ENVIRONMENTAL IMPACT ASSESSMENT

For Proposed Land Clearance in

Kudarikilu Island, Baa Atoll

Proposed by:

Baa Kudarikilu Council

May 2017

Prepared by:

Ahmed Anwar, Mahfooz Abdull Wahhab, Mohamed Ibrahim Jaleel

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List of Abbreviations

EIA Environmental Impact Assessment

EPA Environmental Protection Agency

EPPA Environmental Protection and Preservation Act

MHE Ministry of Housing and Environment

TOR Terms of Reference

UNDP United Nations Development Program

Consultant Declaration

Environmental Impact Assessment for Proposed Land Clearance in B.Kudarikilu

DECLERATION OF THE CONSULTANTS

We certify that the statements made in this Environmental Impact Assessment study are true, complete and correct.

Name: Ahmed Anwar

Signature: 

Date: 7 June 2017

Name: Mahfooz Abdull Wahhab

Signature: 

Date: 7 June 2017

Commitment Letter

بسم الله الرحمن الرحيم

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Secretariat of the Kudarikilu Council, South Maalhosmadulu
Kudarikilu, Rep of, Maldives

Mr.Thoriq Ibrahim
Minister
Ministry of Environment and Energy
Male', Maldives
Date: 04 June 2017

No: 313-F/438/2017/04

Dear Mr. Thoriq Ibrahim,
Re: Environmental Impact Assessment for Relocation of Tress from Baa Kudarikilu to K.Olhahali
As per the requirement of the EIA regulation, we hereby confirm our commitment to implement the mitigation measures according to what is proposed in the EIA report attached herewith.

Yours Sincerely

Abdull Hannan Abbass
(President of the Island Council)

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Secretariat of the Kudarikilu Council, South Malhosmadulu
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Declaration of the Proponent

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Secretariat of the Kudarikilu Council, South Maalhosmadulu
Kudarikilu, Rep of, Maldives

Declaration of the Proponent

As the representative of the proponent of the proposed development, I guarantee that I have read the report thoroughly and that to the best of my knowledge all information provided here is accurate and complete. In addition, I confirm out commitment to making sure that contractor implements all mitigation measures proposed in the present report and adhere the monitoring schedule given.

Name:Abdull Hannan Abbass

Signature:

Date:04 June 2017

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1 EXECUTIVE SUMMARY

The secretariat of the Ba.kudarikilu Island Council proposes to clear the land adjacent to the existing football ground, in order to expand the existing football pitch to the standard size pitch. Another objective of the project is to develop grounds for other sports (volley ball, bashi ball and net ball courts) in one area of the island. A total of 125 coconut trees will be uprooted from the proposed land. Compensation for the coconut trees will be given to their owners. Coconut trees will uprooted from the ground will be transferred to the K.Olhahali resort for replanting. As a mitigation measure, island council will plant two trees in Kudarikilu Island for each tree that will be uprooted in the proposed project.

The baseline environmental condition of the proposed project location as well as socio-economic environment of the Ba.Kudarikilu was conducted for which the environmental impacts and mitigation measures as well as the project alternatives are presented in this EIA. It was found that there is a great need for expanding the existing football pitch and develop new courts for other sports on the island, which is recognized as an important community need especially from the youth of the island.

As a result of the proposed land clearance, most significant environmental impacts would be loss of vegetation especially coconut trees from the island vegetation. As a mitigation measure, Island council will plant two new trees in the Island for each tree planned to be removed in the proposed project. Careful measures will be taken while using the machinery to remove the vegetation to avoid or minimize any negative impact to the ground water table. And holes will be refilled and the ground will be leveled properly to minimize the risk of direct exposure of the groundwater. Environmental monitoring program was proposed in the report to carry out careful and meaningful mitigation measure to minimize any negative impacts from the project.

Although there are some environmental impacts from the proposed project, the negative impacts can be minimized and mitigated by use of appropriate methodology. The effectiveness of these methodologies can be documented by implementing a comprehensive monitoring programme. Also, with positive socio-economic outlook of the project and the community needs for the project, it is concluded that the project should go ahead as planned.

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2 INTRODUCTION

2.1 Purpose of this EIA

The aim of this EIA is to critically analyze the environmental and socio-economic impacts which may arise due to the removal and transfer of trees from B. Kudarikilu to K. Olhahali resort. After analyzing the impacts, it would be then possible to suggest proper mitigation measures to prevent or reduce any negative impacts and to enhance any positive impacts.

2.2 Project Overview and Rationale

The existing football ground on the island is not up to standard and hence the locals cannot host any home games during football cups on the Atoll level. Therefore need to make the ground to standard size so that they can host home matches to get home advantage in cups. Also to develop other sports grounds such as Volley, Bashi and netball courts in one area in the Island.

Kudarikilu island council has been trying to develop the islands sports arena for some time. They had been communicating with the Ministry of Youth and Sports to get the necessary funds, however due to difficulties in the budget the Ministry could not give any support to the council and has asked to find an alternative way to finance the project by finding a resort developer who will take the trees. And finally in April this year they were able to find the proponent of K. Olhahali resort developer to get the trees to K. Olhahali.

2.3 Project Objectives

In collaboration with the Ministry of Youth and Sports, to bring all sports grounds (Volley, Bashi, Netball courts) to one area and expand the existing football ground to a standard size patch.

2.4 EIA Methodology

The methodology adopted for the environmental impact study consists of the following stages:

Identification of significant environmental components and assessment of their baseline (pre-project or existing) status within the study area. This is carried out by site visits to study geophysical and environmental conditions at the site.

Prediction of impacts on various identified environmental parameters due to the proposed project. Data relating to the proposed land clearance activities including excavation as well as other activities causing environmental impacts through an environmental impact matrix.

Evaluation of environmental impacts by use of significance analysis method.

Expert judgment and professional opinion have also been used throughout the impact assessment and evaluation process.

2.5 Review of Relevant Studies

As part of relevant literature review and preparation of the report, the available relevant Environmental Impact Assessment studies have been used as reference in addition to professional experiences of the environmental consultant who have prepared this EIA Report. These are;

Environmental Impact Assessment for the Road Development Project at R.Dhuvaafaru, by Ahmed Jameel and Ibrahim faiz in 2016

Environmental Impact Assessment for the Proposed Agricultural Development project at Gdh.Dhoonirehaa by Mahmood Riyaz and Mohamed Shiham Adam in 2016

Environmental Impact Assessment for Relocation of Trees from B. Kihaadhoo to B.Voavah by Mariyam Saleem and Mohamed Ibrahim Jaleel,

2.6 Proponent

The proponent of the proposed project is Baa Kudarikilu Council.

2.7 Consultants

This EIA report has been compiled by Ahmed Anwar, Mahfooz Abdul Wahhab and Mohamed Ibrahim. The lead EIA consultant was Ahmed Anwar.

3 PROJECT DESCIRPTION

3.1 Project background

Kudarikilu island council has been trying to develop the islands sports arena for some time. They had been communicating with the Ministry of Youth and Sports to get the necessary funds, however due to difficulties in the budget the Ministry could not give any support to the council and has asked to find an alternative way to finance the project by finding a resort developer who will take the trees. And finally in April this year they were able to find the proponent of K. Olhahali resort developer to get the trees to Olhahali resort.

3.2 Project objective

In collaboration with the youth ministry to bring all sports centers to one area and In collaboration with the Ministry of Youth and Sports, to bring all sports grounds (Volley, Bashi, Netball courts) to one area and expand the existing football ground to a standard size patch.

3.3 Need for project

The existing football ground on the island is not up to standard and hence the locals cannot host any home games during football cups on the Atoll level. Therefore, need to make the ground to standard small size so that they can host home matches to get home advantage in cups. Also to develop other sports grounds such as Volley, Bashi and netball courts in one area in the Island.

The proposed project is highly important to meet the recreational facility need of the youth of the island. This proposed development is an important request from the island community especially from the youth of the island.

3.4 Project location and Study Area

The location of the project is the football ground of Kudarikilu which is on the Southern side of the island. The figure below shows the area which needs to be cleared for the expansion of the football ground. The existing football ground area is already cleared land, thus, the proposed project involves the removal of vegetation present adjacent to the existing football ground.

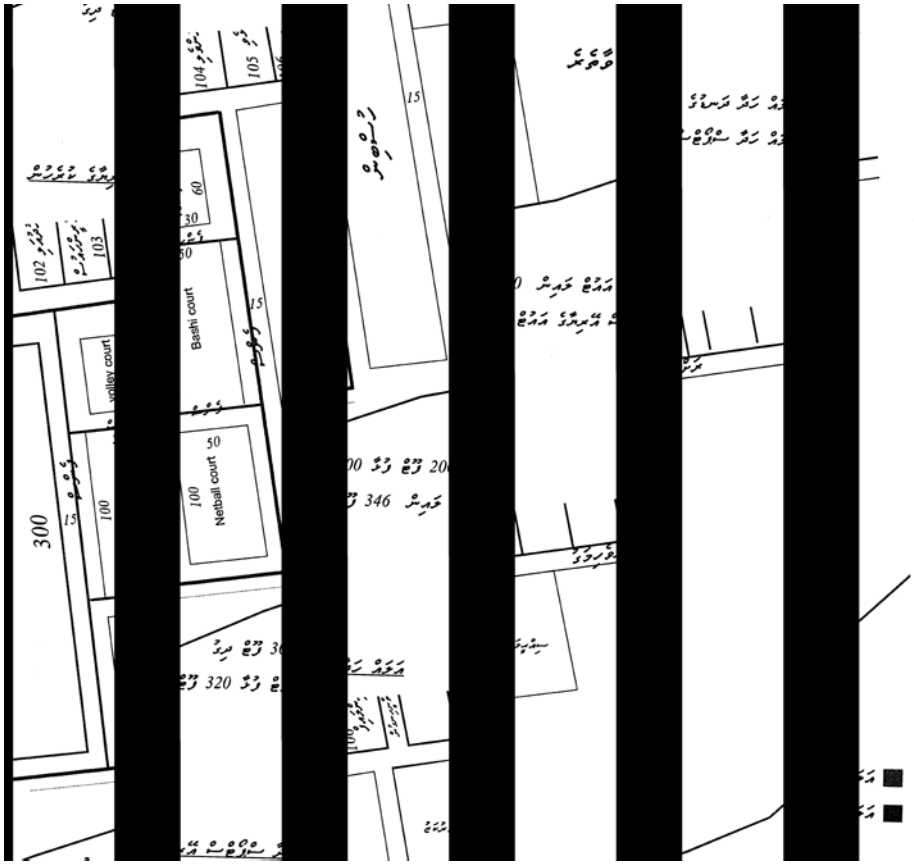

Figure 1: Drawing of the proposed extension of existing football pitch and development of new sports grounds in Ba Kudarikilu

Figure 2: Land clearance area for expansion of football ground at Kudarikilu

The study area comprised of the proposed land clearance area and the surrounding. Figure 2 shows the study area and boundary for the EIA.

The coconut trees will be transferred to K. Olhahali resort which is located in the Northern rim of Kaafu Atoll. This is a recently reclaimed island and developed as a luxury tourist resort. Following figure shows the location of Olhahali resort in Kaafu Atoll.

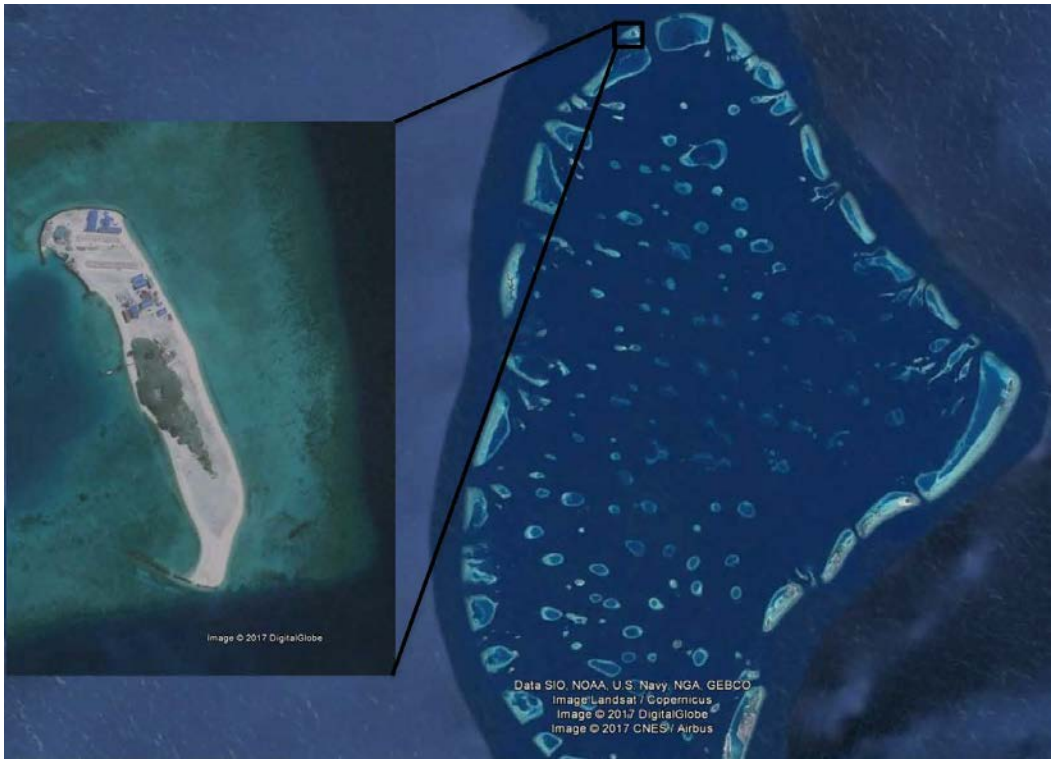

Figure 3:location of Olhahali resort in Kaafu Atoll

3.5 Proposed Works

Essentially the proposed works under this project include:-

3.5.1 Uprooting of trees

A total of 125 coconut trees, 8 midhili (*Terminalia catappa L)*, 8 dhigga (*Hibiscus tiliaceus L)* will need to be uprooted. Smaller trees found in the area also will be removed. A list of trees found in the area are given in the existing environment chapter. Compensation for the trees will be given by the resort developers on K. Olhahali resort.

3.5.2 Levelling

After uprooting the holes left will be backfilled.

3.5.3 Transfer of trees to Olhahali resort

A total of 125 coconut trees will be transferred to K. Olhahali resort to be replanted.

3.6 Construction method

3.6.1 Mobilization

Barge will enter from the existing harbor on the western side of the island. The entrance of the harbor is wide enough for the access of the barge. Once on the island the heavy machinery can access the project area using existing roads. Which includes excavator and a lorry.

3.6.2 Levelling

The holes left from uprooting trees will be backfilled using the sand from elevated areas on the clearance site itself during leveling. If further sand is required, it will be taken from the sand pile on the SE corner of the island near the waste management center. The sand pile is approximately 5 *8 area and height of 1.5 m (figure 4).

Figure 4: Sand pile found near the Island Waste Management Center. This excess sand will be used to backfill the holes left from the removal of trees.

3.6.3 Uprooting

Trees will be uprooted using excavator. A rope will be tied to excavator and to the tree. The excavator will pull until the tree is uprooted. The sands from the roots will be removed as much as possible and will be used to backfill the ground.

3.6.4 Transfer and replanting

Trees will be transferred on the barge. The roots and shoot will be covered to minimize transpiration as much as possible during the transfer.

Trees will be replanted on K. Olhahali resort. Trees will be placed inside dug wells of approximately 1.5 m^2 area. A wooden cross brace will be used to support the tree until the

roots are strong enough to support the weight of the tree. On Olhahali resort the trees will be replanted in between all the villas and in the back of house area.

Figure 5 ;Vehicle operation route in Kudarikilu

Figure 6:Proposed replantation areas on K. Olhahali resort

Further the other species and remaining coconut trees (which are not transferred to Olhahali resort) will be replanted on two areas of Kudarikilu; east side green zone and south side reclaimed area. For each tree that have been planned to be uprooted in the project, two new trees will be planted in the Kudarikilu Island by the Island council in the areas highlighted in the below map (Figure 7)

Figure 7: proposed replantation areas on Kudarikilu

3.6.5 Project temporary facilities

Proposed option 1 is at the side of football ground. This includes temporary storage and waste collection area. No facilities will be constructed as this site will only be used to temporarily keep the machinery and fallen trees. The workers will be staying in existing houses on Kudarikilu.

3.6.6 Workforce

It is estimated that a maximum of 5 workers will be required to do the works. The details are shown in table 1.

3.6.7 Demobilization

All machinery will be taken on the barge once all works are completed.

3.7 Project Inputs and Outputs

The following two tables details the project inputs and outputs for the uprooting and transfer of trees from B. Kudarikilu to K. Olhahali resort.

Table 1:Major project inputs and outputs during construction phase

Project Components	***Input***	***Source***	***Output***	***Management options***
Temporary project site setup; option 1 is at the side of football ground. This includes temporary storage and waste collection area. No facilities will be constructed as this site will only be used to temporarily keep the machinery and fallen trees.	-	-		*Trees which can re-planted will be replanted in other areas of the island and others will be stock-pilled for transfer to Kaafu Olhahali resort.*
Uprooting of trees	*1 Excavator* *1 Lorry* *1 Lorry Driver* *1 Excavator operator* *3 Laborers* *30 Liters of Diesel per day*	*Contractor*	*Green waste* *GHG emission*	*Most of the trees to be replanted elsewhere on the island.* *Leaves to be used in landscaping* *Green waste temporarily stored and transferred to island waste management center.* *Coconut leaves given to local thatch producers.*
Leveling	*1 Excavator* *1 Lorry* *1 Lorry Driver* *1 Excavator operator* *30 Liters of Diesel per day*	*Contractor*	*Sand* *GHG emission*	-
Transfer of trees and replanting	*1 Excavator* *1 Lorry* *1 Lorry Driver* *1 Excavator operator* *1 barge* *3 Laborers* *30 Liters of Diesel per day* *125 wooden cross braces*	*Contractor*	*GHG emission*	-

3.8 Project duration and schedule of implementation

The uprooting of trees will commence once the EIA process have been completed. Estimated date is around June 2017. The mobilization works commence as soon as the EIA decision statement is released and is expected to be completed by end of July 2017.

The entire project is estimated to be completed within 2 months from project commencement date. The major milestones of the project are as follows:-

Table 2: estimated durations required to achieve major milestones of the project

Task Name	***Duration/Days***
Proposed Land Clearance	***60***
Mobilization	*10*
Uprooting of trees	*25*
Leveling	*11*
Transfer of trees and replanting	*16*
Demobilization	*4*

4 PROJECT SETTING

This section summarizes the relevant environmental legislations, policies and guidelines that the proposed project has to comply with and relevant regulatory bodies regarding environmental protection in the Maldives that are relevant for the proposed project.

4.1 Applicable Laws and Regulations

4.1.1 Environment Protection and Preservation Act of the Maldives (Law no. 4/93)

The Environment Protection and Preservation Act of the Maldives (EPPA; Law no. 4/ 93) provide the legal basis for environmental protection, preservation and conservation in the country. The authority responsible for the Environment Act is the Ministry of Environment and Energy. Being an umbrella law, it gives extensive power to Ministry of Housing and Environment (MHE) in matters concerning the environment.

The following articles of the Environment Act are relevant to the proposed project.

Article 2 states that the guidelines and advice on environmental protection in accordance with the prevailing needs and conditions of the country shall be provided by the concerned government authorities.

Article 3 states that in areas of environmental protection and preservation that do not already have a designated government authority, MHE shall be the responsible authority to formulate policies, rules and regulations.

Article 4 states that MHE shall be responsible for identifying and drawing up legislation for conservation of protected areas and natural reserves.

Article 5 of the act states that an environmental impact assessment has to be submitted to MHE before implementation of any project that may have an impact on the environment. MHE shall formulate the guidelines and determine the projects that require such an assessment.

Article 6 states that MHE has the authority to terminate any project that has an unfavourable impact on the environment without compensation.

Article 7 states that disposal of waste, oil, poisonous gases or other substances harmful to the environment is prohibited within the territory of the Maldives. In the event that disposal of such substances become necessary, they shall be disposed of within the area designated for the purpose by the government.

Article 8 of the Act states that disposal of hazardous, toxic or nuclear waste is prohibited within the territory of Maldives and a permit shall be obtained before any trans-boundary movement through the Maldivian territory.

Under Environment Act the government of Maldives has the right to claim compensation for any damages caused by activities that are detrimental to the environment.

4.1.2 Regulation on Uprooting, Cutting and Transportation of Palms and Trees

This regulation was formulated under the Environment Act and came into force in 2006. The primary purpose of the regulation is to control and regulate large scale uprooting, removal, cutting and transportation of pals and trees from one island to another. Under this regulation certain trees are prohibited to remove from the island. And they are:

- The costal vegetation growing around the islands extending to about 15 m into the inland.
- All tress and pals growing in mangroves and wetlands spreading to 15 m of land area.
- All trees in environmentally protected areas.
- Trees that are being protected in order to protect the habitats of the species of animals/birds.
- Trees and palms of extraordinary nature.

Under this regulation, prior permission must be obtained for removal and/or relocation of 10 or more mature trees or palms. Uprooting or removal of 10 or more trees or palms are subjected to conduct and environmental impact assessment, which is required to be submitted to the Environmental Protection Agency and written approval is required prior to implementation of the project.

4.1.3 Regulation on Conservation of Old Trees

A regulation for conservation of old trees in the Maldives has been formulated under the Environment Protection Act. The main purpose of this regulation is to protect old trees which are important habitats for the birds and animals that are threatened due to exploitation; development and commercial use. According to this regulation, trees between age of 50-100 years, over 100 years, old trees that are risk of extinction, protection of tress that are important for the historical and traditional value due to the location in which the tree is found as well as protection of old trees from a request by the island community or an association to protect such trees.

4.1.4 Environment Impact Assessment Regulations 2012

Under the article 5 (a) of the Environment Act, an environmental impact assessment has to be submitted by the developer of a project which may have potential impacts on the environment, to the Ministry of Environment for the approval before commencement of the project.

The first step in environmental assessment process described in the regulation involves screening of the project to be classified as one that requires to conduct an EIA or not. Based on this decision, the Ministry then decides the scope of the EIA with the discussion of the project proponent, EIA consultant and relevant stakeholders. Once the scope is identified, baseline surveys will be carried out by the EIA consultant and the EIA report shall be submitted to the Ministry according the guidelines specified in the EIA regulation. The main components of the EIA report are project description, describing existing natural and socioeconomic environment, public consultation, impact assessment, project alternatives, mitigation and environmental monitoring.

The EIA report is reviewed by the Ministry of Environment following which an EIA decision note is given to the project proponent who will have to implement the decision note accordingly. Under the decision note, the project proponent is committed to implement all impact

mitigation measures that are specified in the submitted EIA report. Proponent is also committed to environmental monitoring at the intervals specified in the report.

This report fully complies with EIA regulations.

4.1.5 Waste Management Regulation

Waste Management Regulation came into force in 2014. The main purpose of this regulation is to implement the national waste management policy. Waste Management Regulation gives specific provisions to:

- Implement measures to minimize impacts on human health
- formulate and implement waste management standards
- implement an integrated framework for sustainable waste management
- Encourage waste minimization, reuse and recycling
- Implement polluter pays principle
- Introduce extended producer responsibility

The regulation provides set standard procedures for the following areas:

- Waste collection
- Transportation of waste on land and sea
- Waste treatment
- Waste storage
- Management of waste management centers
- Landfill
- Management of hazardous waste

All the waste produced in the proposed development would be managed according to the standards specified in the waste management regulation.

4.1.6 Regulation on Dredging and Land Reclamation

Regulation on Dredging and Land Reclamation was formulated under the Environment Act and this regulation came into force in 2013. The main purpose of the regulation is to minimize the negative environmental impacts from dredging and reclamation activities in islands and reefs across Maldives.

According to the regulation, all dredging and reclamation activities must be approved by the Environmental Protection Agency in writing. Application process for the permit for the

reclamation and dredging includes the submission of the adequate information of the project to Environmental Protection Agency along with a scaled before and after map.

The regulation defines the rationales for reclamation and dredging as those absolutely necessary for social, economic developments. Under this regulation, dredging is restricted in the following areas:

- 500m from the ocean side reef edge
- 50m from island vegetation line
- Environmentally protected areas

Under this regulation, land reclamation is restricted within 200m of an environmentally protected area. And also, land reclamation cannot exceed beyond the 30 percent of the house reef area.

4.1.7 Environmental Liability Regulation

This regulation is pursuant to the article 22 of the constitution that states that, protection, preservation and maintenance of the natural environment, the richness of the living species, the natural resources for the present generation as well as for the future generations is a basic obligation of the government. One of the key objectives of the regulation is to practice polluter pays principles in the Maldives. It aimed at maintaining equal standards for enforcing environmental liabilities, fines for those who violates the rules and regulations. The proposed project will be subjected to this regulation for any activity outside of the EIA scope and environmental decision statement. The proponent and the contractor shall take all practical measures to ensure that all relevant laws and regulations are followed.

4.2. Environmental Permits required for the Project

4.2.1 Environmental Impact Assessment Decision Note from Environmental Protection Agency

The proposed project requires the approval of this EIA report and issuance of an Environmental decision note/statement prior to the implementation of the project. The EIA decision note govern the manner in which the project activities must be undertaken. EIA decision note is the final environmental clearance granted by the Environmental Protection Agency for the proposed project.

4.3 International Conventions

4.3.1 Convention on Biological Diversity

Convention on Biological Diversity entered into force in 1993. The Maldives is a party to the Convention on Biological Diversity. The three main goals of this convention are:

- Conservation of biodiversity
- Sustainable use of its components and
- Fair and equitable sharing of benefits arising from genetic resources.

The objectives of the convention is to develop national strategies for the conservation and sustainable use of biodiversity. Proposed project involves removal of large number of mature palms, in order to minimize any negative impacts from this activity, proposer mitigation measures will be implemented. This would include replanting 2 palms for each palms removed in this project.

4.3.2 United Nations Framework Convention on Climate Change

United Nations Framework Convention on Climate Change is the first binding international legal instrument that deals directly with the threat of climate change. The objective of the convention is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Signatory countries have agreed to take action to achieve the goal outlined in Article 2 of the Convention which addresses the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the 16 climate system," Thus all Parties to the Convention are committed under Article 4 to adopt national programs for mitigating climate change, promote sustainable management and conservation of greenhouse gas (GHG) sinks such as coral reefs, to develop adaptation strategies, to address climate change in relevant social, economic and environmental policies, to cooperate in technical, scientific and educational matters and to promote scientific research and exchange of information.

The Kyoto Protocol entered into force in 2005 and is an international and legally binding agreement to reduce GHG emissions globally. It strengthens the Convention by committing Annex I Parties to individual, legally-binding targets to achieve limitations or reductions in their GHG emissions. Maldives has signed and ratified both the Convention and the Protocol.

5 EXISITING ENVIRONMENT

5.1 Data Collection Methods

Below are the key environmental components and methods used to gather relevant study data for the Environmental Impact Assessment. This section of the report outlines the major information requirements under the Term of Reference for the present EIA.

5.1.1 Geophysical Environment

Data to describe the geophysical environment was collected from observations during the field survey visit to the project location as well as published information, aerial photography; Google Earth maps and published information available from websites were used. Furthermore, information was also collected from meeting with Kudarikilu Island council.

5.1.2 Terrestrial Environment

To describe terrestrial environment, major two environmental components are vegetation and groundwater of the project location. The vegetation data was collected during field visit to the island and are based on the field assessment and observations. A vegetation transect was taken to find out the types and number of plant species present in the proposed project location. A soil profile was taken from within the project location by digging a well and water samples were taken from analysis from the project location and were collected in a clean PET bottles.

5.1.3 Socio-Economic Environment

The relevant socio-economic data was collected from published information and also documents provided from the Kudarikilu Island Council. A meeting was held in the Kudarikilu Island Council to gather more information about the socio-economic environment of the island.

5.1.4 Hazard Vulnerability

Hazard vulnerability of the project location was generalized from the information obtained from published sources.

5.1.5 Uncertainties on Data Collection Methods

The baseline information of the proposed project and surrounding environment were collected through primary data collected during the study visit and available secondary data. The environmental data includes general physical environment, natural environment and socioeconomic environment.

5.2 Geological Setting of B.Kudarikilu

Maldives has a total of 1,192 islands, distributed over 26 natural atolls that encompass an area of approximately 107,500 km2 of which less than 1.9 percent is land area. The country‘s total land area is estimated to approximately 300 km2, with islands varying in size from 0.5 km2 to 5.0 km2. Only 197 of the islands are inhabited. The islands consist of coral, sea grass, seaweed and sand dune ecosystems which are of great ecological and socio-economic significance.

B.Kudarikilu is an inhabited island located at 5^{o} 18’0.96”N and 73^{o} 04’14.74”E, on the Eastern side of Baa atoll, slightly inside the atoll. Nearest inhabited island to Kudarikilu are B.Kendhu and B.Kamadhu situated approximately 7 km away from Kudarikilu. Baa Atoll consists of number of environmentally significant protected areas. Baa atoll was declared as a UNESCO biosphere reserve in 2011. Nearest protected area to Kudarikilu is B.Bathalaa (island and surrounding lagoon) situated approximately 5.62 km north of kudarikilu.

Figure 8: Location of B.Kudarikilu

5.3 Vegetation

Detailed vegetation transect was done in order to know the existing vegetation cover. Table 4 shows the GPS coordinates of the vegetation transect conducted and table 5 contains the plant species which were identified along the survey track considering different vegetation floors. Figure 9 shows the location where the vegetation transect was taken.

Figure 9: Shows transect that was carried out in B. Kudarikilu

Table 3 :Transect location in B.Kudarikilu

Transect location	**Coordinates**	
Transect	Longitude	Latitude
Vegetation Transect starting point	73° 4'14.01352"E	5°17'58.48699"N
Vegetation Transect end point	73° 4'13.90397"E	5°17'57.46325"N

Table 4: Vegetation storeys and related species for transect

Distance /m	**Ground**	**0-2 m**	**2-4 m**	**4m >**
0-5	*Ischaemum muticum L.* *Eragrostis tenella/ syn.E. amabilis* *Panicum maximum*	*Ricinus communis L*	*Cocos nucifera L*	*Hibiscus tiliaceus L*
5-10	*Ischaemum muticum L.* *Eragrostis tenella/ syn.E. amabilis* *Panicum maximum*	*Ricinus communis L*	*Cocos nucifera L* *Terminalia catappa L*	*Hibiscus tiliaceus L*
10-15	*Ischaemum muticum L.* *Eragrostis tenella/ syn.E. amabilis* *Panicum maximum*	*Ricinus communis L*	*Pandanus odoratissimus*	*Hibiscus tiliaceus L* *Cocos nucifera L*
15-20	*Ischaemum muticum L.* *Eragrostis tenella/ syn.E. amabilis* *Panicum maximum*	*Ricinus communis L*	*Cocos nucifera L* *Terminalia catappa L*	*Cocos nucifera L* *Terminalia catappa L* *Leucaena leucocephala (Lam.) de Wit*
20-25	*Ischaemum muticum L.* *Eragrostis tenella/ syn.E. amabilis* *Panicum maximum*	*Ricinus communis L* *Cocos nucifera L*	*Cocos nucifera L*	*Cocos nucifera L* *Terminalia catappa L*
25-30	*Ischaemum muticum L.* *Eragrostis tenella/ syn.E. amabilis* *Panicum maximum*	*Ricinus communis L* *Cocos nucifera L*	*Cocos nucifera L* *Pandanus odoratissimus*	*Cocos nucifera L* *Terminalia catappa L*

In the vegetation transect, most commonly encountered species of plant was *Cocos nucifera L.*

Other species like *Ricinus communis L and Hibiscus tiliaceus L* were also found.

Table 5: Scientific and Dhivehi names of the vegetation species

Dhivehi name	**Scientific Name**
Ruh	*Cocos nucifera L*
Dhigga	*Hibiscus tiliaceus L*
Aamanaka	*Ricinus communis L*
Midhili	*Terminalia catappa L*
Ipil-ipil	*Leucaena leucocephala (Lam.) de Wit*
Maakashikeyo	*Pandanus odoratissimus*
Thinbi	*Ischaemum muticum L.*
Thun'bulhi- hui vina	*Eragrostis tenella/ syn.E. amabilis*
Onuhui	*Panicum maximum*

Figure 10: Vegetation found in the location where the coconut palms are cleared

5.4 Protected Areas and Sensitive sites

The entire Baa Atoll was declared as a UNESCO Biosphere Reserve by UNESCO in 2011. Baa Atoll Biosphere Reserve is the only UNESCO biosphere exists in the country. Even though the entire Baa atoll is declared as a Biosphere Reserve, there are a number of Core Areas or protected areas under the Maldives Environment Protection and Preservation Act. Most of these areas are marine protected areas. Hanifaru area is one such area established within the Baa atoll biosphere researve which is managed by a specific regulation called Regulation on Protection of Baa Atoll Hanifaru Region which was published in 2012.

The closest Core Area to Kudarikilu Island is Bathalaa Region located north of the island. The Hanifaru Region has been protected due to frequenting of Whale Sharks and Manta

Rays, which has become a world renowned site. Kudarikilu Island is within transition area where a number of activities can be undertaken upon approval of the EPA.

The proposed land clearance project in Kudarikilu Island is not believed to cause any negative impact on nearest Core Area.The following figure shows Protected Areas within the Baa Atoll Biosphere Reserve boundary.

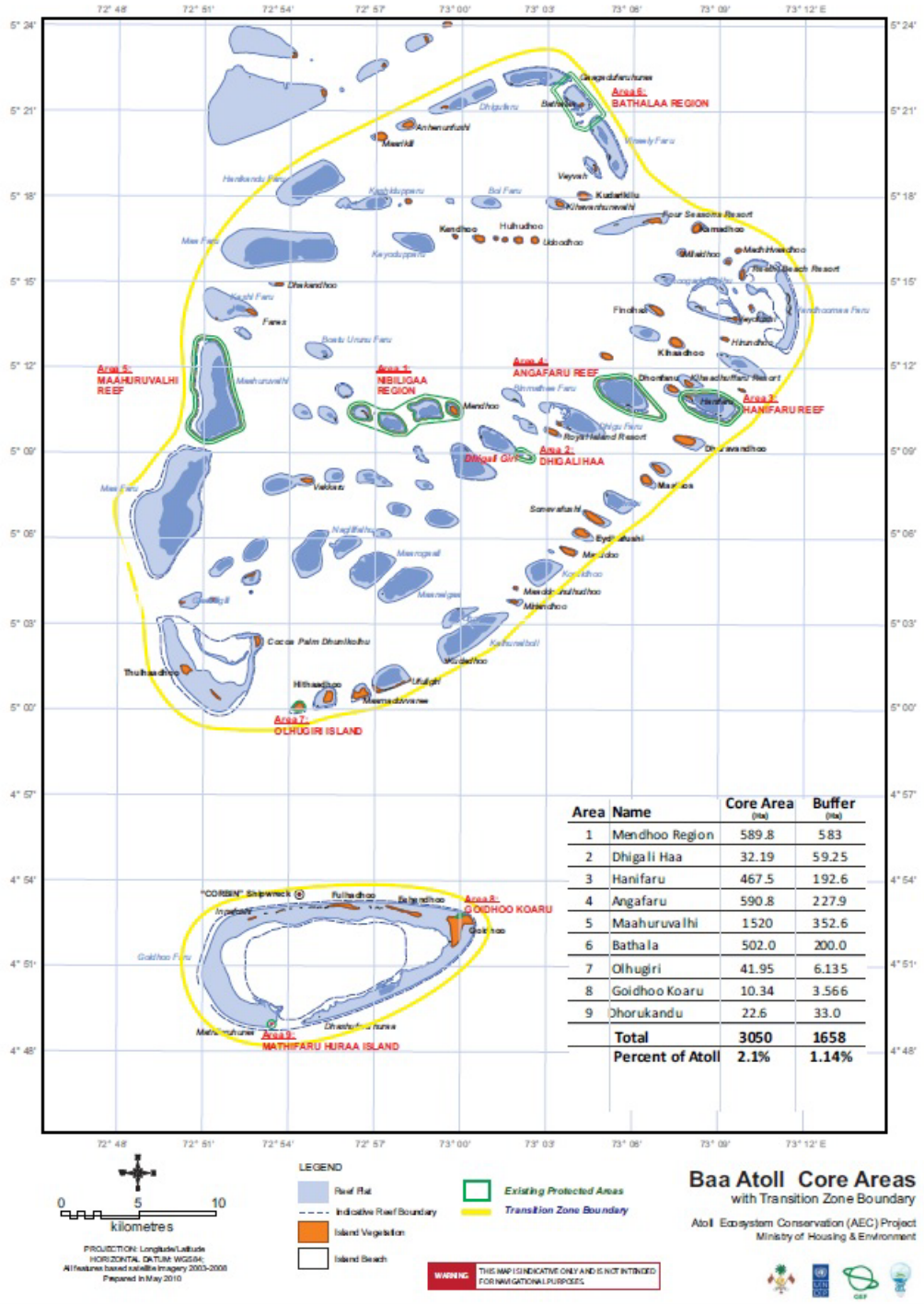

Figure 11: Environmentally protected areas in Baa Atoll

5.5 Water Quality Assessments

Two groundwater samples were taken for laboratory analysis, one sample was taken from the soil pit dug inside the proposed project location and other sample was taken from the groundwater well found about 20m away from the project site. The locations of the groundwater samples in Baa Kudarikilu was given in the table 6.

Table 6: water sample locations

Water Sample	**coordinates**	
	Longitude	Latitude
Sample G1	73° 4'12.98861"E	5°17'57.91525"N
Sample G2	73° 4'11.92060"E	5°17'58.55256"N

Figure 12: Water sample was taken from a dug well within the project location.

The following table shows the results of the groundwater analysis for the two samples.

Table 7 Groundwater analysis results

Perimeter	**Unit**	**Sample 1**	**Sample 2**
Physical Appearance		Clear with particles	Clear with particles
pH	-	8.00	7.72
Salinity	$^{o}/_{oo}$	047	.46
Nitrite	mg/L	0.006	0.008
Phosphate	mg/L	0.10	0.13
BOD	mg/L	4	-

The condition of groundwater is generally good on the location and free from pollution. Results of the groundwater analysis area attached in the appendix 4.

5.6 Soil Profile

Soils are home to a number of living organisms including insects, worms and a number of micro-organisms such as nitrogen fixing bacteria and removal of soil also removes these organisms from their habitats. Generally, the soil of coral islands of the Maldives are formed of coral fragments, mollusk shells, materials are the constituents of beach sand of cay island, and as the island grow older and plant foraminiferan test, calcareous algae skeletons, and other biogenic coralline detritus material. These and other biogenic activities increases these materials possess a humus layer forming proper soil in the island. Soils play a vital role in the overall ecological balance of the island in terms of providing food and shelter for a number of organisms and nutrients for plants.

In order to observe general condition of the soil, a soil pit was dug in the center of the proposed project site. The soil of the island was observed to be in a good condition. The groundwater depth was 1.6m. The top soil layer on the profiles consists of a thick layer of humus, where the thickness of the top layer was observed to be 0.4m. The bottom layers on the soil profile consists of mix of coarse sand and humus and a fine sand layer towards the water table.

Figure 13: Soil profiles of the island

Removal and excavation of soils deteriorate these functions from the ecosystem that are known to sustain the ecological balance of the island. Removal of soil also affects minor vegetation that are within the boundary of the proposed project site. Removal of these vegetation may also directly remove some minor habitats.

5.7 Natural Hazards and Disaster Risks

The major natural hazards in the Maldives are strictly controlled by their geophysical and climatic settings. The islands of the Maldives are less prone to tropical cyclones and are only impacted in the northern part of the country by weak cyclones that formed in the southern part of the Bay of Bengal and the Arabian Sea. Tropical cyclones and correspondingly storm surges and droughts predominantly prevail in the north of the Maldives. In contrast, swell waves and heavy rainfalls are more prominent in the southern and western islands of the Maldives. Since 1877, only 11 cyclones crossed the archipelago. Most of the cyclones crossed Maldives north of 6.0o N and none of them crossed south of 2.7o N during the period. All the cyclones that affected Maldives were formed during the months of October to January except one, which formed in April (UNDP, 2006).

According to the UNDP assessment report, the natural hazards prevailing in the Maldives can be classified into 4 categories. These are;

☐Geological hazards (earthquakes and coastal erosion)

☐Meteorological hazard (tropical cyclones and storms, thunder storms, waterspouts, heavy rainfall, and drought)

☐Hydrological hazards (floods induced by heavy rainfall, storm surges, swell waves, udha, and tsunamis)

☐Climate-related hazards (accelerated sea level rise, sea surface temperature rise, changes in monsoon pattern)

Among those listed above, floods (induced by tsunamis, abnormal swell waves, and heavy rainfall), windstorms, droughts, and earthquake are counted as major natural hazards prevailing in the Maldives.

The northern atolls have a greater risk of cyclonic winds and storm surges. This reduces gradually to very low hazard risk in the southern atolls. The maximum probable wind speed in Zone 5 is 96.8 knots (180 kilometers per hour) and the cyclonic storm category is a lower Category 3 on Suffir-Simpson scale. At this speed, high damage is expected from wind, rain and storm surge hazards (UNDP, 2006). UNDP (2006) identified that hazard risk from earthquake is low for the Maldives and considered as a disaster risk for only islands located in the south of the country. Maldives faces tsunami threat largely from the east, and lower threat from the north and south. Islands along the eastern fringe of the atolls are more prone to tsunami hazard than those along the northern and southern fringes. Islands along the western fringe experience a relatively low tsunami hazard. Historically, Maldives has been affected by three earthquakes which had their sources in the

Indian Ocean.

Based on the above analysis, it can be said that the proposed project location is relatively in a safe zone from major natural disasters due to its location in the central parts of the country. Also since Kudarikilu is located on the eastern periphery of the Atoll, there is little risk for swells and udha which are mostly generated from the western side of the country.

5.8 Socio-Economic Environment

5.8.1 Brief Description of Baa Atoll

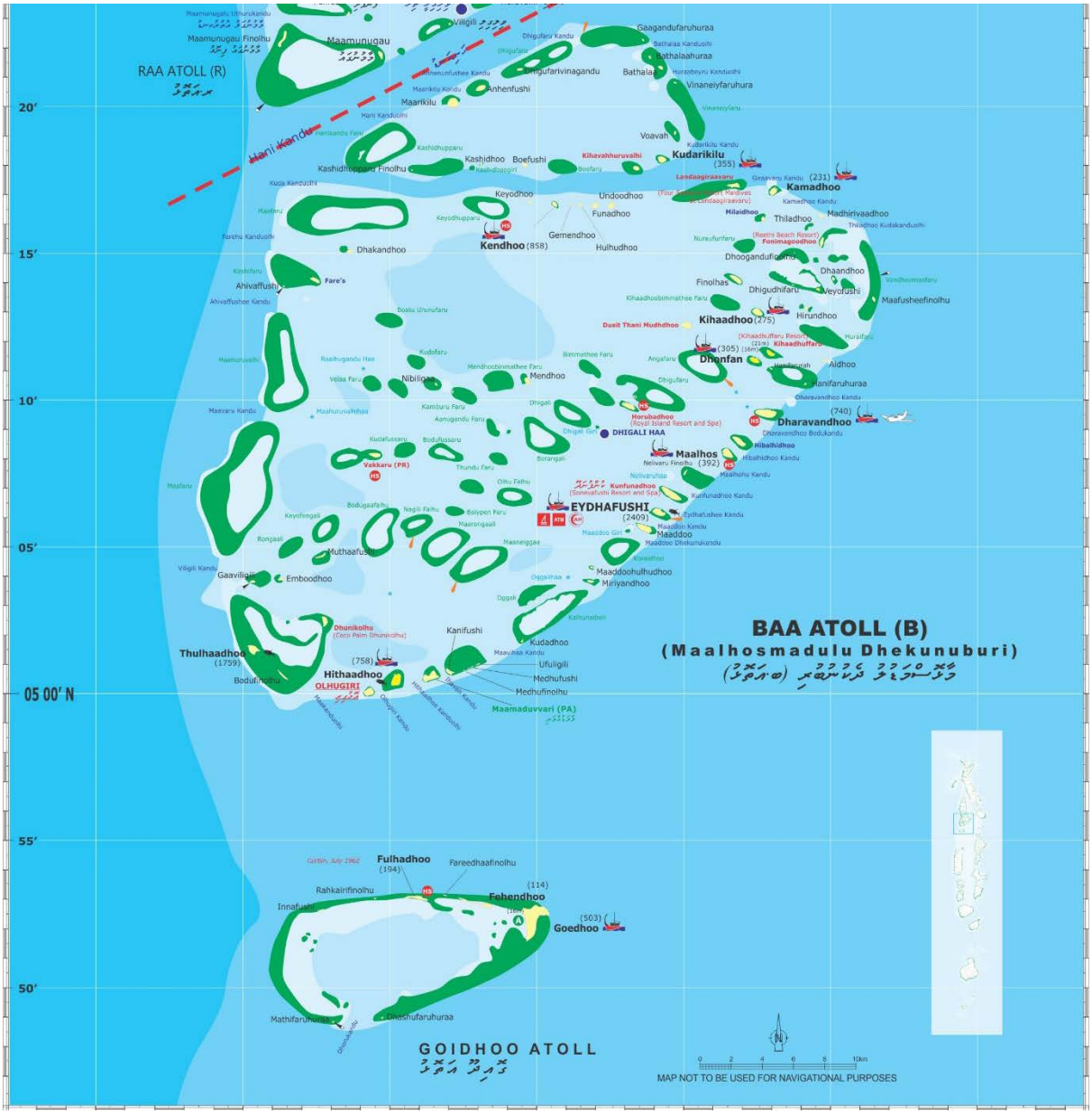

Figure 14: Baa Atoll

Baa Atoll is located between 5° 23' N and 4° 49' N. The Atoll is situated on the western side of the county. Baa atoll consists in two roughly circular sub-atolls, separated by the narrow

Kudarikilu Kandu channel. The total measures approximately 38 km wide (east-west) and 46 km long (north-south), covering a surface of 1127 km2. Baa atoll is formed by 105 coral reefs, representing a reef surface of 263 km2. There are total 77 islands in the Atoll and 13 islands are inhabited. There are 12 operating resorts. Eydhafushi Island is the Atoll Capital. Baa Atoll is one

of the environmentally significant atoll in the country and Baa Atoll was declared as a UNESCO biosphere reserve in 2011.

5.8.2 Population and Housing

The 13 inhabited islands and corresponding populations as well as populations in tourist resorts and industrial islands are found in the following table.

Table 7: Population of Baa Atoll (Source: Population and Housing Census, 2014, DNP)

Island Name	Population
Kudarikilu	598
Kamadhoo	471
Kendhoo	868
Kihaadhoo	364
Dhonfanu	369
Dharavandhoo	839
Maalhos	485
Eydhafushi	2626
Thulhaadhoo	1505
Hithadhoo	718
Fulhadhoo	220
Fehendhoo	107
Goidhoo	548
Tourist Resorts	2418
Industrial Islands and others	1326

5.8.3 Kudarikilu Island

The total land area of the Kudarikilu Island is about 16.3 hector. The total population of the Kudarikilu is 598, out of which 295 are women and 303 are men. The island has total of 109 households which are about 5 people per house on average. The major economic activities are fishing and tourism. Most of the youth works in the tourism sector. About 40 percent of the population of the island works in fishing activities. There are 5 fishing vessels registered and operated in the island. Larger percentage of the total population of the island works in tourism and fisheries sector. And only 10 percent of the total population works in other sectors like agriculture and government.

The island has one government secondary school and one pre-school run by the island community. The secondary school in the island has achieved one of the nest academic school (below 100 students) in two years.

The island has 2 house electricity service provided by the government electricity company FENAKA. Kudarikilu has an efficient sewerage system established by the Kudarikilu ekuverin ge gulhun, a local NGO.

6 STAKEHOLDER CONSULTATIONS

This section outlines the major findings of the consultations undertaken with regards to the proposed project in Baa Kudarikilu.

6.1 Key Stakeholders

The approved Terms of Reference for the EIA requires to consult the key stakeholders that could affect from the proposed project.

- Kudarikilu Island Council
- Kudarikilu Island community

6.2 Methods of Consultation with the Stakeholders

Both formal and informal methods have been used to inform the stakeholders about the proposed project and also gather the important information from the key stakeholders as per the EIA regulation.

A formal meeting was held with Kudarikilu Island council at the Kudarikilu Island Council office. And the Kdarikilu Island community consultation was carried out through a written questionnaire which was distributed to randomly selected people in Kudarikilu.

6.3 Meeting with B.Kudarikilu Island Council

Following is the summary of the consultation with Kudarikilu Island Council:

Participants of the meeting are listed in the below table.

Table 8: Meeting Participants

Name	**Designation**	**Contact**
Mahfooz Abdul Wahhab	EIA consultant	9994467
Ahmed Anwar	EIA consultant	7995080
Abduk Salaam A.H	Council member	9997085
Abdul Hannan A.	President	9192920
Ali Musthafaa	Council member	7437459
Abdulla Yasir	Assistant director, council	7839513

Kudarikilu Island Council is the one of the key stakeholders of the proposed project. A formal meeting was held with the Kudarikilu Island Council on 27th April 2017 at the Kudarikilu Island Council office. Kudarikilu Island Council is also the proponent of this project, thus important information for the EIA report was collected during the consultation meeting.

- EIA consultants briefed the council staff about EIA process and timelines of the process.
- Council staff highlighted that the, existing football ground on the island is small and no up to the standard.
- Council staff also highlighted that, the existing football ground needs to be developed to meet the standard in order to be able to host home games during the atoll level competitions.
- Youth request to develop all play grounds in one area.
- Council has designated areas to plant two new palms for each palms removed in the proposed development.
- Grounds for Netball, Volleyball and bashi court will be developed under the proposed project.
- Council has already informed the community about the proposed project.

6.4 Island Community Consultation

Participants of the Island community consultation are listed in the below table.

Table 9: List of the participants

Name	**Contact**
Hassan Shakir	7693255
Ahmed Firaq	7988837
Mohamed Shifan	9689799
Abdulla Maseeh	7909076
Abdulla Anees	9126847
Hashim Ibrahim	7905841
Moosa Azeef	7514103
Ali Naseem	7791943
Bunyaamin Ibrahim	9991757
Ibrahim Nazim	9707889

Kudarikilu Island community consultation was carried out through a written questionnaire which was distributed to randomly selected people in Kudarikilu. Consultation was carried out on 4th May 2017. Completed 10 questionnaires was collected. Participants were asked if they are happy about the proposed project; if they are happy about removing vegetation from the project location to clear the land for the development of sports grounds; and if they are happy about the proposed location to develop the sports grounds.

Following is the summary of the community consultation:

- All 10 participants expressed that, they are happy about the proposed expansion of the existing football ground.
- All 10 participants expressed that, they agree to clear the land if the owners of the palm trees are paid an adequate amount of compensation.
- All 10 participants also expressed that, they are happy about the selected location for the development of the playgrounds.

7.SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATIONS MEASURES

7.1 Impact Identification Methodology

Impacts on the environment are divided into two main categories: impacts during relocation and impacts after relocation. Furthermore, as a general mitigation measure, the relocation activities shall be carried out as per the Regulation on Uprooting, Cutting and Transportation of Palms and Trees and other relevant laws and regulations highlighted in the report.

7.1.1 *Impacts during relocation*

The impact prediction methodology for impacts during relocation starts with the identification of the potential impact area from the relocation. There is, in this category a difference made between direct physical damage and indirect impacts, for example, the direct and indirect impact which could arise from the removal of vegetation. Therefore, the extent of the damage area is restricted to the areas near the housing plots.

The impacts were predicted using the following:

- The results of field surveys, along with consultations with proponent
- Impact prediction was also based on experience from similar projects carried out previously.

Finally, the magnitude of the impact was inferred based on the conditions at the site and experience from previous projects.

7.1.2*Impacts after relocation*

For the impacts after relocation, the process starts with the identification of the factors, which potentially differ from the existing conditions before the relocation, and the situation once the relocation is completed.

7.1.3*Impacts ratings*

The results from the survey presenting the natural environment in the considered area were then used to assess how the changing conditions will affect the existing environment. The significance of the impacts were predicted based on the experience gathered over years of observations, the magnitude and the duration of the exposure to changing condition as well as

the long lasting changes caused to the natural processes. The negative impacts on the environment have been considered in the worst-case scenario in order to emphasize the need for mitigation and try to minimize the impacts.

The importance of each impact was rated along a scale from very negative (---) to very positive (+++). When the impact is not very significant, it is stated as negligible.

7.1.4*Limitations in impact prediction*

Even though a thorough brainstorming occurs when assessing the impacts, there is always a possibility for some of the impacts to have been disregarded, either that they do not have been noticed in the past or that the effects and causes have not been related. Therefore there is an intrinsic limitation due to the limitation of our knowledge itself.

The lack of previous devoted studies or careful monitoring creates a lack of information as to the extent and magnitude of the impacts encountered in other similar, and in many case it is difficult to ascertain the significance of impacts, which remains subjective to the field experience of the consultant and observations of the proponent.

There is often a discrepancy between the understanding of the consultant and the work methods carried on site by the contractor. Even though the environmental follow up of the project is supposed to reduce these discrepancies, it is clear that there is an inherent risk of misunderstanding.

Furthermore, there is always a possibility that uncertainties about related decisions such as planning, negotiation, coordination, etc., affect the accuracy of prediction in EIA process.

7.2 Impacts during relocation

7.1.5 *Disturbance to local community*

The operation of machinery such as excavators and Lorries can generate a lot of noise which can be disturbing to people living nearby.

Mitigation

The machinery can be operated at times that will cause least disturbance to the local community. This can be determined after consulting the island council of Kudarikilu.

7.1.6 *Loss of vegetation on Kudarikilu*

The clearing of vegetation for such projects can reduce the vegetation cover of the island, diminishing the greenery of the island. The effect on carbon sequestration is negligible.

Mitigation

The impact can be mitigated by replacing the vegetation lost with trees within the stadium area and along the sides of the new and existing roads. Furthermore, not all the plants will be transferred to Olhahali as some are proposed to be relocated within the island.

7.1.7 *Waste generation*

It is expected that a lot of green waste will be generated during the uprooting and transfer process of the coconut trees. Mostly it will be coconut fronds from the pruning of coconut trees for transfer.

Mitigation

The coconut fronds will be given to the local thatch makers. There is a local group of people who specialize in thatch making and earn revenue by selling it to nearby resorts. Hence by giving the coconut fronds to this group of people, socioeconomic benefits will be gained to the local community, by doing so the problem of green waste will also be dealt with.

62.4 risk of groundwater contamination

During the uprooting process the machinery will be working constantly and there is a risk that waste oil maybe spilled on to the ground. As Maldivian soil is very porous the oil can seep into the groundwater table very easily.

Mitigation

The machinery used will be properly inspected every time before the commencement of the operation to make sure that it is functioning properly and that there are no leakages. During the operation of machinery the rules and standards set to operate will be strictly followed to ensure that the machinery does not fail. And if in case there is an oil spillage, emergency clean-up crew will always be on standby.

The uprooting and of the trees and subsequent refilling of the holes will be done promptly to minimize the risk of direct exposure of the groundwater.

7.2 Impacts after relocation

7.1.8 *Disturbance to vegetation on K. Olhahali and Kudarikilu*

There is a risk that pests may be introduced with the new coconut trees from Kudarikilu. If a new pest is introduced into the ecosystem of K. Olhahali it could have a devastating effect on the biodiversity of K. Olhahali. However since the type of vegetation on both islands are very similar the chances of this happening is very slim. Furthermore, the chances of this impact occurring for the transfer sites within Kudarikilu is envisaged to be even less as it is relocated within the island.

Mitigation

Even though the chances of introduction of pests are low, the risk it poses is very real. Therefore all the coconut trees will be carefully inspected for any pests on Kudarikilu before transferring to K. Olhahali.

7.1.9 Socioeconomic losses to locals of Kudarikilu

Some of the palms that are going to be replaced are property of the locals where they use the palms for business purposes. With the relocation of the palms they would lose this income source which may affect their livelihood in a negative manner. However, in the survey that was carried out, most of the participants were of the opinion that if the palm owners are properly compensated for their loss they do not see any issue with the relocation of palms.

Mitigations:

The palms owned by locals shall be properly compensated. Furthermore the council can later show another area for the individuals to grow their palms and continue their economic activities.

7.1.10 *Socioeconomic benefits to locals of Kudarikilu*

The project will have a positive impact to local community as the project has arisen due a need of the community. The existing football ground on the island is not up to standard and hence the locals cannot host any home games during football cups on the Atoll level. Therefore need to make the ground to standard small size so that they can host home matches to get home advantage in cups. Through community consultations, it was known that the love for the sports was very much within the community and it is collective vision to see the day where they can host such tournaments. Furthermore, due to the travelers from other islands for such tournaments, it is

envisaged that it will bring a positive impact to the economy of island. Further, it will help build stronger relationships with neighboring islands.

7.3 Impacts rating

The anticipated impacts arising from the project during the relocation and after the relocation are discussed below and the direct and indirect impacts are summarized in Table 9. These show the ratings of the impacts before and after mitigation.

Table 10: Summary of impacts and ratings and the mitigation measures proposed for negative impacts

Activity	Site of Impact	Component	Impacts	Rating	Mitigation	Final rating
Mobilization of machinery	Kudarikilu projects site, harbor area	Local community	Noise pollution	-	Organize machinery operation times after consulting with council	Negligible
Uprooting of coconut trees	Kudarikilu projects site	Local community and disturbance to vegetation	Noise pollution, risk of groundwater contamination and loss of vegetation	-	Replanting trees after the houses are established and strictly following machinery operation rules to minimize	-

		Local community	Socioeconomic benefits	+++	-	+++
Transfer of coconut trees	Transfer route on Kudarikilu	Local community	Noise pollution and Green waste generation	-	Give the coconut fronds to locals to make thatch	Negligible
Backfilling	Project site of kudarikilu	Ground levelling	Ground levelled	++	-	++
Re-plantation of coconut trees on K. Olhahali	K.Olhahali proposed replantation sites	Disturbance to Vegetation on K. Olhahali	Increase vegetation density on K. Olhahali and Risk of introduction of pests	+	Carefully inspect all trees before transfer to find any pests	++
Demobilization	Kudarikilu harbour area	Local community	Noise Pollution	Negligible	-	Negligible

8 EVALUATION OF ALTERNATIVES

8.1 No-project option

The do nothing scenario means that the coconut trees on the housing plots and roads will not be removed through this project. This implies that the locals and the council have to do it on their own. This could cost considerable financial and human resources as they lack the machinery to do it. Further it implies that the housing plots and roads will take longer time to be cleared, delaying the development of the island. Housing plot owners will have to spend a considerable amount of money and time to clear their plots. Hence more time will be required for them to start building their houses.

The trees on the road and plot footprint would be burnt by the plot owners and council, adversely affecting biodiversity as compared to the proposed works and creating smoke in the vicinity of the village.

8.2 Alternative uprooting

Another alternative is uprooting the coconut trees via manual labour using shovels and crowbars. While this method could completely avoid the risk of getting the groundwater contaminated, it could take a very long time and a greater labour force. Also, this is a more perilous method for the workers as the falling trees may be hard to maneuver.

8.3 Relocate trees to other areas in Kudarikilu

The figure below shows the alternative location of the project site highlighted in Blue color. It is envisaged that the alternative area would require greater number of palms and trees to be relocated and therefore would cause a higher negative environmental Impact. Furthermore, as the proposed location for the project was chosen as a location for all the major sports infrastructure of the island, the commencement of physical works of Futsal ground project carried by the Ministry of Youth and sports has already initiated within the premises of the proposed area. Moreover the existing football ground is also in the proposed area. Therefore taking these aspects into consideration, it is recommended to carry out the project on the proposed plot rather than the alternative.

Figure 15: Alternative location of project site shown in blue

9 MONITORING PROGRAM

Monitoring is the systematic collection of information over a long period of time. It involves the measuring and recording of environmental, social and economic variables associated with the development impacts. Monitoring is needed to:

- Compare predicted and actual impacts,
- Test the efficiency of mitigation measures,
- Obtain information about responses of receptors to impacts,
- Enforce conditions and standards associated with approvals,
- Prevent environmental problems resulting from inaccurate predictions,
- Minimize errors in future assessments and impact predictions,
- Make future assessments more efficient,
- Provide on-going management information, and
- Improve EIA and monitoring process.

The before-impact data collection at Kudarkilu was carried out during baseline surveys in March 2017. Baseline survey is carried out to quantify ranges of natural variation and/ or directions and rates of change that are relevant to impact prediction and mitigation. A set of reference data was obtained from these surveys, which can be used during the relocation and after relocation phases to evaluate whether the predicted impacts occurred and to test the efficiency of the mitigation measures that will be implemented.

To compare predicted and actual impacts occurring from project activities and to determine the efficiency of the mitigation measures, an environmental impact monitoring and a mitigation monitoring are carried out. This type of monitoring is targeted at assessing human impacts on the natural environment. By monitoring the actual impacts, the environmental risks associated with the project can be reduced. Impact monitoring is supported by an expectation that at some level, anthropogenic impacts become unacceptable and action will be taken to either prevent further impacts or re-mediate affected systems. Mitigation and monitoring aims at comparing predicted and actual (residual) impacts, and hence determine the effectiveness of mitigation measures.

In summary, environmental monitoring can:

- Illustrate the extent of environmental effects and resource losses;
- Provide scientific information on the response of the environment to human activities and mitigation measures;
- Provide data that can be used in the environmental auditing for management purposes.

All monitoring activities will be carried out under the supervision of the environmental consultants. The details of the monitoring program are given in Table 10.

Table 11: Environmental Monitoring Plan.

Monitoring	**Phase**	**Methodolo**	**Indicators**	**Sampling**	**Estimated Cost**
Re-planted	After relocation	Visual	☐ Survival rate	Every week for one month after	USD 200/
Groundwater	During relocation	Water chemistry	☐ Concentration in of oil	During uprooting	USD 2000/
Pests	After relocation	Visual inspection	☐ Visual	Every week for one month after	USD 200/

Monitoring will be carried out every week for one month from the date replantation. A monitoring report will be submitted to the Ministry of Environment and Energy 2 months following data collection, as outlined in Table 11.

Table 12: Time frame for monitoring and reporting.

Description	**Month/ Year**
EIA Approval	June 2017
Replantation	July 2017
Data collection - 1	July 2017
Report submission to EPA -	September 2017
Data collection - 2	January 2018
Report submission to EPA -	March 2018
Data collection - 3	July 2018
Report submission to EPA -	September 2018

Data collection - 4	January 2018
Report submission to EPA -	March 2018
Data collection - 5	July 2018
Report submission to EPA -	September 2018

10 CONCLUSION

Through this project the trees on the side of the football ground will be cleared and the trees will be replanted in another island (Olhahali resort) and areas on Kudarikilu. As a result it is expected that the trees cut down will be put to good use to propagate new trees which will bring about greenery in Kudarikilu as well as Olhahali resort. While at the same time providing the opportunity for the council to extend the football ground so that it is up to standard size, which as a result will allow the locals to host home games as they have wished for a long time. Nonetheless it is expected that the loss of coconut trees from the island will be substantial as the island already has few existing coconut in the green zone around the island. Therefore it is very important that new coconut trees are planted in Kudarikilu, especially in the replanting areas highlighted in the report.

The proposed project was compared with the no project alternative finding many disadvantages socially. If the project is not implemented, the trees on the side of football ground on Kudarikilu will not be removed, major vegetation loss from the island will not happen but it also means that the wishes of the locals to host home games and the council to establish a sports arena will not be achieved, which might cause social unrest. Furthermore, in this age where exercising is important to maintain a healthy lifestyle, it is important to provide the locals with the opportunity to do so by establishing places like sports arena. Therefore, the preferred alternative is to go ahead with the proposed project, implanting the mitigation measures to minimize any negative impacts from the project.

All in all, works presented in this EIA does not pose a huge environmental risk, while the benefits of this project outweigh the risks associated, as the loss of trees (the major impact) can be easily mitigated by replanting trees. However, during the uprooting of trees, the mitigation measures and good environmental conduct must be followed strictly to avoid any potential impacts of groundwater contamination. It is expected that the development of the sports arena will greatly improve the social well-being of Kudarikilu people.

References

Developing a Disaster Risk Profile of Maldives, 2006, UNDP

EIA Regulation (Amended), 2015, EPA

Environmental Impact Assessment for the Road Development Project at R.Dhuvaafaru, by Ahmed Jameel and Ibrahim faiz in 2016

Environmental Impact Assessment for the Proposed Agricultural Development project at Gdh.Dhoonirehaa by Mahmood Riyaz and Mohamed Shiham Adam in 2016

Handbook on Compilation of Laws and Regulations on Protecting the Environment of Maldives, 2006, MEEW

Preliminary Results, Maldives Census 2014, Bureau of Statistics, Maldives

Appendices

Appendix 1: Terms of Reference (TOR)

بسم الله الرحمن الرحيم

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Environmental Protection Agency EPA

NO: 203-EIARES/313/2017/2

Terms of Reference for Environmental Impact Assessment for Land Clearance for the Expansion of existing football ground in B.Kudarikilu

The following is the Terms of Reference (ToR) following the scoping meeting held on *06/04/2017* for undertaking the EIA for land clearance for the expansion of existing football ground in B.Kudarikilu. While every attempt has been made to ensure that this TOR addresses all of the major issues associated with development proposal, they are not necessarily exhaustive. They should not be interpreted as excluding from consideration matters deemed to be significant but not incorporated in them, or matters currently unforeseen, that emerge as important or significant from environmental studies, or otherwise, during the course of preparation of the EIA report.

1. **Introduction and rationale** – Describe the purpose of the project and, if applicable, the background information of the project/activity and the tasks already completed. Objectives of the development activities should be specific.

2. **Study area** –Specify the agreed boundaries of the study area for the environmental impact assessment.

3. **Scope of work** – The report should be categorised into the following components:

Task 1. Description of the proposed project – Provide a full description and justification of the relevant parts of the proposed project, using maps at appropriate scales where necessary. The following should be provided (all inputs and outputs related to the proposed activities shall be justified):

- Details of the processes and methods used.
- List of translocate species.
- The proposed area from which the vegetation will be removed and the area where it will be re planted.
- Schedule and duration of the project.

Task 2. Description of the environment – Assemble, evaluate and present the environmental baseline study/data regarding the study area and timing of the project (e.g. monsoon season). Identify baseline data gaps and identify studies and the level of detail to be carried out by consultant. Consideration of likely monitoring requirements should be borne in mind during survey planning, so that data collected is suitable for use as a baseline. As such all baseline data must be presented in such a way that they will be usefully applied to future monitoring. The report should outline detailed methodology of data collection utilized.

The baseline data will be collected before construction and from at least two benchmarks. All survey locations shall be referenced with Geographic Positioning System (GPS) including water

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ތިމާގެ ބިން ބުރުގެ 3 ވަނަ ފަންގިފިލާ، ހަނޑުވަރ ހިންގުން
ދަތުރ: ދިވެހިރާއްޖެ، 20392
ގުޅުއްވުމ: secretariat@epa.gov.mv
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Environmental Protection Agency EPA

sampling points, reef transects, vegetation transects and manta tows sites for posterior data comparison. Information should be divided into the categories shown below:

- Equipment's mobilized.
- Vehicle travel route should be included
- Temporary worksite information
- Vegetation summery
- Exact locations of the vegetation removal
- Number and types of vegetation to be removed; identify any protected trees that needs to be removed.
- Justification for land clearance and selection of locations
- Methods and equipment's used for removal and transportation
- Duration of the proposed work
- Labour requirements and (local) Labour availability
- Housing of temporary labourers
- Location for replanting trees as per regulation of cutting down, uprooting and replanting trees.
- Groundwater quality measuring these parameters: pH, Salinity, BOD, COD, phosphate and nitrate.

Socio-economic environment

- Demography: total population, sex ration, density, growth and pressure on land
- Economic activities of men and women
- Seasonal changes in activities
- Services quality and accessibility (water supply, waste/waste disposal., energy supply, social services such as health, education)
- Community needs

Task 3. Legislative and regulatory considerations – Identify the pertinent legislation, regulations and standards, and environmental policies that are relevant and applicable to the proposed project, and identify the appropriate authority jurisdictions that will specifically apply to the project. Include permits and approvals in the EIA document.

- Ministry of Housing land use approval.

Task 4. Potential impacts of proposed project, incl. all stages – The EIA report should identify all the impacts, direct and indirect, during and after translocation of the trees, and evaluate the magnitude and significance of each.

Impacts on the natural environment

- Impacts of noise, vibration and disturbance;
- Impact on soil, groundwater table.
- Impacts on unique or threatened habitats or species and
- Impacts on landscape integrity/scenery.

The methods used to identify the significance of the impacts shall be outlined. One or more of the following methods must be utilized in determining impacts; checklists, matrices, overlays, networks, expert systems and professional judgment. Justification must be provided to the selected methodologies. The report should outline the uncertainties in impact prediction and also outline all positive and negative/short and long-term impacts.

Task 5. Alternatives to proposed project – Describe alternatives including the *"no action option"* should be presented. Determine the best practical environmental options. Alternatives examined for the proposed project that would achieve the same objective including the "no action alternative". This should include, alternative designs, alternative materials; and alternative locations. The report should highlight how the best location was determined. All alternatives must be compared according to international standards and commonly accepted standards as much as possible. The comparison should yield the preferred alternative for implementation.

Task 6. Mitigation and management of negative impacts – Identify possible measures to prevent or reduce significant negative impacts to acceptable levels. The confirmation of commitment of the proponent to implement the proposed mitigation measures shall also be included. In cases where impacts are unavoidable, arrangements to compensate for the environmental effect shall be given. Cost of the mitigation measures, equipment's and resources required to implement those measures. The commitment need to be provided for replanting 2 trees for every tree removed, by the island council.

Task 7. Development of monitoring plan - Identify the critical issues requiring monitoring to ensure compliance to mitigation measures and present impact management and monitoring plan. Ecological monitoring will be submitted to the EPA to evaluate the damages during construction, after project completion and every three months thereafter, up to one year and then on a yearly basis for five years after. The baseline study described in task 2 of section 2 of this document is required for data comparison. Detail of the monitoring program including the physical and biological parameters for monitoring, cost commitment from responsible person to conduct monitoring in the form of a commitment letter, detailed reporting scheduling, costs and methods of undertaking the monitoring program must be provided.

Task 8. Stakeholder consultation–the EIA report should include a list of stakeholders consulted, their contact details and summary of their major outcomes. The EIA draft report need to be submitted to B Atoll council and evidence of which needs to be attached to the final EIA report.

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Presentation- The environmental impact assessment report, to be presented in digital format, will be concise and focus on significant environmental issues. It will contain the findings, conclusions and recommended actions supported by summaries of the data collected and citations f or any references used in interpreting those data. The environmental assessment report will be organized according to, but not necessarily limited by, the outline given in the Environmental Impact Assessment Regulations, 2012.

Timeframe for submitting the EIA report – The developer must submit the completed EIA report within 6 months from the date of this Term of Reference.

......*16th April 2017*......

Date

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Website: www.epa.gov.mv

Appendix 2: Contact Information of all Stakeholders and People Consulted

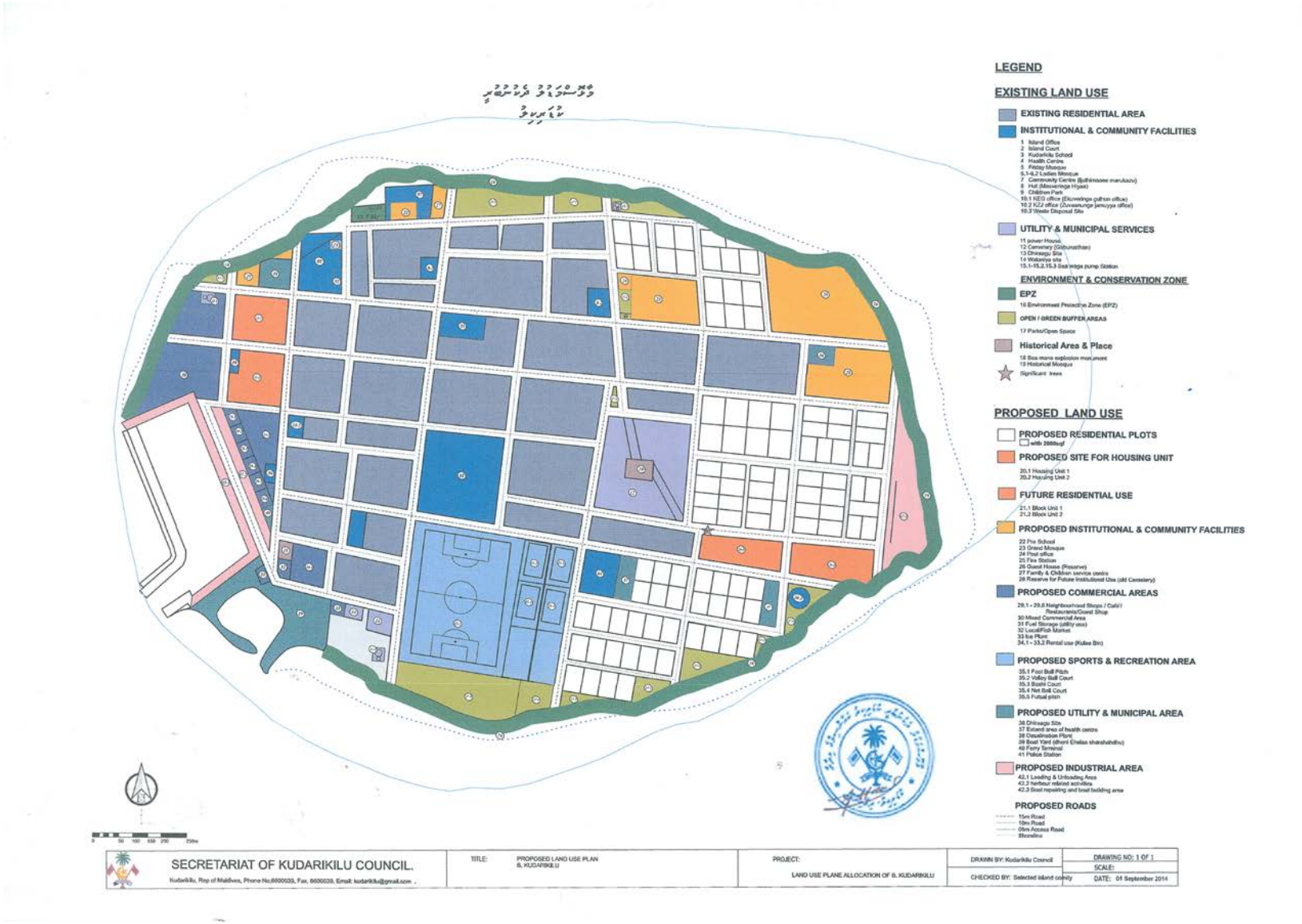
Participants of the meeting with the Ba. Kudarikilu Island Council

Name	**Designation**	**Contact**
Mahfooz Abdul Wahhab	EIA consultant	9994467
Ahmed Anwar	EIA consultant	7995080
Abduk Salaam A.H	Council member	9997085
Abdul Hannan A.	President	9192920
Ali Musthafaa	Council member	7437459
Abdulla Yasir	Assistant director, council	7839513

Participants of Ba. Kudarikilu Island Community Consultation Survey

Name	**Contact**
Hassan Shakir	7693255
Ahmed Firaq	7988837
Mohamed Shifan	9689799
Abdulla Maseeh	7909076
Abdulla Anees	9126847
Hashim Ibrahim	7905841
Moosa Azeef	7514103
Ali Naseem	7791943
Bunyaamin Ibrahim	9991757
Ibrahim Nazim	9707889

Appendix 3: Ba.Kudarikilu Land Use Plan Map Showing the Proposed Development of the Sports Grounds



Appendix 4 Water Test Results

Male' Water & Sewerage Company Pvt Ltd
Water Quality Assurance Laboratory
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Tel: +9603323209, Fax: +9603324306, Email: waqa@mwsc.com.mv

MWSC

WATER QUALITY TEST REPORT
Report No: 500173842

Report date: **06/06/2017**
Test Requisition Form No: **900175670**
Sample(s) Recieved Date: **31/05/2017**
Date of Analysis:: **31/05/2017 - 05/06/2017**

Customer Information:
Ahmed Anwar
M. Vistynia
Bloakiyaa Magu
Male' -

Sample Description	b KUDARIKILU G1	TEST METHOD	UNIT
Sample Type	Ground Water		
Sample No	83186844		
Sampled Date	30/05/2017		
PARAMETER	ANALYSIS RESULT		
Physical Appearance	Clear with particles	Method 4500-H+ B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	-
pH	8.00		
Salinity	0.47	Method 2520 B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	‰
Nitrite	0.006	Method 8507 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Phosphate	0.10	Method 8048 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Biological Oxygen Demand (BOD)	4	HACH Method 8043	mg/L

Keys: ‰ : Parts Per Thousand, **mg/L** : Milligram Per Liter

Checked by
Afnan Farooq
Laboratory Executive Gr.1

Approved by
Mohamed Eyman
Assistant Manager, Quality

Notes: Sampling Authority: Sampling was not done by MWSC Laboratory
This report shall not be reproduced except in full, without written approval of MWSC
This test report is ONLY FOR THE SAMPLES TESTED.
~ Information provided by the customer

..... END OF REPORT .....

Page 1 of 1

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MWSC

WATER QUALITY TEST REPORT
Report No: 500173843

Customer Information:
Ahmed Anwar
M. Vistyria
Blookiyaa Magu
Male' -

Report date: **06/06/2017**
Test Requisition Form No: **900175670**
Sample(s) Recieved Date: **31/05/2017**
Date of Analysis: **31/05/2017 - 01/06/2017**

Sample Description	B. Kudarikilu	**TEST METHOD**	**UNIT**
Sample Type	Ground Water		
Sample No	83186845		
Sampled Date	30/05/2017		
PARAMETER	**ANALYSIS RESULT**		
Physical Appearance	Clear with particles		
pH	7.82	Method 4500-H+ B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	-
Salinity	0.46	Method 2520 B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	‰
Nitrite	0.008	Method 8507 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Phosphate	0.13	Method 8048 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L

Keys: ‰ : Parts Per Thousand, **mg/L** : Milligram Per Liter

Checked by
Afnan Farooq
Laboratory Executive Gr.1

Approved by
Mohamed Eyman
Assistant Manager, Quality

Notes: Sampling Authority: Sampling was not done by MWSC Laboratory

This test report is ONLY FOR THE SAMPLES TESTED.
~ Information provided by the customer

********** END OF REPORT **********

WQA/LAB/F-14, Rev 05

Appendix 5 CV – Mr. Mohamed Ibrahim Jaleel

CIRRICULUM VITAE

NAME	Mohamed Ibrahim Jaleel
DATE OF BIRTH	9 May 1991
CITIZENSHIP	Maldivian
PERSONAL ADDRESS	V.Edhuruvehi Male’
TELEPHONE NO.	(960)9768999
E-MAIL ADDRESS	mohamed.ibrahimjaleel@hotmail.com
EDUCATION	• Post Graduate Diploma in Research Studies • Bachelor’s Degree on Environmental Management from the Maldives National University • General Certification of Education, (GCE) Ordinary Level

WORKSHOPS AND OTHER TRAINING

- Certificate in Project Management from Clique College
- Certificate in Contract Management (Ongoing)
- Graphics designing short course from IBI
- Participant in the 2015 South Asian Climate Outlook Forum held in Dhaka, Bangladesh
- Participant in lecture series held by IUCN Maldives on various conservation issues and opportunities in the Maldives
- Participant in the training on preparation of Environmental Mitigation
- Participant in the Monitoring Program under the MGCC project of USAID
- Participant in the Training workshop on Integrated Water Resource
- Participant in the Management concepts under the GEF project, Kenya, Nivasha
- Participant in the the development of the Maldives National Strategic Action Plan as focal point from Water and Sewer sector
- Participant in the stake holder consultations of formulation of the water and sewer act of Maldives
- Participant in the stake holder consultations of formulation of the water and sewer policy of Maldives
- Participant in the stake holder consultation of formulation of the Energy act of Maldives
- Participant in the stake holder consultations of formulation of the Energy sector policy of Maldives
- Participant in the stake holder consultations of revising the Environment Act of Maldives

LANGUAGE & DEGREE OF PROFICIENCY		Speaking	Writing	Reading
	English	Excellent	Excellent	Excellent
	Dhivehi	Mother tongue	Mother tongue	Mother tongue

Referees

- Hussain Hameez – Director of Utilities Services Division (Water, Sewer and Environment), Fenaka Corporation. (7774602)
- Ahmed Zahid – Managing Director of Sandcays Pvt. Ltd. (7781535)
- Shaheeda Adam Ibrahim – Director General of Water and Sanitation Department, Ministry of Environment and Energy. (3018381)

FROM: November 2016

TO: Present

EMPLOYER

Ministry of Environment and Energy, Environment Department, Coastal Unit

POSITION HELD

Assistant Director

DESCRIPTION OF DUTIES

- Overseeing all projects.
- Manage and supervise the implementation of project work on a daily basis.
- Administrative and Policy related works of the sector.
- Ensuring that the projects are proceeding according to the government policies
- Processing invoices and making payment certificates
- Liaising with finance section in follow up of bills processing and monitoring budget expenditure
- Liaising with procurement section in request for services relative to the project
- Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project progress and resolving issues
- Monitoring the project progress is in accordance with the project schedules
- Drafting contract amendments and time extensions with guidance and approval of supervisor
- Drafting of contract, contract negotiation and awarding and multiple contract management
- Assist in developing proposals for application of Donor funding agencies

FROM: May 2015	TO: November 2016
EMPLOYER	Fenaka Corporation, Utilities Services Division (Water, Sewer and Environment)
POSITION HELD	Assistant Director
DESCRIPTION OF DUTIES	• Overseeing all the water and sanitation related projects of the company under the guidance of Division head, including coordinating all the donor projects as focal point of the company. Which includes but is not limited to the following: o Arranging surveys and ensuring timely data collection are done to formulate projects o Development of Bill of materials and Bill of Quantities from designs o Development of technical proposal for bidding or direct negotiations o Contract management and coordinating with contractor to solve issues and fast tracking the project o Coordinating with client to resolve issues and update progress o Coordinating with regional and island office to ensure proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side. o Formulation of invoices for finished works and providing information to billing department o Developing weekly and monthly project progress reports o Ensuring proper field inspections are taken place at relevant project milestones. o Formulation of project schedules.

  - Providing technical comments for requests for project extensions from contractor side.

- Overseeing all water and sewer system operations under the guidance of Division head. Which includes but is not limited to following:

  - Attending to issues of Operation and Maintenance of water and sewer systems under the company
  - Verifying requests from island side on request for materials, labor and services for operation and maintenance of the systems.
  - Providing technical assistance to island side on technical and strategical planning aspects of operation and maintenance.
  - Revision of Tariff structure for newly acquired systems to be submitted to regulator (EPA)
- Overall monitoring of staff

- Ensuring smooth handover process for newly acquired systems with proper coordination and respective process implementation with internal stakeholders (regional and island office, CSD (billing and sales), Company Board), MEE and EPA.

- Planning, developing and implementing of the Environmental Impact Assessment (EIA) process within the company for all the projects.

- Development, Implementation and Monitoring of Environmental Safeguards for the water and sewer operations as per the existing regulations of the sector.

- Coordination of training opportunities with Sponsor (eg. MEE), Trainers / educational institute, island and regional offices and Human Resource Division.

- Revising Job Descriptions and Development of ToR’s for technical positions for

advertisement.

- Drafting and reviewing technical and strategic documentations relevant to the service of water and sewerage (i.e. Emergency Response Plan, Health, Safety manual, Strategic action plans, project monitoring formats)
- Representing the company on policy and strategy review meetings relevant to the service sectors of the company.
- Representing the company on meetings with international organizations (Eg: UNDP) and foreign delegates.
- Member of the Disciplinary committee of the company
- Member of the Monitoring and Evaluation committee of the company

FROM: January 2015	TO: May 2015
EMPLOYER	Ministry of Environment and Energy, Water and Sanitation Department
POSITION HELD	Assistant Director
DESCRIPTION OF DUTIES	

- Overseeing all the donor related water and sewerage projects.
- Manage and supervise the implementation of project work on a daily basis.
- Administrative and Policy related works of the sector.
- Ensuring that the projects are proceeding according to the government policies
- Processing invoices and making payment certificates
- Liaising with finance section in follow up of bills processing and monitoring budget expenditure
- Liaising with procurement section in request

for services relative to the project

- Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project progress and resolving issues
- Monitoring the project progress is in accordance with the project schedules
- Drafting of contract, contract negotiation and awarding
- Multiple contract management
- Finalization of Terms of Reference and Evaluations of Bids and Proposals.
- Participate in document review, evaluation and other relevant committees

FROM: 2014	TO: 2015
EMPLOYER	Sandcays Pvt. Ltd.
POSITION HELD	Research Assistant
DESCRIPTION OF DUTIES	• Coordinating with project proponent / client in acquiring necessary information for the EIA process. • Updating project proponent / client on the status of EIA process • Coordinating with regulator (EPA) to ensure fast track the EIA process • Assist in carrying out topographic, marine and hydrographic surveys EIAs of projects • Providing environmentally sound mitigation measures and alternatives to projects • Drafting EIA/ESIA reports

FROM: 2012	TO: 2013
EMPLOYER	HOLOGRAM (Photo copy shop)
POSITION HELD	Senior Administrative Officer
DESCRIPTION OF DUTIES	• Dealing with customers on a regular basis • Photocopying • Binding • Printing • Designing of name cards • Laminating • Working as part of team to prepare and participate in sales events like "*night market*" and "*Foi mauraz*"

FROM: 2011	TO: 2012
EMPLOYER	Maldives National University
POSITION HELD	Admission and Registration Officer
DESCRIPTION OF DUTIES	• Checking and receiving application and registration forms with relevant documentation from applicants • Data entry of the application and registration forms to the system. • Solving issues of admission and registration of the students with guidance from registrar • Preparation of award letters and dispatching letter to the selected students • Work at call hotline, clarifying doubts and resolving issues of students • Working in graduation preparation team to prepare for the event of graduation.

FROM: 2010	TO: 2011
EMPLOYER	Kudakudhinge hiya
POSITION HELD	Child Care Supervisor
DESCRIPTION OF DUTIES	• Monitoring and supervising the routines of children in Kudakudhinge Hiya • Monitoring and supervising the routines of child care workers • Making monthly duty schedules of childcare workers • Carrying out and planning various activities that are necessary for the growth and development of the children. • Formulating and implementing annual and monthly activity schedules for children • Ensuring that the children get adequate opportunities in the fields of education and growth. • Ensuring that daily reporting of every aspect of the children are properly carried out by the childcare workers • Attending to emergencies and accidents that occur within the Kudakushinge hiya. • Resolving issues that occur between the children.

12. RELEVANT WORK EXPERIENCE

Project Name: **OFID (Phase 1) Provision of Water Supply Facilities 04(Four) Island and Sewerage Facilities in 05 (Five) Island, Maldives**
Donor: OFID
Client : Ministry of Environment and Energy
Period : Time Spent: Jan 2015 to May 2015
Position Held : Assistant Director / Project Coordinator
Duties :

- Team leader responsible for overseeing all the project activities and issues
- Involved in the tendering process
- Engaged in the draft of contract agreement, contract negotiations and award of design and supervision consultant
- Contract management of design and supervision consultant
- Daily progress monitoring of the project according to project schedule
- Coordinating with external stakeholders such as council, MHI and MLSA to fast track the project and obtain necessary approvals
- Processing invoices, making payment certificates

Project Name : **IDB – Sanitation in Five Island Project**
Donor **Islamic Development Bank**
Client : Ministry of Environment and Energy
Period : Time Spent: From Jan 2015 To May 2015
Position Held : **Assistant Director** / Project Coordinator
Duties :

- Responsible for overall project management and coordination with all relevant stakeholders, resolving issues and ensuring that the project is progressing according to the project schedule
- Engaged in the tendering process of design and supervision consultant
  - Carrying out technical evaluations of the design and supervision consultant as per donor's requirement
  - Engaged in the draft of the contract agreement of the supervision consultant.
- Involved in the recruitment of PMU staff (finalization of ToR, facilitating evaluation and selection)
- Contract management of the TA

Project Name : **Water supply project (UNOPS) in Lh. Hinnavaru with the inclusion of awareness component (CHEMONICS)**
Donor : **USAID**
Client: **Ministry of Environment and Energy**
Period : Time Spent: From Jan 2015 To May 2015
Position Held : **Assistant Director** / Project Coordinator
Duties :

- Responsible for overall project management and coordination with all relevant stakeholders, resolving issues and ensuring that the project is progressing according to the project schedule.

- Cordination with the donor agency (USAID) to resolve any issues and update on the progress
- Coordination with project implementing Agency (Infrastructure component, UNOPS) to fast track the project and gapping the delays.
- Giving guidance to the implementing agency on the local processes and ensuring fast approvals are received to project deliverables from respective authorities.
- Coordination with the soft component project management team (Chemonics) to fast track the project and gapping the delays.
    - Some of the soft component include:
        - Formulation of RO operator and laboratory technician course
        - Awareness programs

Project Name : **KUWAIT FUND water supply project in Gn.Fuvahmulah**
Donor: **KUWAIT FUND**
Client : Ministry of Environment and Energy
Period : Time Spent: From Jan 2015 To May 2015
Position Held : **Assistant Director** / Project Coordinator
Duties :

- Responsible for overall project management and coordination with all relevant stakeholders, resolving issues and ensuring that the project is progressing according to the project schedule
- Involved in the tendering process of the design and supervision consultant
    - Technical evaluation of the design and supervision consultancy
    - Engaged in the drafting of the contract, contract negotiations and award
- Contract management of the design and supervision consultant

Project Name: **Water supply project (UNOPS) in Lh. Hinnavaru with the inclusion of awareness component (CHEMONICS)**
Donor: **USAID**
Client : **Fenaka Corporation**
Period : Time Spent: From May 2015 to November 2016
Position Held : **Assistant Director** / Project Coordinator
Duties

- Focal point responsible for overseeing all the program activities and resolve any setbacks from utility
- Provide any required technical or administrative support to the Donor, Implementing Agency or Ministry
- Liaising with the regional and island Fenaka office to ensure smooth project implementation and maximum support from the utility side.
- Coordinating with Implementing agency, HR and Island Fenaka to release the staff of Fenaka for the implementation works of the infrastructure component.
- Provide assistance in coordination with internal stakeholder divisions (HR, Finance), project implementing agency (UNOPS), project

management unit (CHEMONICS) and other external stakeholders (MNU) in ensuring smooth implementation of project components

Project Name:	**Coastal Protection Project in Gn.Fuvahmulah**
Donor:	**ORIO and KFAED**
Client :	Ministry of Environment and Energy
Period :	From November 2016 to Present
Position Held :	Assistant Director
Duties	• Carrying out administrative works and providing assistance to supervisor with relevant project documentations.

Project Name:	**Coastal Protection project in GDh.Thinadhoo**
Donor:	**GEF**
Client :	Ministry of Environmet and Energy
Period :	From November 2016 to Present
Position Held :	Assistant Director / Project Cordinator
Duties	• Coordinating the final inspection of the project and release of final payment to contractor side

Project Name:	**Coastal Protection project in GDh.Faresmaathoda**
Donor:	**Danish Government**
Client :	Ministry of Environment and Energy
Period :	From November 2016 to Present
Position Held :	Assistant Director / Project Coordinator
Duties	• Coordinating the final inspection of the project and release of final payment to contractor side

Project Name	**Works contract for water supply services in all the islands of Addu city**
Client:	**Fenaka Corporation**
Period:	Time spent : From May 2015 to November 2016
Position Held :	**Assistant Director** / Project Manager
Duties:	• Project management includes but not limited to following: o Contract management and coordinating with contractor to solve issues and fast tracking the project

- Coordinating with client to resolve issues and update progress
- Coordinating with regional and island office to ensure proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side.
- Formulation of invoices for finished works and providing information to billing department
- Developing project progress reports
- Formulation of project schedules.
- Providing technical comments for requests for project extensions from contractor side.

Project Name	**Design and Built of Sewer Systems in the islands of Th.Buruni, Th.Madifushi**
Client:	**Fenaka Corporation**
Period:	Time spent : From May 2015 to November 2016
Position Held :	**Assistant Director** / Project Manager

Duties:

- Project management includes but not limited to following:
  - Contract management and coordinating with contractor to solve issues and fast tracking the project
  - Coordinating with client to resolve issues and update progress
  - Coordinating with regional and island office to ensure proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side.
  - Formulation of invoices for finished works and providing information to billing department
  - Developing project progress reports
  - Formulation of project schedules.
  - Providing technical comments for requests for project extensions from contractor side.

Project Name **Design and Built of Sewer Systems in the islands of L.Maamendhoo**

Client: **Fenaka Corporation**

Period: Time spent : From May 2015 to November 2016

Position Held : **Assistant Director** / Project Manager

Duties:

- Project management includes but not limited to following:
    - Contract management and coordinating with contractor to solve issues and fast tracking the project
    - Coordinating with client to resolve issues and update progress
    - Coordinating with regional and island office to ensure proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side.
    - Formulation of invoices for finished works and providing information to billing department
    - Developing project progress reports
    - Formulation of project schedules.
    - Providing technical comments for requests for project extensions from contractor side.

Project Name **Provision of Sewer service to housing units in L.Fonadhoo**

Client: **Fenaka Corporation**

Period: Time spent : From May 2015 to November 2016

Position Held : **Assistant Director** / Project Manager

Duties:

- Project management includes but not limited to following:
    - Arranging surveys and ensuring timely data collection are done to formulate projects
    - Development of Bill of materials and Bill of Quantities from designs by liaison with engineer
    - Contract management and coordinating with contractor to solve issues and fast tracking the project
    - Coordinating with client to resolve issues and update progress

- Coordinating with regional and island office to ensure proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side.
- Formulation of invoices for finished works and providing information to billing department
- Developing project progress reports
- Formulation of project schedules.
- Providing technical comments for requests for project extensions from contractor side.

Project Name **Provision of Sewer service in Addu city, Hithadhoo, central area**

Client: **Fenaka Corporation**

Period: Time spent : From May 2015 to November 2016

Position Held : **Assistant Director** / Project Manager

Duties:

- Project management includes but not limited to following:
  - Coordinating with client to resolve issues and update progress
  - Coordinating with regional and island office to ensure proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side.
  - Formulation of invoices for finished works and providing information to billing department
  - Developing project progress reports
  - Formulation of project schedules.
  - Providing technical comments for requests for project extensions from contractor side.

Project Name **Provision of Sewer service to housing units in GDH.Thinadhoo**

Client: **Fenaka Corporation**

Period: Time spent : From May 2015 to November 2016

Position Held : **Assistant Director** / Project Manager

Duties:

- Project management includes but not limited to following:
    - Arranging surveys and ensuring timely data collection are done to formulate projects
    - Development of Bill of materials and Bill of Quantities from designs by liaison with engineer
    - Contract management and coordinating with contractor to solve issues and fast tracking the project
    - Coordinating with client to resolve issues and update progress
    - Coordinating with regional and island office to ensure proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side.
    - Formulation of invoices for finished works and providing information to billing department
    - Developing project progress reports
    - Formulation of project schedules.
    - Providing technical comments for requests for project extensions from contractor side.

Project Name **Provision of water service to housing units in GDH.Thinadhoo**

Client: **Fenaka Corporation**

Period: Time spent : From May 2015 to November 2016

Position Held : **Assistant Director** / Project Manager

Duties:

- Project management includes but not limited to following:
    - Arranging surveys and ensuring timely data collection are done to formulate projects
    - Development of Bill of materials and Bill of Quantities from designs by liaison with engineer
    - Contract management and coordinating with contractor to solve issues and fast tracking the project
    - Coordinating with client to resolve issues and update progress
    - Coordinating with regional and island office to ensure

proper project monitoring / supervision and to ensure that staff are properly trained under knowledge transfer from contractor's side.

- Formulation of invoices for finished works and providing information to billing department
- Developing project progress reports
- Formulation of project schedules.
- Providing technical comments for requests for project extensions from contractor side.

Project Name **Coastal Protection project in N.Velidhoo**

Client: **Ministry of Environment and Energy**

Period: From November 2016 to Present

Position Held : Assistant Director / Project Coordinator

Duties:

- Project management includes but not limited to following:
  - Manage and supervise the implementation of project work on a daily basis.
  - Ensuring that the projects are proceeding according to the government policies
  - Processing invoices and making payment certificates
  - Liaising with finance section in follow up of bills processing and monitoring budget expenditure
  - Liaising with procurement section in request for services relative to the project
  - Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project progress and resolving issues
  - Monitoring the project progress is in accordance with the project schedules
  - Drafting contract amendments and time extensions with guidance and approval of supervisor

Project Name **Coastal Protection Project in S.Hulhudhoo**

Client: **Ministry of Environment and Energy**

Period: From November 2016 to Present

Position Held : Assistant Director / Project Coordinator

Duties:

- Project management includes but not limited to following:
    - Manage and supervise the implementation of project work on a daily basis.
    - Ensuring that the projects are proceeding according to the government policies
    - Processing invoices and making payment certificates
    - Liaising with finance section in follow up of bills processing and monitoring budget expenditure
    - Liaising with procurement section in request for services relative to the project
    - Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project progress and resolving issues
    - Monitoring the project progress is in accordance with the project schedules
    - Drafting contract amendments and time extensions with guidance and approval of supervisor

Project Name **Coastal Protection Project in GDh.Gahdhoo**

Client: **Ministry of Environment and Energy**

Period: From November 2016 to Present

Position Held : Assistant Director / Project Coordinator

Duties:

- Project management includes but not limited to following:
    - Manage and supervise the implementation of project work on a daily basis.
    - Ensuring that the projects are proceeding according to the government policies
    - Processing invoices and making payment certificates
    - Liaising with finance section in follow up of bills processing and monitoring budget expenditure
    - Liaising with procurement section in request for services

relative to the project

- Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project progress and resolving issues
- Monitoring the project progress is in accordance with the project schedules

Drafting contract amendments and time extensions with guidance and approval of supervisor

Project Name **Coastal Protection Project in Ha.Hoarafushi**

Client: **Ministry of Environment and Energy**

Period: From November 2016 to Present

Position Held : Assistant Director / Project Coordinator

Duties:

- Project management includes but not limited to following:
  - Manage and supervise the implementation of project work on a daily basis.
  - Ensuring that the projects are proceeding according to the government policies
  - Processing invoices and making payment certificates
  - Liaising with finance section in follow up of bills processing and monitoring budget expenditure
  - Liaising with procurement section in request for services relative to the project
  - Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project progress and resolving issues
  - Monitoring the project progress is in accordance with the project schedules
  - Drafting contract amendments and time extensions with guidance and approval of supervisor

Project Name **Coastal Protection Project in GDh.Madaveli**

Client: **Ministry of Environment and Energy**

Period: From November 2016 to Present

Position Held : Assistant Director / Project Coordinator

Duties:

- Project management includes but not limited to following:
    - Manage and supervise the implementation of project work on a daily basis.
    - Ensuring that the projects are proceeding according to the government policies
    - Processing invoices and making payment certificates
    - Liaising with finance section in follow up of bills processing and monitoring budget expenditure
    - Liaising with procurement section in request for services relative to the project
    - Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project progress and resolving issues
    - Monitoring the project progress is in accordance with the project schedules
    - Drafting contract amendments and time extensions with guidance and approval of supervisor

Project Name **Coastal Protection Project in Ha.Dhidhoo**

Client: **Ministry of Environment and Energy**

Period: From November 2016 to Present

Position Held : Assistant Director / Project Coordinator

Duties:

- Project management includes but not limited to following:
    - Manage and supervise the implementation of project work on a daily basis.
    - Ensuring that the projects are proceeding according to the government policies
    - Processing invoices and making payment certificates
    - Liaising with finance section in follow up of bills processing and monitoring budget expenditure
    - Liaising with procurement section in request for services relative to the project
    - Coordination with contractors and other stake holders such as Atoll and Island councils to fast track the project

progress and resolving issues

- Monitoring the project progress is in accordance with the project schedules
- Drafting contract amendments and time extensions with guidance and approval of supervisor

Project Name	**Study and EIA for proposed Reclamation and Resort Development on K. Tholhimarahura**
Client:	**J Lagoons pvt. Ltd.**
Period:	Time Spent: 4 week
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Study and EIA for proposed STP for Alimatha Aquatic Resort, Vaavu**
Client:	**Alimatha Aquatic Resort**
Period:	3 week
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Survey and EIA for proposed STP for Mayaafushi Island Resort, Alif Alif Atoll**
Client:	**Mayaafushi Island Resort**
Period:	3 week
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Study and EIA for proposed STP for Diggiri Tourist Resort, Vaavu Atoll**
Client:	**Dhiggiri Tourist Resort**
Period:	**3 week**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Survey of Ensis RO plant Registration, Hulhumale'**
Client:	**Ensis Pvt. Ltd.**
Period:	**2 days**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Study and EIA for proposed Resort development project in Kanbaalifaru, Shaviyani Atoll**
Client:	**Kanbaalifaru Investments Pvt. Ltd.**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Study and EIA for the proposed Water Supply system in HA. Thuraakunu**
Client:	**Upper North Province Council**
Period:	**3 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Study and EIA for the Aa.Thoddoo water supply project**
Client:	**MWSC**
Period:	**1 week**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**As built Survey of B. Kihaadhufaru Resort**
Client:	**Ibsun pvt.ltd**
Period:	**1 week**
Position Held :	Surveyor
Duties:	Assisted in drafting/compiling of report

Project Name	**Survey of H.Marvel EIA**
Client:	**Adam Saleem**
Period:	**1 day**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Study and EIA for proposed Coastal protection of Paradise Island Resort, North Male' Atoll**
Client:	**Diza Travels and Trade Pvt.Ltd**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Study and EIA for proposed Resort development project in Maareha, Gaaf Alif Atoll**
Client:	**Moving International Pvt.Ltd**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**ESIA for five schools under Enhancing Education Development Project**
Client:	**Ministry of Education**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**EIA for proposed harbour rehabilitation in Holhudhoo, Noonu Atoll**
Client:	**Maldives Transport and Contacting Company (MTCC)**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**EIA for proposed harbour Construction in Dhangethi, Alif Dhaal Atoll**
Client:	**Maldives Transport and Contacting Company (MTCC)**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**EIA for proposed harbour Construction in Dhangethi, Alif Dhaal Atoll**
Client:	**Maldives Transport and Contacting Company (MTCC)**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**EIA for proposed Airport Development at Dh.Kudahuvadhoo**
Client:	**Reollo Investments**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Survey for L. Maamendhoo Sewerage project**
Client:	**Fenaka Corporation**
Period:	**1 weeks**
Position Held :	Environmental Specialist
Duties:	Carried out the survey for the initial concept design of the project, which included taking the block level survey of as built and the levels (elevation) survey for the island.

Project Name	**Environmental Management Plan (EMP) for the proposed project to update the STP in Dhiggiri**
Client:	**Aqua Solutions**
Period:	**2 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report. Carried out monitoring surveys in the

implementation phase.

Project Name	**Survey and EMP for the proposed project to update the STP in Mayaafushi Resort**
Client:	**Aqua Solutions**
Period:	**2 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

Project Name	**Survey and EIA for the proposed Phase (2) of Niyaama Resort**
Client:	**Niyaama Resort**
Period:	**4 weeks**
Position Held :	Environmental Specialist
Duties:	Assisted in drafting/compiling of report

I certify that all aforementioned information are correct to my knowledge

Mohamed Ibrahim Jaleel

Appendix 6 Communication with Baa Atoll Council

EIA for the Proposed Land Clearance in Ba Kudarikilu

Ahmed Anwar <anwar.env@gmail.com> Jun 13 (7 days ago)
to secretariat

Dear Sir,

Attached please find EIA report prepared for the propose land clearance project in Ba Kudarikilu. Kindly acknowldge the receipt of the document.

Looking forward to hear from you soon.

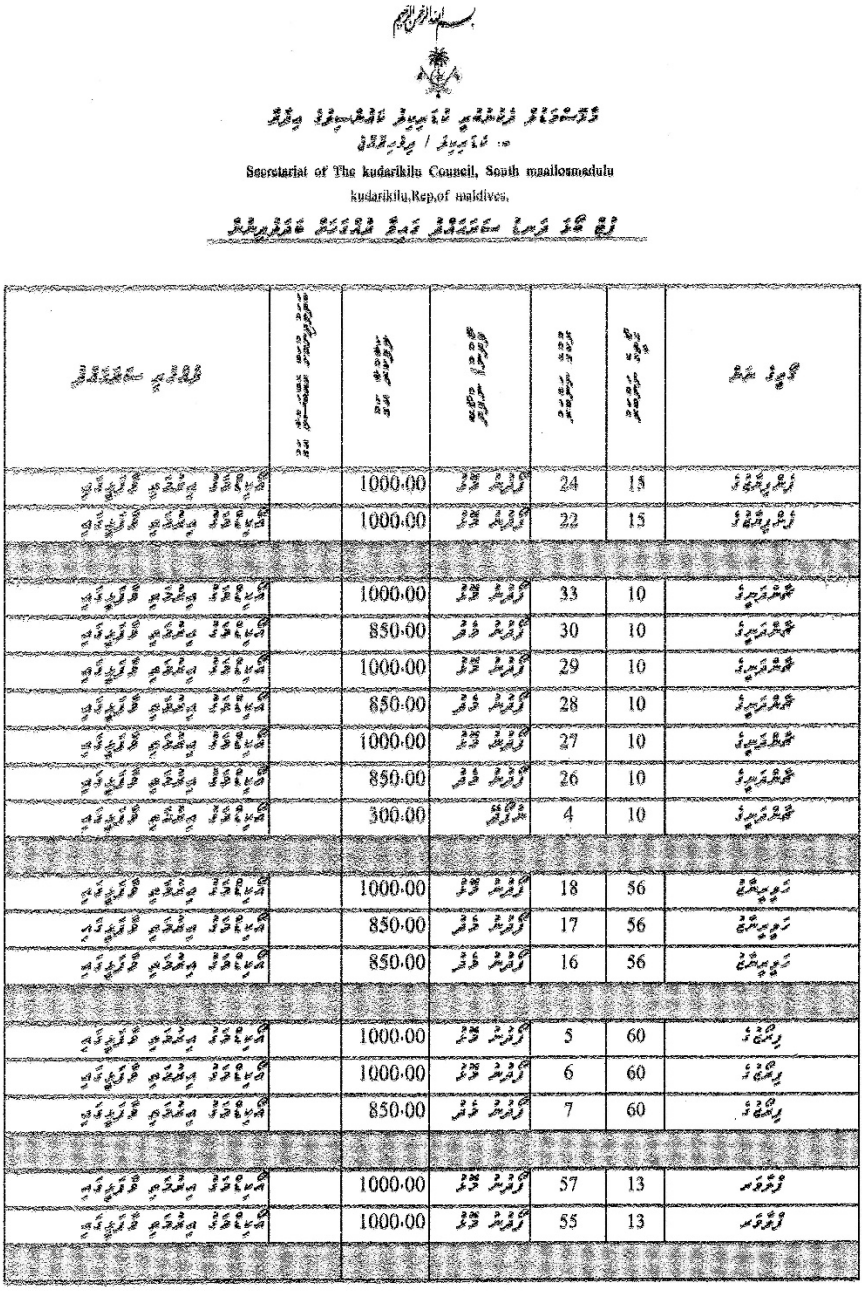
Kind Regards

Anwar
EIA Consultant

PDF EIA for the propos...

Appendix 7 Compensation list

Below is the list created by the Ba.Kudarikilu Island council to pay the compensation for the trees planned to be removed in the proposed project.



Secretariat of The kudarikilu Council, South maalosmadulu

kudarikilu,Rep.of maldives.

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		1000.00		22	15	
		1000.00		33	10	
		850.00		30	10	
		1000.00		29	10	
		850.00		28	10	
		1000.00		27	10	
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		850.00		16	56	
		1000.00		5	60	
		1000.00		6	60	
		850.00		7	60	
		1000.00		57	13	
		1000.00		55	13	

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