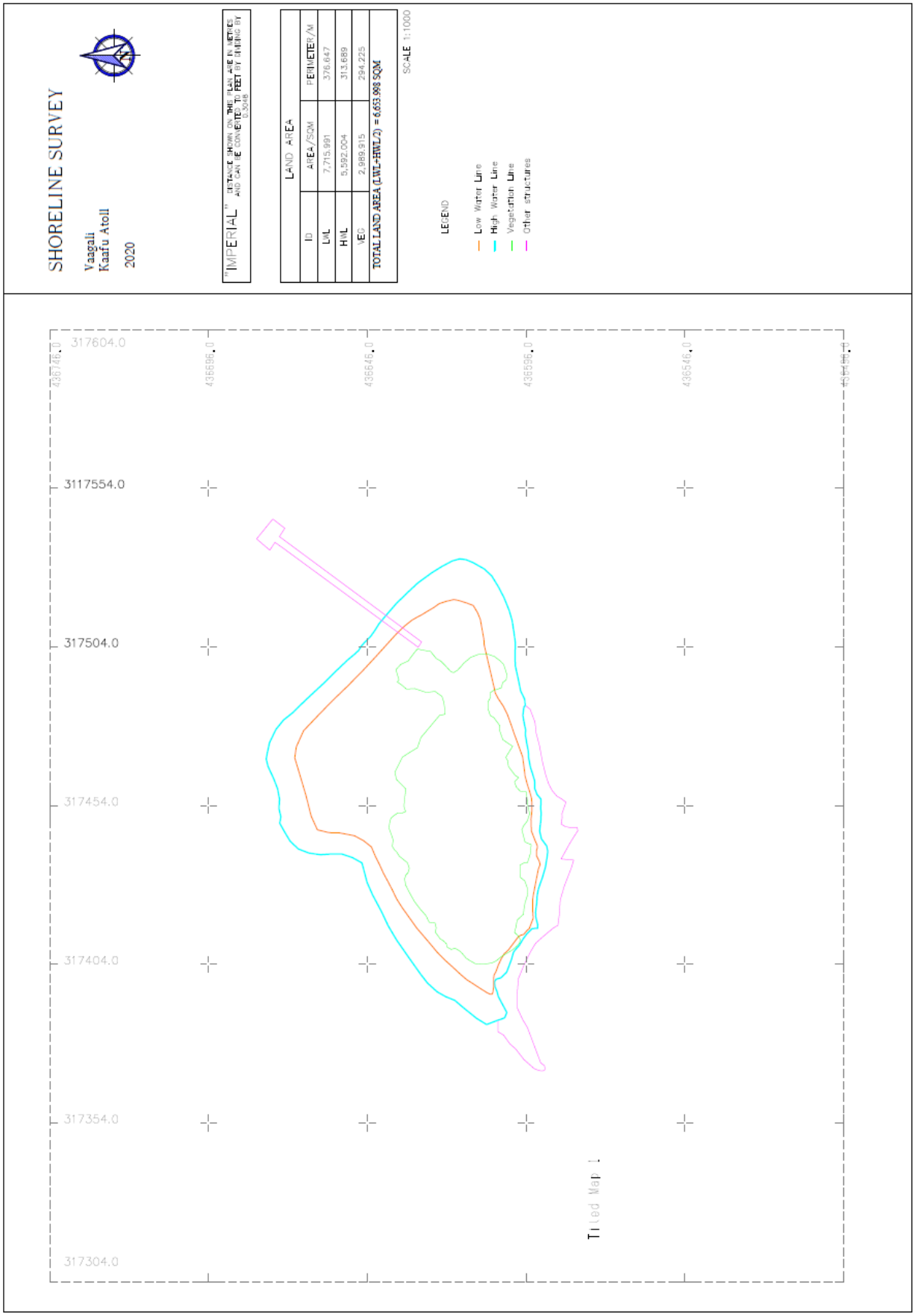


Figure 4 Existing Shoreline

5.2 Terrestrial Flora & Fauna

A detailed vegetation map was created covering the entire island. It was observed that there were old trees however few in number. Also, it was observed that there were very few coconut palm trees of which one coconut tree was significant in size.

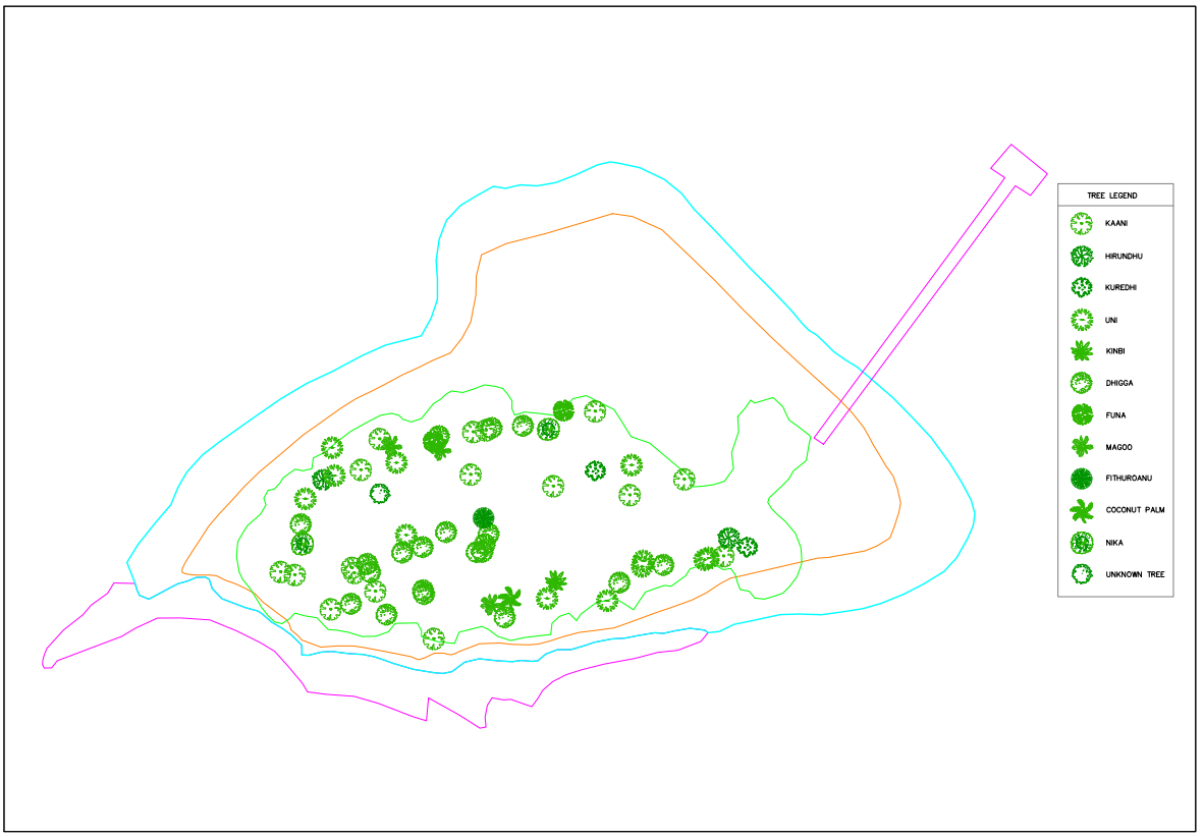


Figure 5 Tree Survey

Figure 6 K.Vaagali Vegetation

6. Environmental Impacts & Mitigation Measures

6.1 Introduction

Impacts on the environment from the proposed project have been predicted through analysis of the project, discussions with the project proponent, field surveys, observations and assessment as well as based on field experience.

6.2 Environmental Impacts

4.2.1. Impact identification

All infrastructure development projects have their own set of potential positive and negative impacts. Various methods are available to identify the magnitude and severity of these impacts. Impacts on the environment from various activities of the project have been identified through consultation, checklist, literatures of similar projects, existing environment condition and consultants experience through similar projects.

The project will have both construction and operational impacts on the environment. These impacts may be either short term reversible or long term irreversible damage or alterations. The impacts identified here will be according its location and magnitude. The intensity or severity of the impacts is further grouped into negligible, minor, moderate and major. This will help in identifying and carrying out remedial and mitigation measures.

Propose project involves upgrading and renovation works of existing structures and services. Impacts from the project are limited to location of the project and scale of the project. Major negative and positive impact to the environment and economic issues will rises during the construction and implementation process of the project.

4.2.2. Identification of significant impacts

4.2.2.1. Mobilization

Mobilization of the equipment and materials involve transportation of the equipment required for the project to Vaagali Island. The mode of transportation for the items is via sea transport. Service jetty will be used to transport the construction material. Due to the scale of the project, the impacts that emerged from mobilization are negligible and short term.

4.2.2.2. Air pollution and noise

During the renovation, it is expected to generate dusts, emission of gas and noise at project site. Emission of gas and dust alters the air quality and cause health issues. Since the project activities does not involve heavy duty construction and use of heavy machinery, the impacts will be short term and proper mitigation measures can mitigate this impact.

4.2.2.3. Ground water quality and soil condition

It is unlikely to contaminate groundwater and soil condition during the upgrading works. There is limited possibility of disturbing the ground water table during utility network upgrading. Mishandling of fuel and construction chemicals during renovation might contaminate soil and groundwater, this will have negative impact to the environment.

4.2.2.4. Marine water

Since there is no significant project activity in the island lagoon except for replacing utility outfall lines. Minimal disturbance to the marine environment will be caused.

4.2.2.5. Solid Waste

The main types of waste expected to be generated for this project include material waste and packing material waste. Demolition waste will be generated from renovation works. This waste will be collected and stored for incineration and for final disposal.

4.2.3. Impact during operational phase

4.2.3. Cumulative Impacts

No major negative cumulative impacts are anticipated as there are no other projects on-going on the island or in the vicinity of the project site. Implementation of this project will bring economic, environmental, health etc. benefits to the resort.

4.2.4. Impact analysis

A purpose build matrix method (a leopold matrix) adopted from (Josimovic, Jasna, & Sasa, 2014) used identify the impacts.

Depending on the scope of this project impact factors (Table 5) have been evaluated for impact magnitude, impact significant, impact probability and impact duration as show in Table 6 to Table 9.

Table 5 Project impact factors.

	Scale	Attribute
Impact Magnitude	0	No observable effect
	1	Low effect
	2	Tolerable effect
	3	Medium high effect
	4	High effect
	5	Very high effect (devastation)

Impact significance	L	Limited impact on location
	O	Impact of importance for municipality
	R	Impact for regional character
	N	Impact of national character
	M	Impact of cross-border character
Impact probability	M	Impact is possible (probability of less than 50%)
	V	Impact is probable (probability of over 50%)
	I	Impact is certain (100% probability))
Impact duration	P	Occasional/temporary
	D	Long-term/permanent

Table 6 Magnitude of the impact of factors on the environmental components for the proposed project.

		Project activities								
		Construction Phase					Operational phase			
	envisaged impact factors	Mobilization	Guest Room Renov.	Restaurant/ Kitchen Reno.	Electricity, Water, Sewer System Upgrade	Staff Accommodation, Mosque, Other Service Structures	Employment	Socio-economic development	Sum of IF Values by types and biological Components	average
Physical Components	Water	0	1	1	1	0	0	0	3	0.43
	Land	0	0	0	1	0	0	0	1	0.14
	Air	0	1	1	1	1	0	0	4	0.57
	Noise	0	1	1	1	1	0	0	4	0.57
Biological Component	Diversity of flora	0	0	0	0	0	0	0	0	-
	Diversity of Fauna	0	0	0	0	0	0	0	0	-
Socio-cultural component	landscape	0	0	0	0	0	0	0	0	-
	land use	0	0	0	0	0	0	0	0	-
	Economy	0	0	0	0	0	2	2	4	0.57
	Culture	0	0	0	0	0	0	0	0	1
	Accidents	1	1	1	1	1	1	1	7	0.25
Cumulative values of IF according to environmental factors		1	4	4	5	3	3	3	IF = 0.32	
Average		0.0.9	0.36	0.36	0.45	0.27	0.27	0.27		

Table 7 Significant of the impacts of the factors on the environmental component for the project.

		Project activities						
		Construction Phase					Operational phase	
	envisaged impact factors	Mobilization	Guest Room Renov.	Restaurant/ Kitchen Reno.	Electricity, Water, Sewer System Upgrade	Staff Accommodation, Mosque, Other Service Structures	Employment	Socio-economic development
Physical Components	Water		L	L	L			L
	Land				L			L
	Air		L	L	L	L		L
	Noise		L	L	L	L		L
Biological Component	Diversity of flora							
	Diversity of Fauna							
Socio-cultural component	landscape							
	land use							
	Economy						L	L
	Culture						L	L
	Accidents	L	L	L	L	L	L	L

Table 8 Probability of the impacts of factors on environmental component for proposed project.

		Project activities						
		Construction Phase					Operational phase	
	envisaged impact factors	Mobilization	Guest Room Renov.	Restaurant/ Kitchen Reno.	Electricity, Water, Sewer System Upgrade	Staff Accommodation, Mosque, Other Service Structures	Employment	Socio-economic development
Physical Components	Water		M	M	M	M		
	Land							
	Air		M	M	M	M		
	Noise		M	M	M	M		
Biological Component	Diversity of flora							
	Diversity of Fauna							
Socio-cultural component	landscape							M
	land use						V	I
	Economy						I	I
	Culture							
	Accidents		M	M	M	M		M

Table 9 Duration of the impacts of the factors on environmental component for the proposed project.

		Project activities						
	envisaged impact factors	Mobilization	Guest Room Renov.	Restaurant/ Kitchen Reno.	Electricity, Water, Sewer System Upgrade	Staff Accommodation, Mosque, Other Service Structures	Employment	Socio-economic development
Physical Components	Water		P	P	P	P		
	Land							
	Air		P	P	P	P		
	Noise		P	P	P	P		
Biological Component	Diversity of flora							
	Diversity of Fauna							
Socio-cultural component	landscape							P
	land use						D	D
	Economy						D	D
	Culture							
	Accidents		P	P	P	P		P

4.2. Mitigating the impacts

Several actions can be taken to minimize the above mentioned impacts. Expert consultations, past experience and local knowledge are essential in reducing the impacts. The proponent and the contractors must work carefully to eliminate or reduce the identified risks.

Table 10 Potential impacts during construction and operation of the project and mitigation measures to minimize the impacts

Impact	**Mitigation**	**Intensity and reversibility**	**Responsible Party**	**Cost (USD)**
Ground water & Soil condition	Fuels, grease or any other harmful chemical to be handled in sealed or specific areas allocated. Flush the existing sewer network before removing the existing pipeline to avoid sewer spills.	Minor, short term	Proponent/ Contractor	N/A

	Avoid deep excavation for utility pipelines to avoid ground water disturbances.			
Air and Noise pollution	To avoid noise avoid working night time. To minimise the air pollution, regular maintenance of the equipment and machineries	Minor, short term	Proponent/ Contractor	N/A
Solid waste pollution	Solid waste to be managed in daily basis in inhouse waste management room	Minor, short term	Proponent/ Contractor	N/A
Increasing Turbidity & Sedimentation	Complete works in shortest time period and in calm conditions	Minor, short term	Proponent/ Contractor	N/A
Damage to Marine biodiversity	Pre-identify the exact locations to place all structures. Brief workers to avoid live corals in the area, and on proper behavior in water to avoid damage to corals and marine life in the area. When replacing the sea water intake line and outfall pipelines, the work shall be conducted during low tide and during calmer weather to minimize the number of workers in the lagoon to avoid sediment disturbance.	Minor, short term	Proponent/ Contractor	N/A
Damage to Vegetation	During surface excavation for utility network upgrade, use manual excavation and navigate carefully through the tree roots avoiding root damage.	Minor, short term	Proponent/ Contractor	N/A
Health & Safety	All workers will be briefed on safety plan and procedures. All workers will be provided Personal Protective Equipment.	Minor, short term	Proponent/ Contractor	N/A

5. Environment Management Plan

During the construction and implementation, it is vital to have an environmental management plan. An environmental management plan will address how the possible impacts would be addressed, who will be responsible to carry out respective tasks and what would be the remedial actions in order to provide a better quality of service. It will also provide evidence that the proponent has been abiding the legislative requirements, guidelines and policies.

5.2. Management plan

The management plan proposed for the project would comprise of a framework with five major components. A schematic of management plan is shown in Figure 7

- Policy planning
- Formulation of management plan
- Implementation and operation
- Management plan monitoring and
- Reviewing

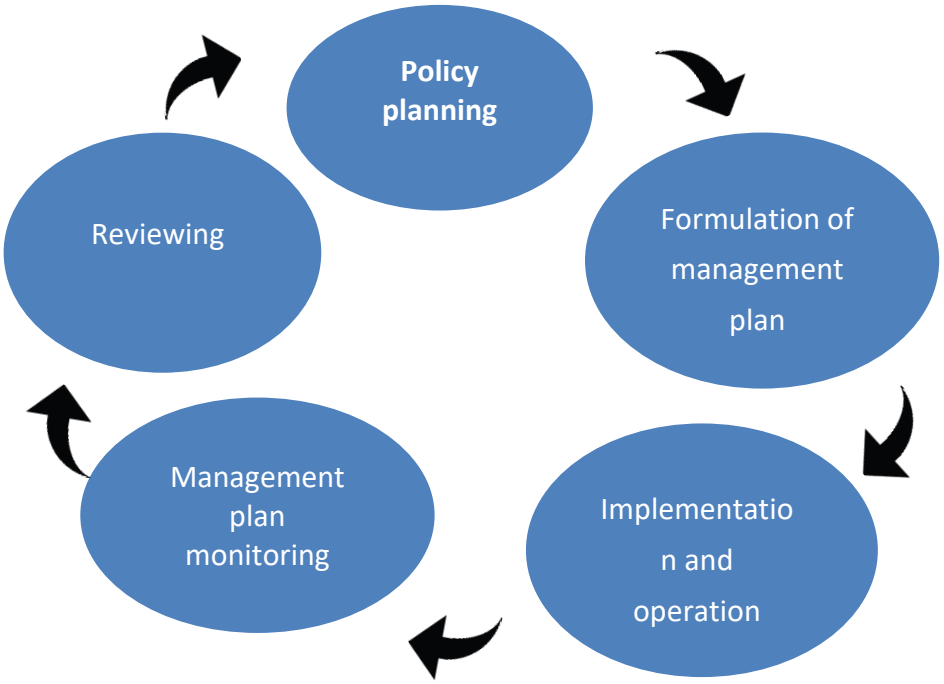


Figure 7 Schematics of the environmental management plan

5.3. Roles and responsibilities

Following key partners would be involved in the implementation of the management plan as described in the respective roles and responsibilities.

5.3.4. Proponent

Proponent would be responsible for all the project activities during the construction and implementation of the project. The proponent has to be familiar with the rules and regulation relating to the project. In addition, the proponent will carry out the activities in the management plans and the monitoring. The necessary expertise would have to be sought to prepare the monitoring reports.

Proponent of this project is the Vaagali Investment Pvt. Ltd.
Address: H. Palm Beach
Malé
Republic of Maldives

5.3.5. Contractor

Project contactor will be assigned by the proponent. The contractor has to be familiar with the rules, regulation and the management plan relating to the project. It is the responsibility of the contractor to implement all measures given in the management plan during construction.

5.3.6. Environmental Consultant

The environmental consultant will do the necessary field survey and analysis. The consultant should also compare with the baseline conditions and advice the proponent on the necessary changes. The consultant will carry out environmental audits necessary for the enhancement of the management and monitoring plan.

5.3.7. Ministry of Tourism

The ultimate approval and the operating licensing issuing body is the Ministry Tourism since all the resort operations are regulated by the Ministry. The ministry is responsible to check and approve the designs and drawings before the construction approval would be given. Once proposed project is finished and ready for operation, operation permit will be given by the Ministry after the site inspection.

5.4. Environmental monitoring, reporting and commitment

5.4.1. Environmental Monitoring

This section outlines the environmental monitoring and reporting mechanism for the proposed project. Objectives of this monitoring program are to detect and document the environmental impact to the environment and the surroundings due to the proposed project. The purpose will be to:

1) Assess the magnitude of the impacts resulting from the various stages of the proposed work and

2) Undertake take mitigation measures to minimize the negative impacts.

The Table 11 outlines the major features of the monitoring program to be put in place during the construction period and during the operation period. It also provides the frequency, the responsible partner and the estimated cost for the monitoring.

Table 11 Monitoring program for the proposed project.

Monitoring requirements	Indicator	Method/ Parameters	Frequency of monitoring	Responsible parties	Estimated cost (USD)
Ground water quality	Water Quality: pH, Turbidity, and Fecal/total coliform	3 sample, 3 different location. Laboratory analysis	Very 3 month, during construction and 6 month during operation	Proponent	500.00
Marine water quality	Water Quality: Salinity, DO, BOD, pH, Turbidity, and Fecal/total coliform	3 sample, 3 different location. Laboratory analysis	Very 3 month, during construction and 6 month during operation	Proponent	500.00
Waste generation	Amount of waste generate in kg	Monthly report	Monthly report (construction/operation phase)	Proponent	-
Energy production & consumption	KW/Month	Monthly log	Every 6 month (only operational phase)	Proponent	-
Water production & consumption	Tons/Month	Monthly log	Every 6 month (only operational phase)	Proponent	-

5.4.2. Reporting

Based on the data collected, bi-annual monitoring report will be compiled and submitted to the relevant authorities for compliance.

5.4.3. Commitment by the proponent

The proponent is fully committed to undertaking the monitoring program outlined in this Chapter (refer Appendix A of this report).

6. Conclusions

This EMP is written in accordance with the regulations and requirements to renovation and upgrading project at Vaagali in Kaafu Atoll. This has been proposed by the proponent the Vaagali Investments Pvt. Ltd. The EMP looked into the major impacts due to the proposed development. It assessed the possible impacts on the surrounding environment during the construction and operations stages of the project. It also looked into the possible mitigation actions which could be undertaken to mitigate the impacts.

In economic perspective it is envisaged that this developmental project brings positive impacts to the proponent and to the tourism industry, since island is targeted for international and local tourist. Benefits from this project outweighs the negative environmental impacts with the mitigation actions proposed in the report and the impacts could be mitigated during the construction and implementation of this project activities.

It is important that the actions in the management plan to be given a high consideration. Regular monitoring of the activities during the construction and operation of the project as stated in this report to minimize the impacts and to take early action to rectify any issues. The proponent has committed to implement mitigation measures and conduct all monitoring program highlighted in this report to minimize the impacts.

It was seen from the assessment that there will be no significant impact on the environment since, the development is under taken in the existing footprint developed previously.

Therefore, from an economic perspective, the project is justified and it is recommended to carry on this project with the proposed mitigation measures, management plan and the monitoring plan.

7. References

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Leopold, L. B., F. E. Clarke, B. B. Hanshaw, and J. E. Balsley. 1971. *A procedure for evaluating environmental impact. U.S.* Geological Survey Circular 645, Washington, D.C.

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MOT (2005), Environmental Guidelines for Tourist Resort Development & Operation in the Maldives; A guide for Planners, Managers & Operators

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8. Appendix

A. Proponent Declaration & Commitment Letter

B. Concept Approval

C. Approved Concept

D. Screening Decision

E. Water & Sewer Network Layout

F. Surveyed Shoreline Map

G. Tree Survey Map

H. Consultant CV

Appendix A. Proponent Declaration & Commitment

Vaagali
Investment Private Limited

بسم الله الرحمن الرحيم

Wednesday, September 23,2020

Mr. Ibrahim Naeem
Director General
Environmental Protection Agency
3rd Floor, Green Building
Han'dhuvaree Hingun,
Malé
Rep. of Maldives

Dear Mr. Ibrahim Naeem

Sub: Proponent declaration and Commitment letter for the proposed renovation and Upgrading project at Vaagali, South Malé Atoll.

As the proponent of the project (proposed renovation and upgrading project at Vaagali in South Kaafu Atoll), we conform that we have read all information in this EMP and to the best of our knowledge, all the information relevant to this project description, project construction works and operational aspects provided here are accurate and complete.

As the Proponent of the project; we assure you our commitment to undertake the proposed mitigation measures and management plan given in the report.

Thank you

Yours Sincerely,

Vaagali
Investment Private Limited
C - 0981 / 2017

Hussain Shareef
Managing Director

H. Palm Beach, Kaalafaanu Hingun, Male' 20076 – Rep of Maldives.
Phone: 3317528 Fax 3317529 Email: info@vaagaliinvestment.com

Appendix B. Concept Approval

بسم الله الرحمن الرحيم

MINISTRY OF TOURISM
REPUBLIC OF MALDIVES

Ref no: 88-DS/PRIV/2020/956

07th July 2020

Mr. Hussain Shareef,
Managing Director,
Vaagali Investment Private Limited,
H. Palm Beach,
Male'
Republic of Maldives,

Dear Mr. Hussain Shareef,

Re: Concept Approval of Vaagali in Kaafu Atoll

We refer to your application dated 16th January 2019 requesting to approve the concept drawing of the proposed structures at Vaagali in Kaafu Atoll.

A conditional approval is hereby granted to the development concept drawings submitted for the project, subjected to the fulfillment of the following requirements and procedures;

- Submission and approval of the environmental clearance report for the project.
- Submission of revised work plan with amended dates and including the milestones (Environment Clearance and Detail Drawing submission date).
- Submission and approval of the detail drawings for the project.
- Built up area percentage and carrying capacity of the facility shall comply with the existing regulations.
- Development shall comply with all conditions specified in the lease agreement.

Furthermore, please be informed that once the physical construction work begins, you are required to arrange an inspection within 30 days from the commencement of the physical construction and also submit the development progress report before the 15th of each calendar month. We make note that upon completion of the project, the bed capacity of the resort would be 5 guest rooms, 10 beds and the total built up area of the island is 15.03 %(450.82 sqm) of the total land area (3,000.00 sqm).

Thank You,

Yours Sincerely,

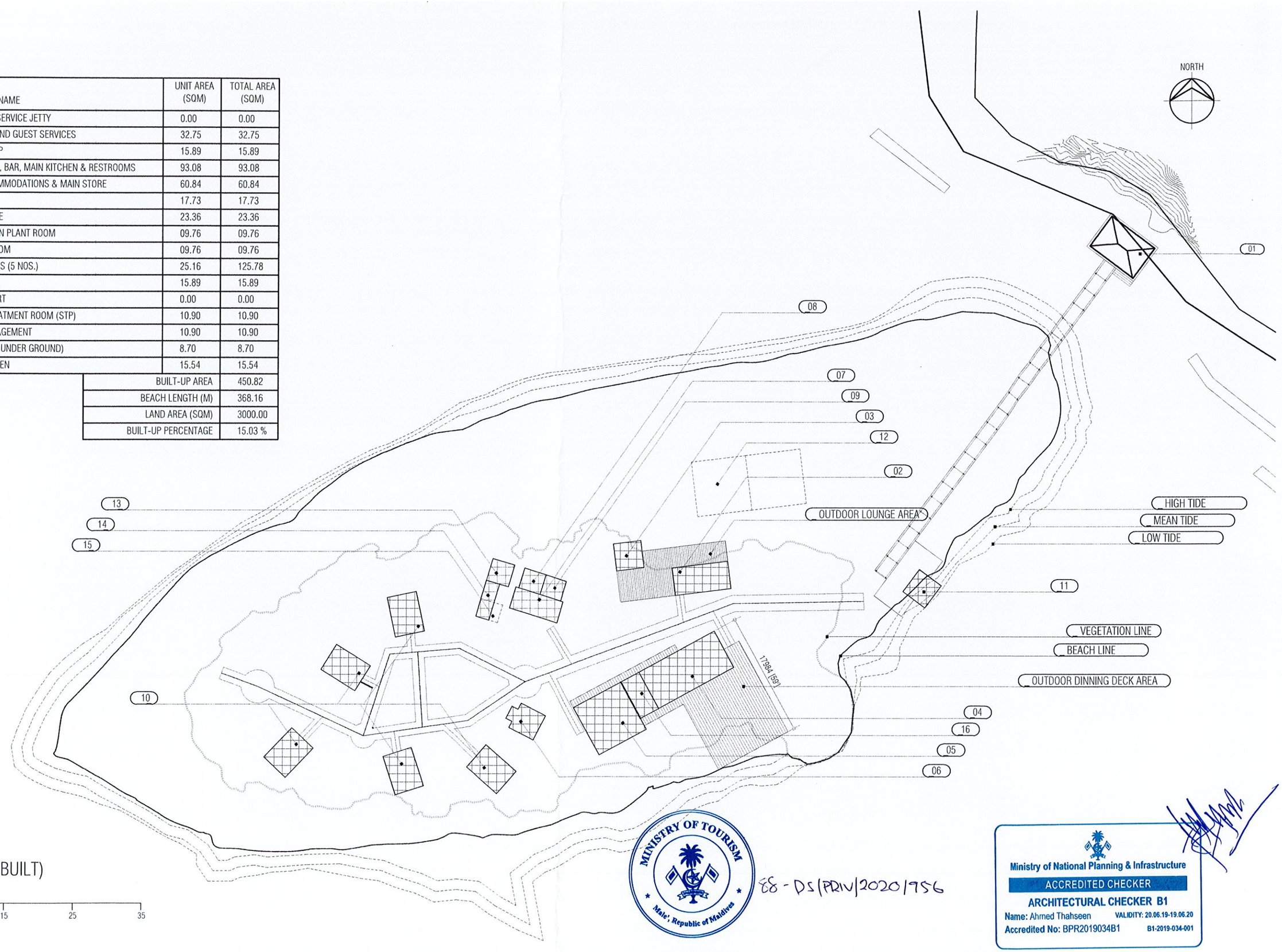
Mohamed Khussan
Senior Policy Director

SN/DS

Appendix C. Approved Concept

BUILT UP AREAS

UNIT NO.	STRUCTURE NAME	UNIT AREA (SQM)	TOTAL AREA (SQM)
01	GUEST AND SERVICE JETTY	0.00	0.00
02	RECEPTION AND GUEST SERVICES	32.75	32.75
03	RESORT SHOP	15.89	15.89
04	RESTAURANT, BAR, MAIN KITCHEN & RESTROOMS	93.08	93.08
05	STAFF ACCOMMODATIONS & MAIN STORE	60.84	60.84
06	MOSQUE	17.73	17.73
07	POWERHOUSE	23.36	23.36
08	DESALINATION PLANT ROOM	09.76	09.76
09	LAUNDRY ROOM	09.76	09.76
10	GUEST ROOMS (5 NOS.)	25.16	125.78
11	DIVE SCHOOL	15.89	15.89
12	VOLLEY COURT	0.00	0.00
13	SEWAGE TREATMENT ROOM (STP)	10.90	10.90
14	WASTE MANAGEMENT	10.90	10.90
15	FUEL TANKS (UNDER GROUND)	8.70	8.70
16	STAFF CANTEEN	15.54	15.54
	BUILT-UP AREA		450.82
	BEACH LENGTH (M)		368.16
	LAND AREA (SQM)		3000.00
	BUILT-UP PERCENTAGE		15.03 %



SITE PLAN (AS BUILT)

SCALE BAR

0 2 5 10 15 25 35

MINISTRY OF TOURISM
Male', Republic of Maldives

EE-DS/PRIV/2020/956

Ministry of National Planning & Infrastructure
ACCREDITED CHECKER
ARCHITECTURAL CHECKER B1
Name: Ahmed Thahseen VALIDITY: 20.06.19-19.06.20
Accredited No: BPR2019034B1 B1-2019-034-001

[ ]spaces inc	PROJECT: VAAGALI, MALE', K. ATOLL, REPUBLIC OF MALDIVES	STAGE: AS BUILT	ISSUED NO.: 01	ISSUED BY: SPACES	DATE ISSUED: 15/01/2020	CLIENT: VAAGALI INVESTMENT Pvt. Ltd, H.PALM BEAM, HENVEIRU, 20076 MALE' MALDIVES	CONTENTS: SITE PLAN (AS BUILT)	REVISION NOTES:	CONCEPT DESIGN BY: AHMED THAHSEEN BPR2019034B1
									DRAWING NUMBER: VAA/AR-001
									PROJECT NO: 01/2020
									PROJECT DATE: 15 JAN 2020

Appendix D. Screening Decision

Environmental Protection Agency
އެންވަޔަރަމަންޓަލް ޕްރޮޓެކްޝަން އެޖެންސީ

203-ECA/PRIV/2020/401:ނަންބަރު

ސްކްރީނިން ކުރުމަށްފަހު ނިންމިގޮތް

Screening Decision

މިއީ ކ. ވާގަލި ރިނޮވޭޝަންކުރުމުގެ މަޝްރޫޢުގެ މަސައްކަތުގެ ސްކްރީނިން ކުރުމަށްފަހު ނިންމިގޮތް އެންގުމަށްޓަކައި ވާގަލި އިންވެސްޓްމަންޓް ޕްރައިވެޓް ލިމިޓެޑް އަށް ފޮނުވާ ރަސްމީ ލިޔުމެކެވެ.

This is an official document issued to **Vaagali Investments Pvt Ltd**, for communicating the decision made after screening of the project; **Proposed Renovation Works s at Vaagali, Kaafu Atoll, Maldives.**

މި މަޝްރޫޢުގެ ސަބަބުން ތިމާވެށްޓަށް ނޭދެވޭ ބޮޑު އަސަރުތައް ކޮށްފާނެ ކަމަށް ފެނެއެވެ. ވީމާ، ތިމާވެށްޓަށް އަސަރު ފޯރާނެ މިންވަރު ބަޔާންކުރާ ރިޕޯޓެއް ހުށަހަޅާށެވެ. This project is likely to cause significant negative environmental impacts. Hence, please submit an EIA report.	☐
މި މަޝްރޫޢުގެ މަސައްކަތްތަކަށް ތިމާވެށީގެ ފުރަތަމަ ދިރާސާއެއް ހުށަހަޅާށެވެ. Submit an Initial Environmental Examination for this project.	☐
މި މަޝްރޫޢުގެ މަސައްކަތްތަކަށް ތިމާވެށީގެ މެނޭޖްމަންޓް ޕްލޭނެއް ހުށަހަޅާށެވެ. Submit an Environmental Management Plan for this project.	☑
މި މަޝްރޫޢުގެ ސަބަބުން ތިމާވެށްޓަށް ނޭދެވޭ ބޮޑު އަސަރުތައް ކޮށްފާނެ ކަމަށް ނުފެނެއެވެ. ވީމާ، މަޝްރޫޢުގެ މަސައްކަތް ކުރިއަށް ގެންދިއުން އެންމެ ރަނގަޅުކަމުގައި ދަންނަވަމެވެ. This project is unlikely to have a significant negative impact on the environment. Hence, you may proceed with the project.	☐
މި މަޝްރޫޢުގެ ސަބަބުން ތިމާވެށްޓަށް ކޮށްފާނެ ނޭދެވޭ އަސަރުތައް ކުޑަކުރުމަށް މި އެޖެންސީއިން އަންގާ ފިޔަވަޅުތަކާއި މަސައްކަތް ކުރިއަށްގެންދަން ދަންނަވަމެވެ. The measures stipulated by this agency shall be used to mitigate the negative environmental impacts of the project.	☐

މިއީ ތިމާވެށީގެ ގޮތުން ކުރެވިފައިވާ ސްކްރީނިންގެ އެކެވެ. ވީމާ، މި މަސައްކަތަށް ކުރުމަށް ސަރުކާރުގެ އަދި ކަމާގުޅޭ އެހެން އިދާރާ ތަކުން ނަގަންޖެހޭ ހުރިހާ ހުއްދަތަކެއް ނަގަންޖެހޭނެކަމުގައި ދަންނަވަމެވެ. މިސްކްރީނިން ކުރުމަށްފަހު ނިންމިގޮތުގެ ލިޔުމުގައި މުއްދަތު ހަމަވާ ތާރީޚަކީ ކަމަށް ބަޔާންކުރެވިފައިވާ މިއެޖެންސީއިން ނިންމިގޮތް ފުރިހަމަ ކުރުމަށް ދެވޭ މުއްދަތެވެ.

This is an environmental screening. Hence, obtain all necessary approvals/permits from other relevant government authorities before commencement of the project activities. The date of expiry stated in this Environmental Screening Decision Statement is the duration given to implement the decision made by this agency.

305

Screening Institution: **Environmental Protection Agency of Maldives**

ސްކްރީން ކުރި އިދާރާ: އެންވަޔަރަމަންޓް ޕްރޮޓެކްޝަން އޭޖެންސީ، ދިވެހިރާއްޖެ

Date of issue: **26th August 2020**
Date of Expiry:**26th August 2021**

ދޫކުރި ތާރީޚު: 26 އޮގަސްޓް 2020
މުއްދަތު ހަމަވާ ތާރީޚު: 26 އޮގަސްޓް 2021

Name: **Mr. Ibrahim Naeem**
Designation: **Director General**

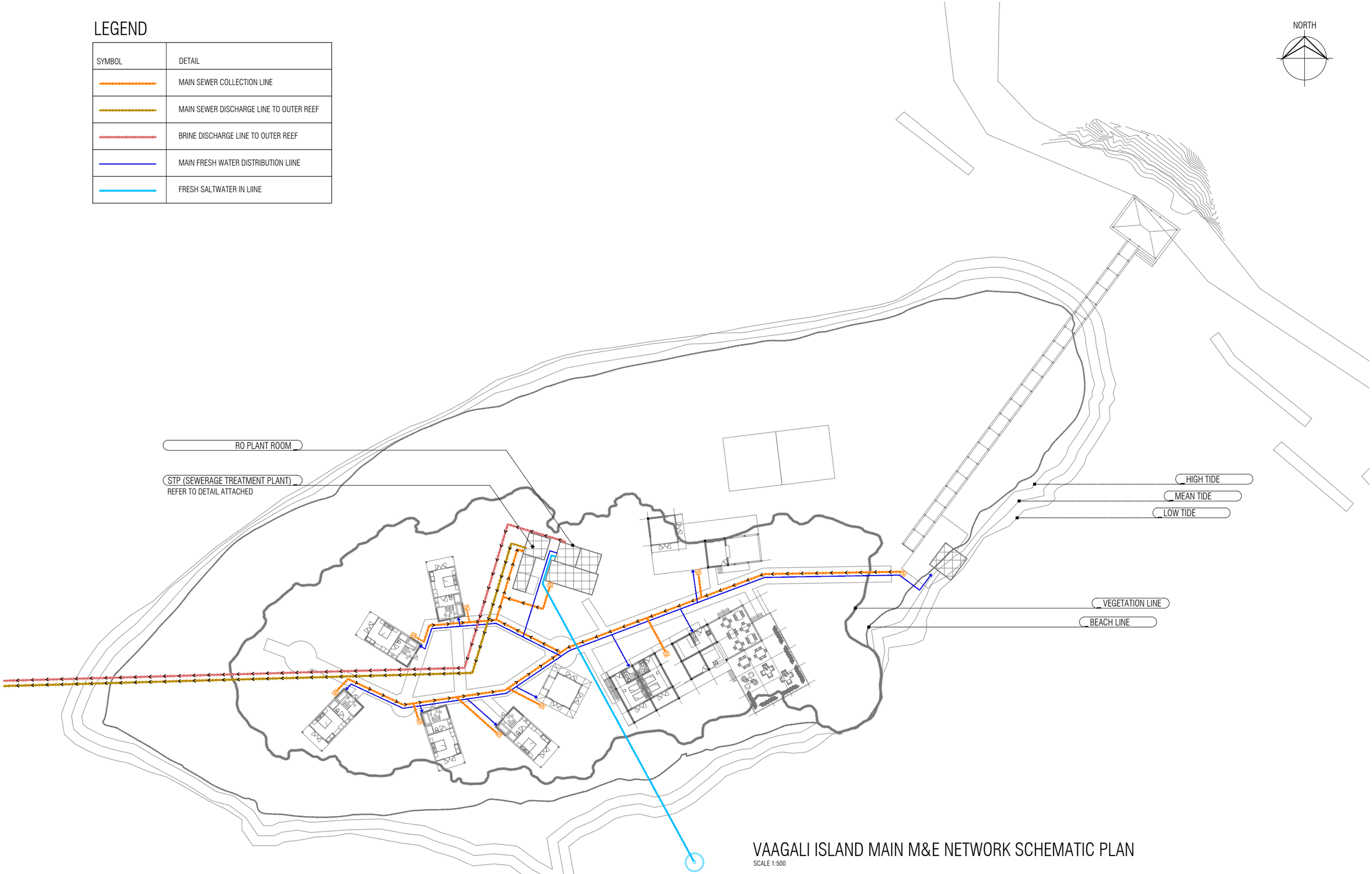
ނަން : އިބްރާހީމް ނައީމް
މަޤާމު: ޑިރެކްޓަރ ޖެނެރަލް

Signature: ސޮއި:

Appendix E. Water & Sewer Network Layout

LEGEND

SYMBOL	DETAIL
	MAIN SEWER COLLECTION LINE
	MAIN SEWER DISCHARGE LINE TO OUTER REEF
	BRINE DISCHARGE LINE TO OUTER REEF
	MAIN FRESH WATER DISTRIBUTION LIINE
	FRESH SALTWATER IN LIINE



VAAGALI ISLAND MAIN M&E NETWORK SCHEMATIC PLAN

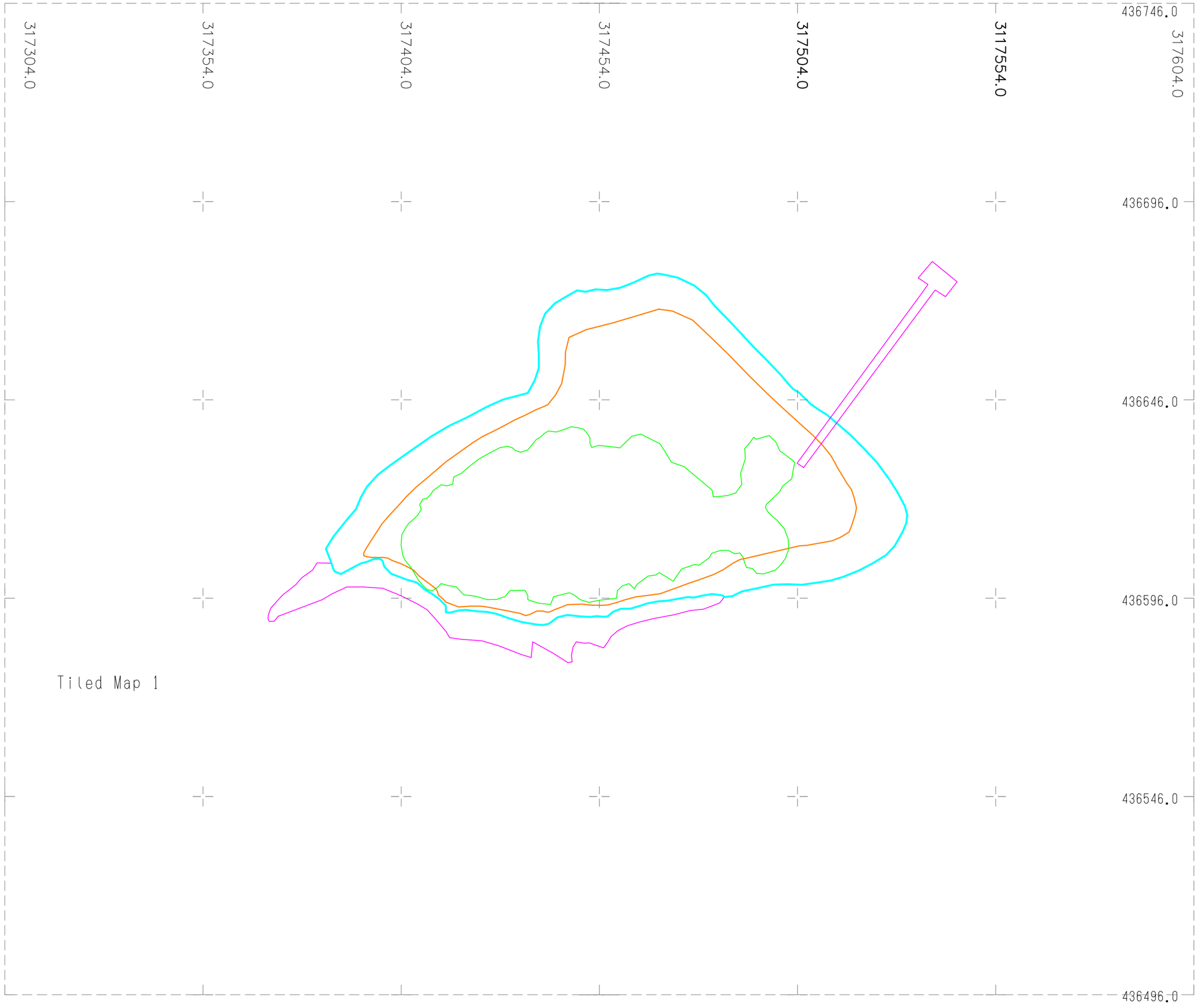
SCALE 1:500

Appendix F. Surveyed Shoreline Map

SHORELINE SURVEY

Vaagali
Kaafu Atoll

2020



"IMPERIAL" DISTANCE SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

LAND AREA		
ID	AREA/SQM	PERIMETER/M
LWL	7,715.991	376.647
HWL	5,592.004	313.689
VEG	2,989.915	294.225
TOTAL LAND AREA (LWL+HWL/2) = 6,653.998 SQM		

SCALE 1:1000

LEGEND

- Low Water Line
- High Water Line
- Vegetation Line
- Other structures

Appendix G Tree Survey Map

TREE LEGEND

- KAANI
- HIRUNDHU
- KUREDHI
- UNI
- KINBI
- DHIGGA
- FUNA
- MAGOO
- FITHUROANU
- COCONUT PALM
- NIKA
- UNKNOWN TREE

Appendix H. Consultant CV

ABDUL AWWAL AHMED NIZAR

CHIEF SURVEYOR
REGISTERED EIA CONSULTANT

CONTACT

Phone
+960 99507279

Email
a.avvwal@gmail.com
awwal@foresightsurveyors.com

Address
H. Nereen
8th Floor, Apartment 8B
20042
Majeedhee Magu
Male' City

EDUCATION

Cambridge IGCSE & GCE O'Level
Majeedhiyya School
2005 - 2007

Edexcel AS & AL GCE
Centre for Higher Secondary Education
2008 - 2010

Bachelor of Environmental Management
Maldives National university
2011 - 2015

CAREER FIELDS

Land & Hydrographic Surveying (Primary)

Environmental Consultancy (Primary)

Water & Sanitation Management

Administrative & Office Management

Business Management

Information Technology Management

PROFILE

I am a hardworking and sufficient team player with excellent organizational, administrative and communication skills, where my proficiency can be maximized. Having the ability of completing the tasks successfully, I am confident and capable of achieving my pursuing ambition through high performance, good decision making skills and by taking my responsibilities sincerely.

EXPERIENCE

Chief Surveyor
Foresight Surveyors Pvt. Ltd. - July 23rd 2019 - Present

My position at Foresight Surveyors is to manage the technical component of the projects undertaken by the firm and lead fellow surveyors to complete the project by data collection, data analysis and reporting to the highest technical standards of the profession and satisfaction of the client.

ROLES & RESPONSIBILITIES

- ✓ Schedule & coordinate surveys with regard to the project
- ✓ Undertaking land/topographical/hydrographic/measured building surveys with specialist equipment & technology
- ✓ Survey data analysis with maps, charts and software
- ✓ Providing technical advice and tackling issues for surveyors at sites
- ✓ Preparing site reports & filing other relevant paper work
- ✓ Consult survey findings with engineers, architects, clients & other concerned people
- ✓ Train junior surveyors & direct their work tasks
- ✓ Analyze survey objectives & specifications required to prepare survey proposals & direct others in proposal preparation
- ✓ Compute geodetic measurements & interpret survey data required to determine positions, shapes & elevations of geomorphic & topographic features.
- ✓ Checking technical designs & drawings to ensure it meets the standards & accuracy
- ✓ Analyzing preliminary data & secondary data prior to on site surveys
- ✓ Managing & liaising with project managers, construction engineers, consultants, other technical professionals
- ✓ Accessing & verifying the accuracy of survey data, measurements & calculations
- ✓ Compute areas of land parcels & easements to be acquired
- ✓ Research previous survey evidence, maps, deeds, physical evidence and other records required for the project
- ✓ Generate reports & maps with regard to project requirements

SOFTWARE SKILLS

- Microsoft Office
- Microsoft Dynamics NAV
- Human Resource Management System
- CorelDraw
- Autodesk AutoCAD
- Autodesk AutoCAD Civil 3D
- QGIS
- Pix4D Mapper
- Carlson SurvCE
- Survey Master
- Compass Solution
- X-PAD
- TideMaster Express
- Adobe Premiere Pro
- Intuit Quick Books
- Xero Accounting

EQUIPMENT SKILLS

- Sokkia GSR2700 ISX
- Sokkia GRX2
- SinoGNSS T300
- SinoGNSS T300 Plus
- SinoGNSS T30
- GeoMAX Zenith 35 Pro
- GeoMAX Zenith 40
- GeoMAX Zenith 16
- GeoMax ZDL 700
- GeoMax ZAL 132
- GeoMAX Zoom 25
- OHMEX SonarMIte Echo Sounder
- Valeport TideMaster Tide Gauge
- Leica Disto D110
- DJI Phantom 4 Pro
- DJI Phantom 4 RTK
- Chasing Dory
- Gladius Mini

EXPERIENCE (CONTINUED)

LAND AND HYDROGRAPHIC SURVEY EXPERIIENCE

- Th.Omadhoo Hrabour - Bathymetry Survey
- K.Ithaafushi Land Registration Survey
- K.Madivaru Land Registration Survey
- Ga.Dhigurah Land Registration Survey
- K.Vaagali Land Registration Survey
- K.Kassanfaru – Bathymetry Survey & Setting-out Survey

PROJECT MANAGEMENT EXPERIENCE

- Consultancy Services for survey, design and EIA works of Water Supply and Sewerage Facilities in 05 Islands (Sh.Komandoo, Sh.Foakaidhoo, R.Alifushi, R.Rasgetheemu and Th,Vandhoo) and Water Supply Facilities in 02 Islands (Ha.Maarandhoo and Ha.Muraidhoo) – Topographic & Bathymetry Survey; Project Management
- Consultancy Services for survey, design and EIA works of Water Supply and Sewerage Facilities in 04 Islands (HDh.kumundhoo, HDh.Hirimaradhoo, Ha.Vashafaru and Ha.Thakandhoo) and Water Supply Facilities in 02 Islands (Ha.Maarandhoo and Ha.Muraidhoo) – Topographic & Bathymetry Survey; Project Management
- Consultancy Services for survey, design and EIA works of Water Supply and Sewerage Facilities in 03 Islands (N. Fohdhoo, N. Maafaru and Sh. Goidhoo) and Water Supply Facilities in 02 Islands (N. Hen'badhoo and Sh. Feevah) – Topographic & Bathymetry Survey; Project Management
- Consultancy Services for survey, design and EIA works of Water Supply and Sewerage Facilities in 02 Islands (Lh.Olhuvelifushi and R.Fainu) and Water Supply Facilities in 04 Islands (B.Kamadhoo, B.Maalhos, R.Innamaadhoo and K.Himmafushi) – Topographic & Bathymetry Survey; Project Management
- Consultancy Services for survey, design and EIA works of Water Supply and Sewerage Facilities in 04 Islands (M.Naalaafushi, M.Rayimandhoo, V.Keyodhoo and V.Rakeedhoo) and Water Supply Facilities in 02 Islands (Th.Dhiyamigili and Th.Madifushi) – Topographic & Bathymetry Survey; Project Management
- Consultancy Services for survey, design and EIA works of Water Supply and Sewerage Facilities in 04 Islands (M.Naalaafushi, M.Rayimandhoo, V.Keyodhoo and V.Rakeedhoo) and Water Supply Facilities in 02 Islands (Th.Dhiyamigili and Th.Madifushi) – Topographic & Bathymetry Survey; Project Management
- Consultancy Services for survey, design and EIA works of Water Supply and Sewerage Facilities in 05 Islands (Ga.Dhevadhoo, Ga.Nilandhoo, GDh.Nadella, L.Hithadhoo and L.Kunahandhoo) - Topographic & Bathymetry Survey; Project Management

ENVIRONMENTAL CONSULTANCY EXPERIENCE

- B.Hithaadhoo Seagrass Removal – Environmental Management Plan
- GDh.Maavarulu Harbour Extension Project – Environmental Impact Assessment (2019 - Completed)
- S.Maradhoo Harbour Extension - Environmental Impact Assessment (2019 – completed)

LANGUAGE

Dhivehi
Native Speaker

English
Second Language/ Fluent

ATTRIBUTES

Kind & Caring

Honesty & Trustworthy

Strong & Resilient

Confident & Motivated

Mature & Appreciative

Assertive & Perceptive

PERSONAL SKILLS

Good Communication

Good Organization

Team Leadership

Planning & Assessment

IT Application

Technical Versatility

EXPERIENCE (CONTINUED)

ENVIRONMENTAL CONSULTANCY EXPERIENCE

- Causeway Development Project between L.Hithadhoo, Mendhoo & Kunahandhoo – Environmental Impact Assessment (2019 – Ongoing)
- Causeway Development Project between L.Kalaidhoo & Dhanbidhoo - Environmental Impact Assessment (2019 – Ongoing)
- K.Maniyafushi; Construction & Operation of Maniyafushi Field Station – Environmental Impact Assessment (2020 -Completed)
- Ga.Maamendhoo Sewerage Network - Environmental Impact Assessment (2020 – Completed)
- K.Guraidhoo Land Reclamation Project – Environmental Impact Assessment (2020 – Completed)
- Lh.Aligau; Agriculture Development Project – First Addendum to Environment Impact Assessment (2020 – Ongoing)
- AA.Rasdhoo; Construction of a 07 Storey Tourist Hotel – Environmental Impact Assessment (2020 – Ongoing)
- ADh.Mandhoo Harbor Construction – Environmental Impact Assessment (2020 – Ongoing)

Engineer (Environmental)
Surveyor

FENAKA CORPORATION LIMITED. - January 31st 2017 – July 11th 2019

My position at FENAKA was to manage a key technical department of FENAKA; Water, Sewerage & Environment Department which oversees the Water & Sewer services provided & operated by island branches accordingly to the set policies of the corporation and regulations set by EPA. I reported directly to the Chief Technical Officer (CTO) of FENAKA. Apart from my technical responsibilities, I was the acting Head of Department whenever the HoD was absent, thus being part of the Senior Management of FENAKA and reporting directly to the Managing Director (MD). I was a member of the Technical Committee of FENAKA since 04th April 2017 to 31st December 2018 providing technical support & evaluation of technical proposals presented to the committee. In addition, I also was a member of Project Technical Committee (PTC) of the Green Climate Fund (GCF) project in Maldives since the initiation of PTC in October 2018 to March 2019.

ROLES & RESPONSIBILITIES

Surveyor: Technical Responsibilities

- ✓ Undertake land & hydrographic surveys required for Water & Sewerage System design and establishment
- ✓ Undertake surveys required for EIA's
- ✓ Survey data analysis & generating reports
- ✓ Providing technical advice and tackling issues for surveyors at sites
- ✓ Preparing site reports & filing other relevant paper work
- ✓ Consult survey findings with design engineers, architects, clients & others on concerned people
- ✓ Brief Chief Technical Officer on the survey findings
- ✓ Analyze design objectives & specifications required to prepare design proposals & direct others in proposal preparation
- ✓ Checking technical designs & drawings to ensure it meets the technical specifications & regulations
- ✓ Assist operations of Water & Sewerage services given by the department to the branches
- ✓ Assist HoD & CTO with department mandated works

WORK TRAVEL HISTORY

HA. ATOLL;

- KELAA (2015)
- THAKANDHOO (2019)

HDH.ATOLL;

- HANIMAADHOO (2015, 2018, 2019)
- KULHUDHUFUSHI (2016, 2019)

SH. ATOLL;

- FEEVAH (2017)
- LHAIMAGU (2019)
- FOAKAIDHOO (2019)
- KOMANDOO (2019)

N. ATOLL;

- MEDHUFARU – SONEVA JANI RESORT (2015, 2016)

R. ATOLL;

- IFURU (2015 – 2020)
- MADUVVARI (2015, 2016)
- HULHUDHUFFAARU (2015)
- RASGETHEEMU (2015)
- KOTHAIFARU (2015)
- KUROSHIGIRI (2015)
- FUGGIRI (2015)
- HURUVALHI (2015)
- MURAVANDHOO (2015)
- MAAMUNAGAU (2015, 2016)
- INNAMAADHOO (2017)

B. ATOLL;

- DHARAVANDHOO (2016-2020)
- KENDHOO (2016, 2018)
- KUNFUNADHOO (SONEVAFUSHI RESORT) (2015, 2016)
- MIRIYANDHOO (2015)

LH. ATOLL;

- HINNAVARU (2015-2019)
- ALIGAU (2020)

K. ATOLL;

- MALE' CITY
- HURAA (2011 – 2018)
- THULUSDHOO (2012)
- HIMMAFUSHI (2015)
- MAAFUSHI (2015, 2019)
- GULHI FALHU (2016)
- OLHUVELI (2016)

EXPERIENCE (CONTINUED)

Engineer: Technical Responsibilities

- ✓ Provide technical guidance to department staff & branch staff on Water, Sewerage & Environment
- ✓ Provide technical guidance to other departments on Water, Sewerage & Environment related matters
- ✓ Do technical evaluations of products that are required for RO plant operations
- ✓ Do technical evaluations of products that are required for Sewerage system operations
- ✓ Prepare Terms of Reference for projects that FENAKA outsources
- ✓ Prepare technical proposals for projects that FENAKA bids
- ✓ Assist in Bid preparation
- ✓ Provide technical information to bidders at pre-bid meetings
- ✓ Evaluate & approve procurement requests at department level via Enterprise Resource Management (ERP) system of equipment & spare parts of RO plants & sewerage systems sent by island branches
- ✓ Evaluate & approve service requests of water pumps and sewerage pumps at department level via ERP system sent by island branches
- ✓ Assist department staff in operating ERP system
- ✓ Assist island branches in operating ERP system
- ✓ Post Good Received Note via ERP system
- ✓ Check & inspect procured items, equipment & spare parts for specification and requirement match
- ✓ Evaluate documents handed over during Water & Sewer systems handover to FENAKA for operations by the developer
- ✓ Take part in pre-commissioning & commissioning of new Water & Sewerage system networks
- ✓ Identify & report issues of in the system/network during pre-commissioning and commissioning of new water/sewer systems
- ✓ Conduct the processes of Temporary Operating License Application with regard to EPA guidelines
- ✓ Conduct the processes of Permanent Operating License Application with regard to EPA guidelines
- ✓ Liaise with Ministry of Environment & EPA regarding Water & Sewerage system establishment projects under the guidance of CTO
- ✓ Participate in technical workshops conducted by Ministry of Environment donor agencies
- ✓ Provide technical information of Water & Sewer systems operated under FENAKA to donor agencies
- ✓ Provide technical support to ongoing projects of establishment of water & sewerage system networks from FENAKA as a utility operator
- ✓ Lead technical supervisor of the department
- ✓ Lead technical liaison with Ministry of Environment, Environment Protection Agency, Maldives Energy Authority, donor agencies; UNDP, UNOPS, USAID, GCF, OFID & ADB with regard to Water, Sewerage & Environmental subjects

Technical Committee Member

- ✓ Attend technical committee meetings & contribute to the works in the agenda
- ✓ Evaluate BOQ's & bids related to genset procurement, water & sewerage equipment/spare procurement & civil work projects proposals within the mandate of the technical committee
- ✓ Evaluate technical documents prepared for pre-bids by technical departments
- ✓ Give technical recommendations to departments, senior management & MD regarding relevant matters
- ✓ Keep confidentiality

K. ATOLL;

- MADIVARU (2019)
- ITHAAFUSHI (2019)
- MAKUNUFUSHI (2019)
- VAAGALI (2020)
- MANIYAFUSHI (2020)
- GURAIDHOO (2020)
- DHIFUSHI (2020)
- KASSANFARU (2020)

AA. ATOLL;

- THODDOO (2013)
- RASDHOO (2020)

ADH.ATOLL;

- MANDHOO (2020)

F. ATOLL;

- BILEIDHOO (2017)
- NILANDHOO (2019)

DH. ATOLL;

- KUDAHUVADHOO (2019)

TH. ATOLL;

- OMADHOO (2019)
- VANDHOO (20190

L. ATOLL;

- KAHDHOO (2015, 2019)
- MAAMENDHOO (2015)
- MAABAIDHOO (2019)
- GAN (2019)

GA. ATOLL;

- KOODOO (2019)
- KANDUHULHUDHOO (2019)
- DHIGURAH (2019)
- MAAMENDHOO (2019)

GDH. ATOLL:

- KAADEHDHOO (2016)
- THINADHOO (2016)
- HAVODIGALA (2016)
- GAHDHOO (2019)
- MAAVARULU (2019)

ADDU ATOLL;

- GAN (2018, 2019)
- FEYDHOO (2018)
- MARADHOO-FEYDHOO (2018, 2019)
- MARADHOO (2018, 2019)
- HITHADHOO (2018, 2019)

EXPERIENCE (CONTINUED)

Technical Committee Wise Chairperson

- ✓ Assist committee chairperson with committee mandated works
- ✓ Facilitate & conduct regular technical committee meetings in the absence of committee chairperson
- ✓ Prioritize committee agenda based on the technical urgency in the absence of committee chairperson
- ✓ Review and finalize committee meeting minutes
- ✓ Keep confidentiality

Green Climate Fund; Project Technical Committee Member

- ✓ Attend to PTC meetings & represent FENAKA as a key stakeholder in the project
- ✓ Give technical contribution with regard to the project components
- ✓ Give technical recommendation to the Project Steering Committee
- ✓ Review concepts, technical specifications, design drawings of the project
- ✓ Contribute to the Annual Work Plan
- ✓ Review project budget

Acting Head of Department; Management Responsibilities

- ✓ Take on the full responsibilities of the Head of Department
- ✓ Attend the daily senior management meeting
- ✓ Report to MD & provide updates to MD regarding emerging issues of water/sewer services at branches
- ✓ Present technical and efficient solutions to the water & sewer related issues to MD & senior management
- ✓ Provide latest updates of Water & Sewer systems to CTO
- ✓ Give suggestions to CTO with regard to issues raised by branches
- ✓ Suggest solutions to issues raised in the senior management meeting
- ✓ Liaise with other department heads in issues related to Water, Sewerage & Environment Department
- ✓ Manage the department mandated works
- ✓ Manage 15+ staff of the department
- ✓ Assign daily tasks to the staff
- ✓ Assess the work of the staff & give guidance to them
- ✓ Direct admin staff in sending/replying to fax messages sent by Island branches
- ✓ Direct admin staff in sending/replying to memos sent by head office departments
- ✓ Direct admin staff in sending/ replying to letters sent by ministries & other organizations
- ✓ Conduct department meetings when necessary & brief on the issues & undertake works that need to be done to assist branches to give water & sewer services without interruption
- ✓ Approve sick leaves, family responsibility leaves & annual leaves of staff when requested at department supervisory level via HRMS
- ✓ Guide & advice staff if lacking behind on work
- ✓ Assess staff work ethics & performance & fill periodical/annual appraisal
- ✓ Work with HR with regard to staff related matters

EXPERIENCE (CONTINUED)

PROJECT MANAGEMENT EXPERIENCE

- Consultancy Services for Design & EIA for Establishment of Sewer Systems at F.Bilehdhoo, R.Innamaadhoo, Sh.Feevah & GDh.Madaveli – Ministry of Environment & Energy (2017-2018)
- Establishment of Integrated Water Resource Management System in Lh.Hinnavaru – Ministry of Environment & Energy, USIAD, UNOPS (2017-2019)
- Supporting Vulnerable Communities in Maldives to manage Climate Change Induced Water Shortages; Establishment of Fresh Water Resource Management Systems in 49 Islands – UNDP, GCF (2018-2019)

Assistant Surveyor

FORESIGHT SURVEYORS PVT. LTD. - June 1st 2015 – July 16th 2016

My position at Foresight Surveyors was to assist in surveys undertaken by the firm under the supervision of a surveyor by collecting data, data analysis & reporting.

ROLES & RESPONSIBILITIES

- ✓ Assist the surveyor in the field with equipment setup & data collection
- ✓ Equipment setup & data collection with supervision
- ✓ Data download & analysis
- ✓ Preparing draft survey reports
- ✓ Manage projects

SURVEYING EXPERIENCE

- N.Medhufaru (Soneva Jani Resort) – LRS and Setting-out survey
- Soneva Fushi Resort solar farm – Setting-out survey
- Hulhumale' Phase II Volumetric Survey
- B.Miriyandhoo Bathymetric Survey
- K.Rahfalhu Huraa Volumetric & Topography Survey
- R.Kothaifaru/Kuroshigiri LRS, Topographic & Bathymetric Survey
- Ha.Kelaa Harbour Bathymetry & In-survey
- B.Kendhoo Harbour Bathymetry & In-survey
- R.Fuggiri LRS & Topographic survey
- R.Maamunagau LRS & Topographic survey
- L.Maamendhoo Mosque Setting-out survey
- Hulhumale' Phase II Road Development Setting-out & topographic survey
- Lh.Hinnavaru Water Desalination Plant Project – Level Survey
- Dhiraagu Submarine Cable Relocation - Topography & In-survey
- Gulhi Falhu Site Plan 2016 – Topography & In-survey
- Ibrahim Nasir International Airport Localizer setup – Control Alignment Survey
- R.Huruvalhi LRS
- R.Muravandhoo LRS & Setting-out survey
- G.Dh Havodigala EIA – Baseline survey
- Olhuveli Beach & Spa Resort boundary demarcation survey
- H.Dh Kulhudhuffushi artificial beach Setting-out survey

TRAINING & WORKSHOPS

- Training Programme on Project Cycle Management (2017)
  by Bangkok School of Management

- Consultation Workshop on National Adaptation Plan – NAP (2017)
  by Ministry of Environment & Energy, UN Environment

- National Workshop on Establishing a National Geospatial Database for Mainstreaming Climate Change Adaptation into Development Activities & Policies (2017)
  by Ministry of Environment & Energy, ADB

- GCF Inception Workshop; Supporting Vulnerable Communities in Maldives to Manage Climate-Induced Water Shortages (2017)
  by Ministry of Environment & Energy, GCF, UNDP

- Green House Gas (GHG) Inventory Management Training between Maldives & Republic of Korea (2018)
  by Green House Gas Inventory Research Center of Korea

- Stakeholder Consultation Workshop on providing General National MRV framework for Mitigation Actions (2018)
  by Ministry of Environment & Energy, UNEP DTU

- Workshop on Knowledge and Information Sharing Issues & Challenges in Implementing Water Supply & Sewerage Projects in Maldives (2018)
  by Ministry of Environment & Energy, GCF, OFID

- Stakeholder Consultation Workshop on Development of Maldives Climate Change Act (2018)
  by Ministry of Environment & Energy

REFERENCES

Mr. Ahmed Nuaim
Managing Director
Foresight Surveyors Pvt. Ltd.
Phone: +960 7567299
Mail: a.nuaim@foresightsurveyors.com

Mr. Firdous Hussain
Director
Foresight Surveyors Pvt. Ltd.
Phone: +960 7973873
Mail: firdous@foresightsurveyors.com

Mr. Hussain Hameez
Former Chief Technical Officer
FENAKA CORPORATION LIMITED
Phone: +960 7774602

Mr. Shahumeed Abdulla
Former Chief Service Officer
FENAKA CORPORATION LIMITED
Phone: +960 9991342

Mr. Abdulla Nashith
Director
FENAKA CORPORATION LIMITED
Phone: +960 9993667

Ms. Nihani Riza
Environmental Program Specialist
Country Coordinator for Sri Lanka & Maldives
USAID
Phone: +94 775732518
Mail: nriza@usaid.gov

Mr. Lahiru G. Perera
Project Manager
UNOPS
Phone: +94 773385745
Mail: lahiruP@unops.org