Land Acquisition and Resettlement Due Diligence Report

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MLD: Regional Waste Management Facility at Thilafushi – Greater Male Waste to Energy Project

Prepared by the Ministry of Environment (MOE), Government of Maldives for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 4 February 2020)

Currency unit – Rufiyaa (Rf)
Rf1.00 = $0.06
$1.00 = Rf15.46

ABBREVIATIONS

ADB	Asian Development Bank
DDR	Due Diligence report
DBO	Design Based Operation
RWMF	Regional Waste Management Facility
SPS	Safeguard Policy Statement
SWM	Solid Waste Management
tpd	Tonnes per Day
WTE	Waste To Energy

NOTE

In this report, "$" refers to United States dollars

CONTENTS

PAGE

I. INTRODUCTION

A. Project Background

1. The Greater Malé capital region and its outer islands (project area) suffer from severe environmental pollution and deteriorating livability because of inadequate collection and haphazard disposal of solid waste. The project area covers 35 inhabited islands in the North Ari Atoll (Alifu Alifu Atoll), South Atoll (Alifu Dhaalu Atoll), Male' Atoll (Kaafu Atoll) and Vaavu Atoll, including the capital city of Male, with a total population of 295,000 (53% of Maldives). Lack of a sustainable system to manage the 836 tons per day (tpd) of solid waste generated in the project area results in waste spillage into the ocean, and open dumping and burning of garbage at the 30-year old 10-hectare dumpsite on Thilafushi Island which has no pollution control measures creating public health and environmental hazard (Appendix 1).[1] Plumes of smoke visible from the capital Male, the international airport and nearby resorts compromise air quality and pose nuisance to residents and tourists, while leachate and plastics contaminate the surrounding marine environment. This poses a critical threat to tourism and fisheries, both of which rely heavily on the country's pristine environment and are cornerstones to Maldives' economy.[2]

2. The project area lacks a solid waste treatment and disposal service to provide a sustainable end-to-end solution for solid waste management (SWM) in the region. Developing critical infrastructure able to treat systematically and efficiently the waste generated while safely disposing residuals from the process remains a critical priority to improve public health and the environment in the project area. Scarcity of land is a serious constraint that requires high treatment and volume reduction efficiency. There are only 15 hectares of land available for solid waste treatment and disposal, which the government had to reclaim in 2018 from the adjacent lagoon close to the Thilafushi dumpsite due to insufficient space. Proven modern waste-to-energy (WTE) technologies able to treat and minimize residual waste for final disposal while producing renewable energy, coupled with recycling and public awareness, emerged as best fit solution for the project area.[3]

B. Project Description

3. The project will establish a sustainable regional solid waste treatment system for the Greater Malé capital region and its outer islands by (i) developing treatment (proven waste to energy [WTE] technology), recycling and disposal infrastructure; (ii) strengthening institutional capacities for sustainable solid waste services delivery and environmental monitoring; and (iii) improving public awareness on WTE and reduce-reuse-recycle (3R). The project will be designed to reduce disaster risk and improve climate change resilience while creating a cleaner environment and decreasing greenhouse gas emissions.

4. The project is aligned with the following impact: promote waste as a valuable resource

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[1] Sector Assessment (Summary): Water Supply and Other Municipal Infrastructure Services (accessible from the list of linked documents in Appendix 2).

[2] A quarter of country's employment is in tourism and fisheries. Tourism account to 30% of gross domestic product and expected to expand in the area. Government of Maldives, National Bureau of Statistics – Ministry of Finance. 2015 Maldives Population & Housing Census 2014 – Statistical Release 4: Employment. Malé.

[3] Government of Maldives. Ministry of Environment. 2018. *Feasibility Study for an Integrated Solid Waste Management System for Zone III including Greater Malé and Preparation of Engineering Design of the Regional Waste Management Facility at Thilafushi*. Malé.

for income generation.[4] The outcome will be solid waste treatment and disposal services improved in the Greater Malé region and its outer islands. The project will have two outputs.

5. **Output 1: Disaster- and climate-resilient regional waste management facility developed**. This will include (i) a 500 tpd WTE plant with 20-year O&M contract, including two treatment lines of 250 tpd each, energy recovery of 8 megawatt capacity (surplus electricity), and air pollution control system; and (ii) a landfill for safe disposal of air pollution control residues (EU Landfill Directive 1999/31/EC for hazardous waste) and non-marketable bottom ashes.[5] The facility will be able to accommodate a third 250 tpd treatment line, required to respond to further demand increase. The WTE technology minimizes land requirements and produces renewable energy addressing the critical land and electricity constraints in the Maldives. Recycling of marketable incineration bottom ash and metals will be promoted to further reduce landfill requirements and provide valuable materials for the construction industry. The WTE will be implemented through a design, build and operate contract (DBO) contract with long term O&M period to ensure sustainable operations. All facilities will adopt disaster- and climate-resilient features such as raised floor elevations, flood-proof mechanical and electrical equipment and landfill cells, and enhanced drainage systems.

6. **Output 2: Institutional capacity in sustainable WTE service delivery and environmental monitoring strengthened, and public awareness on WTE and 3R improved.** This will include (i) capacity assessment of MOE and EPA for monitoring and ensuring sustainable WTE operations and support implementation of institutional improvement plan; (ii) strengthening MOE and EPA staff capacity in monitoring WTE operational performance and environmental standards, and managing performance-based DBO contract; (iii) support to enhance financial sustainability for WTE O&M, through implementation of an agreed O&M financing plan, including financial need forecasting and finalization of financing sources, revenue enhancement plan, responsibilities, and fund flow arrangements for payment of O&M; and (iv) public awareness campaigns on WTE and 3R benefits. The project will support PMU and government capacity to prepare, monitor, and manage sustainable WTE through consulting services for contract management, monitoring, supervision, and institutional development.

C. Scope of this Report

7. This land acquisition and resettlement due diligence report (DDR) is prepared for the project. This report is prepared based on the preliminary information available from several documents (feasibility reports, environmental assessment and review frameworks, project administration manual, etc.). The DDR will be updated and reconfirmed for final involuntary resettlement impacts after completion of final design.

8. The due diligence process is conducted to assess and examine the land acquisition and resettlement issues based on secondary information made available through project feasibility study and preliminary designs as per section 6 of DBO bidding documents for the WTE facility, aligned with Asian Development Bank's (ADB) Safeguard Policy Statement, 2009. The document will be further updated on finalization of the designs and the involuntary resettlement related impacts will be further assessed and appended accordingly and if required a resettlement plan may be prepared and shared with ADB for approval. The final document will

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[4] Government of Maldives. 2019. *Strategic Action Plan 2019-2023*. Malé

[5] The size of the facility will be able to treat combustible waste generated in the project area up to 2032 (projections). This is assuming a worst-case scenario where waste reduce, reuse, and recycle campaigns are not fully successful.

be reviewed and disclosed on implementing agency and ADB websites. No civil works contract package should be awarded and started before the completion of final document (DDR or resettlement plan implementation) for the said package. The implementing agency is responsible to hand over the project land/site to the contractor free of encumbrance.

II. SUB-PROJECT DESCRIPTION

9. This section describes the subproject component, place/location of implementation and its specific purpose and whether the sub-project is under the scope of this due diligence report.

10. The project is the developing of a regional waste management facility (RWMF) for the project area, including a waste-to-energy (WTE) plant. The main components of the project are (i) WTE plant utilizing moving grate incineration technology; and (ii) landfill for residuals, including leachate treatment plant. Other allied components are also identified in this report. The project will be developed and implemented under a DBO contract where the design-build period (or design phase and construction phase) is expected to be 4 years. The operation service period (or operation phase) is expected to be 20 years. The design-build of the project will be funded by the Government of Maldives using financing from Asian Development Bank (ADB), Japan Fund for Joint Crediting Mechanism (JFJCM) and Asian Infrastructure Investment Bank (AIIB). The operation phase component of the DBO contract will be funded by the Government of Maldives.

11. The RWMF has been designed to provide a long term environmentally sustainable solution for waste management in the project area. Limitations and scarcity of land and the requirement to protect the fragile ecosystem have also been considered during the design of RWMF. The WTE Facility project designed to accommodate up to 500 tpd of solid waste. Based on preliminary design, the facility will be composed of the two lines of moving grate incinerators, each with design capacity of 250 tpd; a bottom ash processing plant; an air pollution control (APC) system including a continuous emission monitoring system (CEMS); landfill that will accommodate residual no-marketable APC residues and bottom ash; associated leachate treatment plant; and other related infrastructure including access roads, drainage and cooling water pipelines (Figure 1).

12. The proposed location of the project is at Thilafushi, an industrial island with numerous industrial companies, and host to the oldest and biggest existing solid waste dumpsite in Maldives (Figure 2). The proposed site for the project is a 15-hectare plot of land reclaimed in 2018 by the government and adjacent the existing dumpsite (Figure 3 and 4, and Appendix 1).[6]

Table 1: List of Allied components of the WTE Facility

Components	Requirements Per Preliminary Design
Waste Reception, Storage and Feeding Facilities	The waste reception, storage and feeding process will have the mechanical equipment for the following process components: weighing system; waste reception hall (tipping hall); waste bunker; waste cranes; and supply of waste oil.
Thermal System	Feeding hoppers, waste chute and waste feeder

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[6] Land reclamation is the process of creating new land from ocean, in this case, through filling up a shallow lagoon with sand.

Components	Requirements Per Preliminary Design
	Moving grate Bottom ash collectors and discharge system Combustion chamber
Boiler and Water Steam System	Radiation and convection boiler passes including evaporator, super heaters and economizer, steam drum and all necessary sampling, venting, injection, blow-down and cleaning equipment, and others that will be needed for safe operations of the boiler and the water steam system
Air Pollution Control System	Flue gas cleaning Nitrogen oxide removal system
Turbine, Generator and Condenser	Steam turbine Steam turbine with auxiliary equipment four-pole rotor (1,500 min-1) Generator System 2-flow seawater surface condenser
Induced Draft Fan and Stack	radial fan with a single-flow impeller, statically and dynamically balanced Two stacks built as a tube-in-tube system, with minimum stack height of 45.7m (bidding document to require 50m)
Continuous Emission Monitoring System	1 continuous emission monitoring system (CEMS) for each stack flue gas sampling points for emission measurements
Condensate System	Condensate collecting system Main condensate tank Boiler feed water pumps Make-up water system
Cooling Water Supply System	sea water-cooled heat exchangers (mainly the condenser) pumps installed in an enclosed, water-tight area to cope with the climate change and disaster risks; pumps to be fully redundant pumps designed to accommodate the instant need to cool down the full steam flow rate bypassing the turbine
Fuel and Chemical Supply and Storage	tanks and silos shall be designed to prevent the occurrence of encrustation and deposits. with monitoring equipment such as but not limited to leakage detection shall be installed for all hazardous substances. All containers shall be equipped with manholes and associated maneuvering aids The manholes shall be opened without the aid of hoists. Trays of containers shall be diverted appropriately via the channel and pumping sump. For chemical containers, sufficient retention volume shall be provided.
Piping and Valves	Installation lengths and connection dimensions of fittings shall be selected according to internationally recognized standards. Fittings for insulated pipelines shall be equipped with spindle extensions, if necessary. All fittings shall be supplied with a full corrosion protection (including the hand wheels and chain wheels) in the factory, in accordance with the customer's order. Fittings and piping components shall be equipped with factory-specific markings.
Pumps	Dry-mounted pumps with suitable base plates or base frames pre-assembled for installation including motor and coupling. The material of the pumps shall be capable of continuous operation under the appropriate conditions of delivery and operation. Pumps shall have a stable characteristic and shall allow a quick start

Components	Requirements Per Preliminary Design
	from the cold conditions without prior warming. Sliding ring seals of the pumps shall preferably be made of silicon carbide or wolfram carbide. All pumps shall be provided with dry-running protection. Pumps with a motor power of 20 kilowatt (kW) shall have a bearing temperature monitor. Suitable shut-off devices before and after the pumps shall be provided so that the pumps can be replaced at any time.
Compressed and Instrument Air Supply	Design and install a fully redundant compressed air supply plant for the provision of dry, particle and oil-free compressed air that allows an energy optimized supply at 110% MCR of each incineration train.
Thermal Insulation and Heat Protection	All equipment or components carrying media at elevated temperatures or at temperatures below ambient conditions or that, due to its operations, work at such temperatures shall be provided with thermal insulation. The thermal insulation design shall be in accordance with the requirements set in the contract documents. The thermal insulation shall be designed so that the maximum temperature the working personnel are exposed to does not exceed 60°C whenever feasible or shall install heat protection shields when the maximum surface temperature of any equipment which cannot be insulated exceeds 60°C. No asbestos shall be used for thermal insulation but only non-flammable, chemically and highly durable resistant rock wool mats that comply with internationally recognized standards. The lagging and jackets shall meet the ambient conditions of the marine corrosive environment, accommodate the thermal expansion of pipes and equipment and that shall allow access to base materials, valves, fittings, flanges, measuring devices and other equipment.
Lifting Devices	The waste-to-energy (WTE) facility shall have all required lifting devices during the operations phase and shall provide either permanent or temporary (including attachments) lifting devices such as cranes and hoists. The surrounding steel structure of the equipment shall be designed to allow anchoring or attaching temporary lifting gear if needed via mounting additional beams, clamps, shackles etc. or directly to the steel structure. A permanent crane shall be installed in the turbine hall. Removable openings in the roof of the machinery hall shall allow the access via mobile cranes to lift larger components that cannot be moved otherwise.

Source: Environmental Impact Assessment for Waste to Energy plant at Thilafushi

Figure 1: 3D Rendering of the Proposed Regional Waste Management Facility at Thilafushi

Figure 2: Location of Thilafushi Island

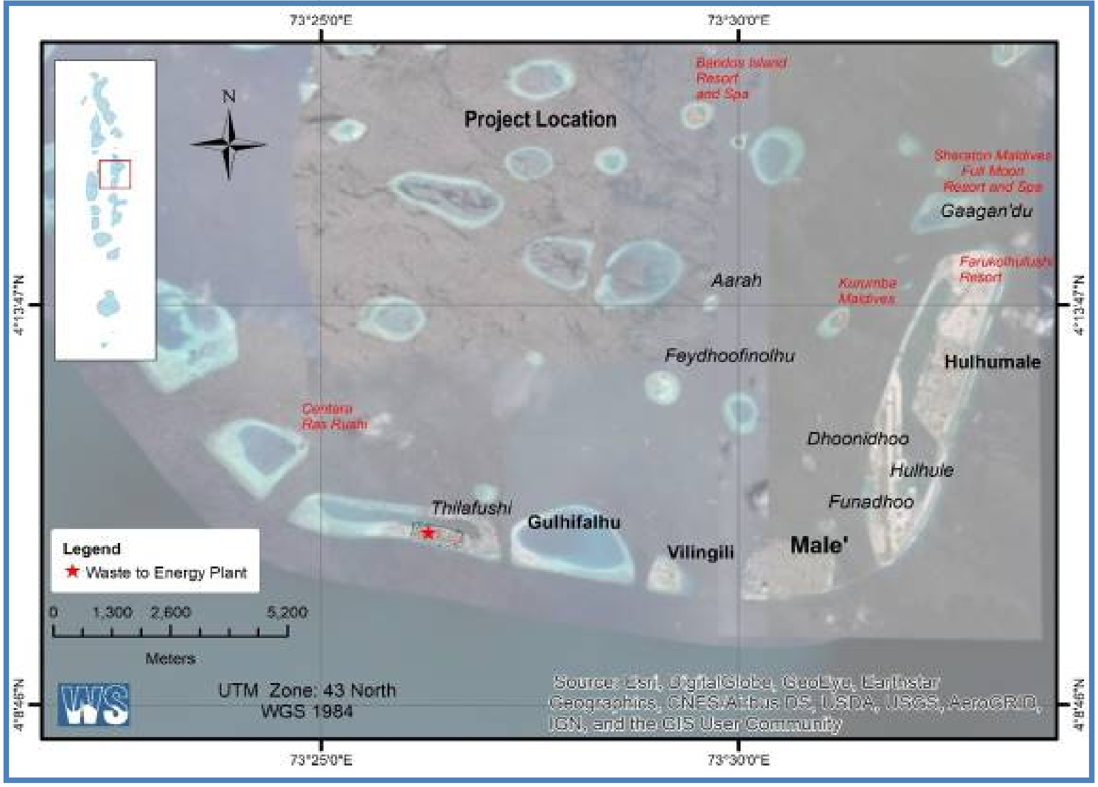


Figure 3: Location of Project at Thilafushi Island

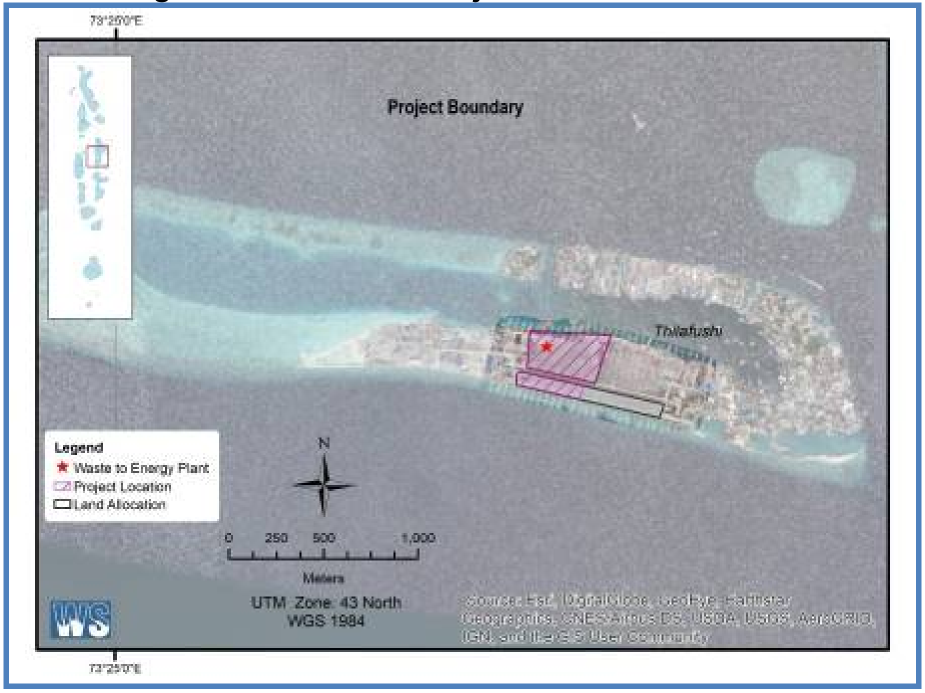


Figure 4: Overview of the Project Boundary

III. FIELD WORK AND PUBLIC CONSULTATION

A. Outline of field work

13. Field inspection of proposed location for the project was undertaken. These included field visit to the identified sites and stakeholder consultations. All land requirements for various components of the project will be fulfilled by government land.

B. Public Consultation

14. Eight consultations (Table 2) were undertaken with key stakeholders in line with ADB's requirements pertaining to environment and social considerations. Tools used for consultation were meetings and focus group discussions (FGD). Key concerns of the people related to the project i.e. people's participation in project implementation, types and likely duration of impacts and proposed mitigation measures were discussed. The following table provides a summary of consultations and discussions held with stakeholders. A total of 77 persons were consulted, of which 18 persons (24%) were women. Summary, attendance sheet and snapshots of consultations are appended as Appendix 2.

Table 2: Summary of Consultations

Sl. No	Date	Location	Total no. of Participants	No. of Women Participants
1	30.08.19	Jumhoori Park, Male	12	12
2	30.08.19	Jumhoori Park, Male	12	Nil
3	30.08.19	Jumhoori Park, Male	6	6
4	01.09.19	Thilafushi	9	Nil
5	01.09.19	Thilafushi	8	Nil
6	01.09.19	Waste Management Site at Thilafushi	13	Nil
7	02.09.19	Thilafushi	10	Nil
8	02.09.19	Gulhi Falhu	7	Nil
		Total	**77**	**18**

15. Another stakeholder consultation was held on 5 August 2019, at the office of MOE during the ADB Mission visit for Greater Male Environmental Improvement and Waste Management Project. All major stakeholders within the government, ADB, AIIB, consultants, and civil society organizations were consulted, and their views and suggestions have informed the project design. Representatives of government ministries in Malé were met repeatedly to verify and validate findings and observations by the project design team. The minutes of the meeting is appended. Focus group discussions with nine workers (all male) living on Thilafushi island were also conducted during the ADB Mission. The workers welcomed the project as they expected it to improve environmental health and living conditions on the island. Surveys of over 400 workers and consultations were also conducted as part of the EIA study to understand the existing living and health conditions of the workers.

IV. LAND AVAILABILITY AND RESETTLEMENT IMPACTS

16. The scope of the land acquisition and involuntary resettlement is identified based on the information received from several documents (EIA, information received from MOE, the Project Administration Manual, draft bidding documents etc.), imagery study (Google Earth) of the site locations, field visits and consultations.

17. The development of the proposed project is proposed at Thilafushi close to the existing landfill site at Thilafushi. The coordinates of the project location are 4°10'54.49"N 73°26'24.38"E. The establishment of RWMF for the project along with the WTE plant is proposed at Thilafushi on a15 hectares plot of reclaimed land adjacent to the existing dump site. Figure 3 illustrates the location of the project. Figure 4 shows a close-up view of the proposed project site at Thilafushi Island.

18. As per the feasibility report SWM in the project area (footnote 3) Thilafushi island in has not been developed for residential purposes. However, some people (foreign and native workers) live on the island, working in the existing facilities. It must be noted that no habitations or other informal users are found on the proposed site. Based on the satellite imagery and field visits, it can be concluded that the proposed project components will be constructed on land owned by MOE and there are no involuntary resettlement related impacts due to land requirement.

19. Component wise land requirement and details of land availability is provided in the following Table 3.

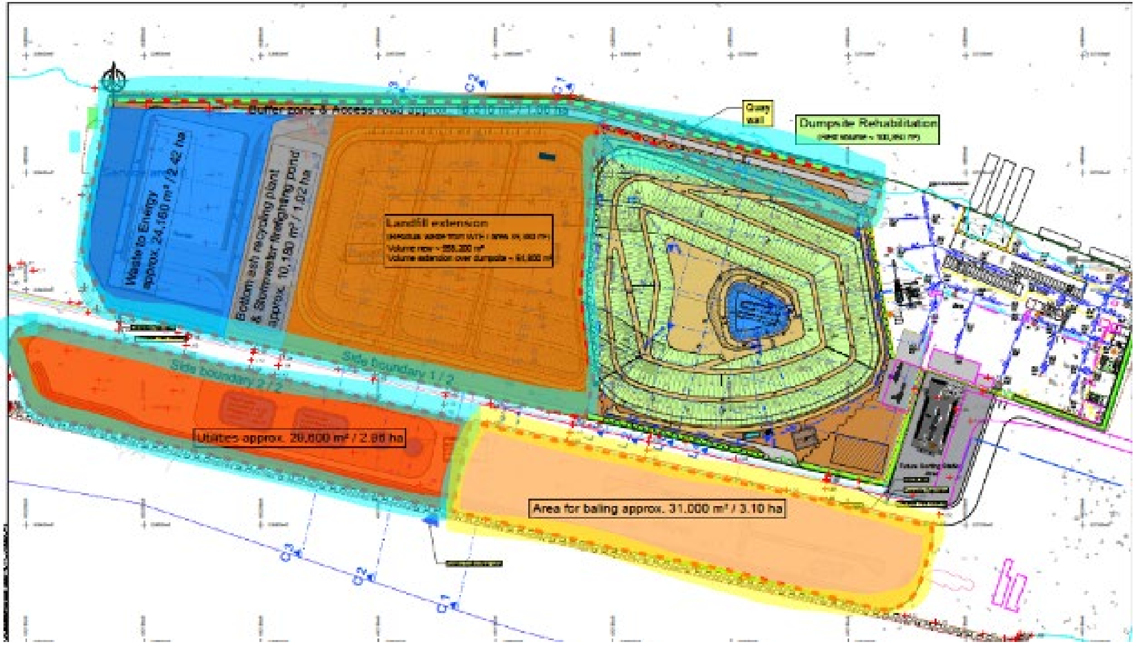
Table 3: Land Area Required and Ownership

Components	**Land Area required (in Hectares)**	**Ownership**	**Potential involuntary resettlement Impact**
WTE treatment plant	2.5 hectares (estimated)	Ministry of Environment (MOE)	The new facilities will be constructed on a newly reclaimed land parcel adjacent to the existing dump site and is owned by MOE. The land is free of encumbrance and unauthorized users. Hence, no involuntary resettlement impact is anticipated.
Bottom ash treatment plant	1 hectare (estimated)	MOE	
Engineered landfill for air pollution control residuals and non-marketable incineration bottom ash	4 hectares (estimated)	MOEMOE	
Utilities and retention ponds	3 hectares (estimated)	MOE	
Buffer zone and access road	1 hectare (estimated)	MOE	
Storage for waste bales	3 hectares (temporary)	MOE	
TOTAL	14.5 hectares (estimated)	MOE	

Source: Ministry of Environment consultant

20. Map showing land use pattern is in Figure 5, the project boundary is highlighted in blue and the temporary land space required to store waste bales in yellow.

Figure 5: Land use Pattern of the Proposed Site



21. Letter from the President's Office sent to Thilafushi Corporation Limited (TCL, now Greater Male Industrial Zone Limited) requesting transfer of ownership of land to MOE is provided in Appendix 3. (it is only available in Dhivehi Language). Land ownership certification confirming that the landowner is Government of the Republic of Maldives is provided in Appendix 4.

V. CONCLUSIONS

A. Summary and Conclusion

22. No involuntary resettlement impacts are anticipated due to implementation of the proposed components of the project based on the preliminary information received from the documents for undertaking construction of the regional waste management facility and the waste to energy plant. The project will not require acquisition of private land. The civil works will be undertaken on assets or land owned by Ministry of Environment, which is free of encumbrance and unauthorized users. No employment loss to workers at the existing dump site is envisaged.

B. Next Steps

23. The Due Diligence Report needs to be updated with following information:

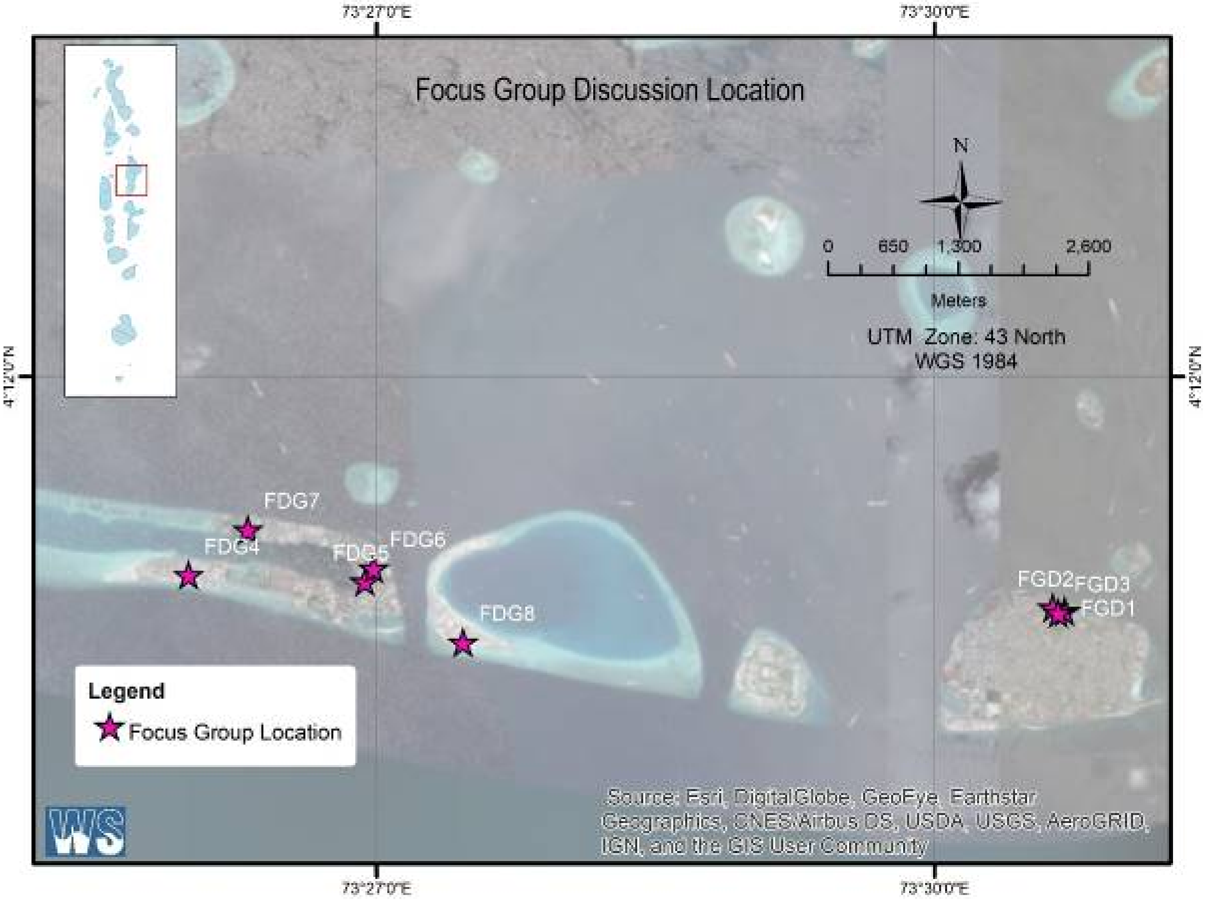
- (i) Consultations with workers living on the island and key stakeholder discussions are to be conducted on a continuous basis and details of such consultations should be included in the updated DDR;
- (ii) The DDR needs to be updated on finalization of detail design of the project components and reconfirmed or reassessed for impacts, if any. if any involuntary resettlement impact is identified, a resettlement plan would need be prepared; and

(iii) The DDR to be updated, initiation and completion of due procedures to be followed for subproject implementation. The DDR should be submitted to ADB and approval obtained prior to start of construction work.

APPENDIX 1: PHOTO GALLERY
Aerial View of Thilafushi Island

APPENDIX 2: MINUTES OF THE FOCUS GROUP DISCUSSIONS (FGDS)

Locations of the FDGs for the Regional Waste Management Facility at Zone 3 in Thilafushi
Locations where Focus Group Discussion were held



Focus Group Discussions 1
Venue: Jumhoori Park, Male, Maldives
Date: 30 August 2019
Time: 1630 hrs

A focus group discussion was carried out with the expatriates living in Male. The expatriate communities comes to the Jumhoori Park Public Square on Friday afternoon. The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist - Greater Male Environment Improvement and Waste Management Project, Ministry of Environment. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project.

The FDG were women and all of them in the group have not been to Thilafushi. They are mostly domestic workers working at houses in Male. However they have seen the smoke rising from Thilafushi from western side of Male. Some of them said they have experience the bad smell coming from Thilafushi on some days.

Some of the members in the group said they have friends who have visited Thilafushi and they said the island has a very big waste dumpsite. Some days the waste site is on fire.

The group felt that improving the waste management at Thilafushi will improve the condition of people working at the island.

Closure
The meeting ended at 1700 hrs
Attendance - Focus Group Discussions 1

Following people were at FDG. Most of the people in the group were reluctant to give details of their contact.

Name	**Gender**	**Country**	**Contact**
Latha	Female	Work as a housemaid. Expatriate from India	-
NiruMalee	Female	Work as a housemaid. Expatriate from India	-
Dharushinee	Female	Work as a housemaid. Expatriate from India	-
Charanjee	Female	Work as a housemaid. Expatriate from India	-
Phrajeet	Female	Work as a housemaid. Expatriate from India	-
Anjali	Female	Work as a housemaid. Expatriate from India	-
Gittu	Female	Work as a housemaid. Expatriate from India	-
Paramjit	Female	Work as a housemaid. Expatriate from India	-
Baljeet	Female	Work as a housemaid. Expatriate from India	-
Mamta	Female	Work as a housemaid. Expatriate from India	-
Thn	Female	Work as a housemaid. Expatriate from India	-
Sarita	Female	Work as a housemaid. Expatriate from India	-

Photos from the Focus Group Discussions 1

Focus Group Discussions 2
Venue: Jumhoori Park, Male, Maldives
Date: 30 August 2019
Time: 1710 hrs

A focus group discussion was carried out with the expatriates living in Male at Jumhoori Park Public Square on Friday afternoon. The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist - Greater Male Environment Improvement and Waste Management Project, Ministry of Environment. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project.

Everyone in the group knows about Thilafushi as they know it is place they can find work easily. Some of them have been Thilafushi and knows about the smoke and its impact on the people on the island. Most of the people in the group were employed as construction workers working at construction sites in Male.

The group felt that improving the waste management at Thilafushi will improve the condition of people working at the island.

Closure
The meeting ended at 1730 hrs
Attendance - Focus Group Discussions 2

Following people were at FDG. Most of the people in the group were reluctant to give details of their contact.

Name	**Gender**	**Country**	**Contact**
Akash	Male	Expatriate from Bangladesh working as a construction laborer	-
Shahidul	Male	Expatriate from Bangladesh working as a housemaid	-
Prito	Male	Expatriate from Bangladesh working as a construction laborer	-
Manzoor	Male	Expatriate from Bangladesh working as a house helper	-
Anawar	Male	Expatriate from Bangladesh working as a construction laborer	-
Hossain	Male	Expatriate from Bangladesh working as a house worker	-
Sarker	Male	Expatriate from Bangladesh working as a construction laborer	-
Munes	Male	Expatriate from Bangladesh working as a house helper	-
Wasif	Male	Expatriate from Bangladesh working as a construction laborer	-
Reza	Male	Expatriate from Bangladesh working as a construction laborer	-
Athiu	Male	Expatriate from Bangladesh working as a paint	-

Name	Gender	Country	Contact
		worker	
Sharee	Male	Expatriate from Bangledhesh working as a house helper	-

Photos from the Focus Group Discussions 2

Focus Group Discussions 3

Venue: Jumhoori Park, Male, Maldives
Date: 30th August 2019
Time: 1740 hrs

A focus group discussion was carried out with the Maldivians living in Male at Jumhoori Park Public Square on Friday afternoon. The group mainly had Maldivian women who were at the park. The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist - Greater Male Environment Improvement and Waste Management Project, Ministry of Environment. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project.

Everyone in the group knows about Thilafushi. Some of the women were from islands who were visiting Male. Everyone in the group knew Thilafushi is the island where waste is taken from Male. They said the waste taken at Thilafushi is burnt as they have seen smoke rising from big mountain at Thilafushi. Some people in the group said some days, they can smell really bad from the smoke coming from Thilafushi.Thilafushi The people in the group said the smoke at Thilafushi need to be stopped. A group member asked when the fire will be stop at Thilafushi. She was told that one of the main priority of the project is to stop smoke risking and this is an urgent work that will be carried out. The group was informed that the implementation of the Greater Male Waste to Energy Project will not have visible smoke emitting from the long stack that would be constructed at Thilafushi.

The group felt that improving the waste management at Thilafushi will improve the condition of people working at the island.

As we were concluding the FGD, Vice President of Maldives came to the park with his son. He met the members of the FGD.

Closure
The meeting ended at 1800 hrs.

Attendance - Focus Group Discussions 3

Following people were at FDG. Most of the people in the group were reluctant to give details of their contact.

Name	**Gender**	**Country**	**Contact**
Nadheema	Female	Maldivian	-
Amira	Female	Maldivian	-
Shareef	Female	Maldivian	-
Fathimath	Female	Maldivian	-
Aishath	Female	Maldivian	-
Nihaani	Female	Maldivian	-

Photos from the Focus Group Discussions 3

Focus Group Discussions 4

Venue: Thilafushi, Maldives
Date: 1st September 2019
Time: 1000 hrs

A focus group discussion was carried out with the people working at Thilafushi, west of the proposed waste to energy project site. The group mainly had expatriate workers and Maldivian supervisor who were doing some construction work at Thilafushi. The group members said that they have been working at Thilafushi over a year. All of the group members comes to work at Thilafushi in the morning and leave to Male in the afternoon. They take the public ferry to Thilafushi.

The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project.

Everyone in the group knows about smoke issuing facing Thilafushi as they have to cross the site on a daily basis. The group member said, the situation of smoke depends on the wind direction. If they have to work downwind, the situation becomes very difficult. Some days, they have to stop work because the smoke makes it impossible for them to work. The group members said, urgently the smoke issue need to be addressed and better waste management need to implement at Thilafushi.The group member said they have seen a number of development near the waste dumpsite. They pointed out new land had been reclaimed and new equipment had been installed to manage the waste.

A group member asked when the fire will be stop at Thilafushi. He was told that one of the main priority of the project is to stop smoke risking and this is an urgent work that will be carried out.
The group felt that improving the waste management at Thilafushi will improve the condition of people working at the island. They said they hope that the big stack at the new waste to energy plant will not have any visible smoke emitting from the long stack that would be constructed at Thilafushi.

Closure
The meeting ended at 1030 hrs.

Attendance - Focus Group Discussions 4

Following people were at FDG.

Name	Gender	Country	Contact
Abdul Mannan	Male	Maldivian	7967447
Al Ameen	Male	Expatriate from Bangladesh working as a construction laborer	-
Santil	Male	Expatriate from Bangladesh working as a construction laborer	-

Name	Gender	Country	Contact
Mumeen	Male	Expatriate from India working as a construction laborer	-
Algiri	Male	Expatriate from Bangladesh working as a construction laborer	-
Balaau	Male	Expatriate from India working as a construction laborer	-
Amir	Male	Expatriate from Bangladesh working as a construction laborer	-
Shahid	Male	Expatriate from Bangladesh working as a construction laborer	-
Haleem	Male	Expatriate from Bangladesh working as a construction laborer	-

Photos from the Focus Group Discussions 4

Focus Group Discussions 5

Venue: Thilafushi, Maldives
Date: 1st September 2019
Time: 1100 hrs

A focus group discussion was carried out with the people working at Heavy Force Site 2 at Thilafushi. The site is located north east of the proposed waste to energy project site. A total of 8 people participated in the discussion: 6 were Bangladeshi and two were Maldivian. All of the Bangladeshi participants are employed under “laborer” visas. However, their work ranged from cleaning the barge to driving vehicles. The two Maldivians worked in supervisory positions. All of the group members has been living at Thilafushi for more than one year.

All of the participants said they would be willing to continue to work in their current jobs even though the site is impact from the heavy smoke from the waste dump site. At night Thilafushi is a very quiet place. A participant told that at night, they would some time hear explosion from the dumpsite as bottles and canister catches fire.

The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project.

The group member said, the situation of smoke depends on the wind direction. If they have to work downwind, the situation becomes very difficult. Some days, they have to stop work because the smoke makes it impossible for them to work. During the discussion, issues related when the smoke would be extinguished, when the project start and what will to the surrounding area after the completion of the project were covered.

The group felt that improving the waste management at Thilafushi will improve the condition of people working at the island.

Closure

The meeting ended at 1100 hrs.

Attendance - Focus Group Discussions 5

Following people were at FDG.

Name	Gender	Country	Contact
Shahid Haleem	M	Maldivian, Supervisor, Heavy Force	7902107
Hussain Fayaz	M	Maldivian, Excavator Driver, Heavy Force	7920107
Haithim	M	Bangladesh, Labourer, Heavy Force	
Sumon MD	M	Bangladesh, Labourer, Heavy Force	
Shibu bai	M	Bangladesh, Labourer, Heavy Force	
MD Suhail	M	Bangladesh, Labourer, Heavy Force	
MD Turaab	M	Bangladesh, Labourer, Heavy Force	

Name	Gender	Country	Contact
MD Suraab	M	Bangladesh, Labourer, Heavy Force	

Photos from the Focus Group Discussions 5

Focus Group Discussions 6

Venue: Waste Management Site at Thilafushi, Maldives
Date: 1st September 2019
Time: 1230 hrs

A focus group discussion was carried out with the people working at Thilafushi waste management site. The focus group discussion was held at WAMCO Office during their lunch time break hours. A total of 13 people participated in the discussion: 11 were Bangladeshi and two were Maldivian. All of the Bangladeshi participants are employed under work permit working at Thilafushi. Their work ranged from cook to excavator drivers. The two Maldivians worked in supervisory positions. Most of the group members has been living at Thilafushi for more than one year. The supervisors comes to Thilafushi to work and return back to Male in the afternoon. They take the public ferry to Thilafushi.

The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project.

Everyone in the group are familiar with smoke issuing facing Thilafushi as they work at the waste management site on a daily basis. Most of the members of the group have bad experiences working in the smoking conditions. Some said, they get red eyes when they work and others said they get throat infection. Some say, they have to take sick leave on regular basis.

The members of the group said, the smoke from the dumpsite could be extinguish when they get additional heavy machineries to handle the waste and manage the dumpsite. The group felt that improving the waste management at Thilafushi will improve the condition of people working at the island. All of the participants said they would be happy to continue to work at Thilafushi when the dumpsite if properly managed. Some of the participants said they did not have any concerns of losing their job in the future, when the project is completed.
Closure

The meeting ended at 1300 hrs.

Attendance - Focus Group Discussions 6

Following people were at FDG.

Name	**Gender**	**Country**	**Contact**
Hazim Ibrahim	M	Maldivian, Assistant Manager, WAMCO	799146
Mohamed Asraf	M	Maldivian, Supervision, WAMCO	9908430
Mohamed Yoosuf	M	Bangladesh, Driver, WAMCO	
Sadir	M	Bangladesh, Driver, WAMCO	
Asadhul	M	Bangladesh, Driver, WAMCO	
Narayan	M	Bangladesh, Lorry Driver, WAMCO	
Oulal	M	Bangladesh, Labor, WAMCO	
Halim	M	Bangladesh, Cook, WAMCO	
Habib	M	Bangladesh, Lorry Driver, WAMCO	
Sohel	M	Bangladesh, Lorry Driver, WAMCO	
Sadik	M	Bangladesh Lorry Driver, WAMCO	
Muneer	M	Bangladesh, Lorry Driver, WAMCO	
Faisal	M	Bangladesh, Lorry Driver, WAMCO	

Photos from the Focus Group Discussions 6

Focus Group Discussions 7

Venue: Thilafushi, Maldives
Date: 2st September 2019
Time: 0930 hrs

A focus group discussion was carried out with the people working at the MTCC Boat Yard at Thilafushi, All participants were Male and their age ranged from 30 years to 50 years. The site is located directly north of the waste dumpsite at Thilafushi. The group mainly had Maldivian working at the site. Most of the members of the group had been working at Thilafushi for a long time. Some of the members in the group works and live at the site at Thilafushi. There was a high rate of job satisfaction amongst the workers. Their key reasons include high salaries, regular pay and good benefits such as food and accommodation. The group members said around 100 people work at Thilafushi site. The work at the site requires them to work outdoors all the time. Hence it makes very difficult during south west monsoon as most of the days the site is covered by the smoke. The

Most of them, especially the supervisors believed that the equipment in the Waste Management Section need to be upgraded immediately. The constant smoke from open burning, particularly during southwest monsoon when their site is directly in the path of the smoke plume, causes discomfort. Some workers said that they have got used to it and thus they no longer are able to understand its effects.

The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project.

Everyone in the group knows about smoke issuing facing Thilafushi as they see it every day which is across the bay on other side of their site. The group member said, the situation of smoke depends on the wind direction. If they have to work downwind, the situation becomes very difficult. Some days, they have to stop work because the smoke makes it impossible for them to work. Even when they come indoors, the smoke will fill the rooms and the smoke will come through the air conditioning unit. The group members said, urgently the smoke issue need to be addressed and better waste management need to implement at Thilafushi. The group were brief that one of the activity of the project is to stop the smoke coming from the exiting dump and it will happen early next year. The group members said that because of the smoke and current situation at Thilafushi, they are unable to attract good talents and experience professionals to work at the boat building yard at Thilafushi.

A group member said he have seen a number of cases where the workers get sick and he believes it is due to the smoke. Improve the situation at Thilafushi waste site with the proposed project will have a very positive impact on industries at Thilafushi. They would be able to improve their services by attracting good and experience professional to work at their site.
The group felt that improving the waste management at Thilafushi will improve the condition of people working and living at the island. Everyone welcomes the project said they are hoping the implementation of the project would commence soon. They said they hope that the big stack at the new waste to energy plant will not have any visible smoke when it becomes operational.
Closure

The meeting ended at 1030 hrs.

Attendance - Focus Group Discussions 7

Following people were at FGD

Name	Gender	Country	Contact
Moahmed Husham	M	Maldivian, General Manager, MTCC	7773653
Abdulla Abdu Shakoor	M	Maldivian, Manager, MTCC	791220
Mohamed Rasheed	M	Maldivian, Engineer, MTCC	7785716
Mohmed Fahty	M	Maldivian, Engineer, MTCC	7747379
Iqbal	M	Maldivian, Engineer r, MTCC	7708026
Sameeu	M	Maldivian, Engineer, MTCC	7914961
Ghina	M	Maldivian, Engineer, MTCC	
Inrhaim Mohamed	M	Maldivian, Accounts Officer, MTCC	7795575
Abdul Shafeeu	M	Maldivian, Welder Supervisor, MTCC	7795575
Abdul Hussam	M	Maldivian, Senior Engineer MTCC	78397615

Photos from the Focus Group Discussions 7

Focus Group Discussions 8

Venue: Gulhi Falhu, Maldives
Date: 2st September 2019
Time: 1130 hrs

A focus group discussion was carried out with the people working and living at Gulhi Falhu. Gulhi Falhu is an island which is located east of Thilafushi. The group mainly Maldivian working at Greater Male Industrial Zone Limited. The group members said that they have been working at Gulhi Falhu over many years. There was one member of the group who had work at Thilfushi waste management site before he joined Greater Male Industrial Zone Limited. He said working at Gulhi Falhu is very comfortable than working at Thilafushi due to the smoke and difficulties related to the smoke. The group members said, Gulhi Falhu is impact during south west monsoon on some days when the wind takes smoke over the island from Thilafushi waste dump site. Some of the group members comes to work at Gulhi Falhu in the morning and leave to Male in the afternoon. They take the public ferry to Male from Gulhi Falhu. Others live in Gulhi Falhu.

The participants of the FGD were presented the Greater Male Environment Improvement and Waste Management Project by Mr. Mohamed Asif, Social and Environmental Safeguards Specialist. Mr. Ahmed Jameel, EIA Consultant at Water Solutions provided the findings of the EIA to the group members. Colour Maps printed on A3 was used as aid to show the present situation of Thilafushi, the proposed Greater Male Waste to Energy Project and bird eye view of Thilafushi after the completion of the project. The group were briefed that when the Greater Male Waste to Energy project is implemented and the facility is operational in 2022/2023 there will be no emission from the stack of the incinerator.

Everyone in the group knows about smoke issuing facing Thilafushi. The group members said, urgently the smoke issue need to be addressed and better waste management need to implement at Thilafushi. The group member said they have seen a number of development near the waste dumpsite but the small incinerators that were installed at the site was a waste of

money as it is not been used. The group was informed that those incinerators would be moved to other islands as these were installed temporarily.
A member of the group asked whether it is safe to fish from the Gulhi Falhu house reef. The EIA consultant explained no government agency, including Health Protection Agency, Environmental Protection Agency or Marine Research Center has issued any notice restriction of fishing at the Gulhi Falhu or Thilafushi house reef. It has been general practice that no fishing would be carried out from the reef nest to the waste dumpsite. Hence it would not advisable to fish from such reefs. The test carried out by the EIA team has not seen an increase of heavy metals in sediments and marine water that was sampled for the study.

The group felt that improving the waste management at Thilafushi will improve the condition of people working at Gulhi Falhu. Gulhi Falhu is a nice place to work, but the work condition gets deteriorated on some days because of the smoke from Thilafushi.

Closure
The meeting ended at 1200 hrs.

Attendance - Focus Group Discussions 8

Following people were at FGD.

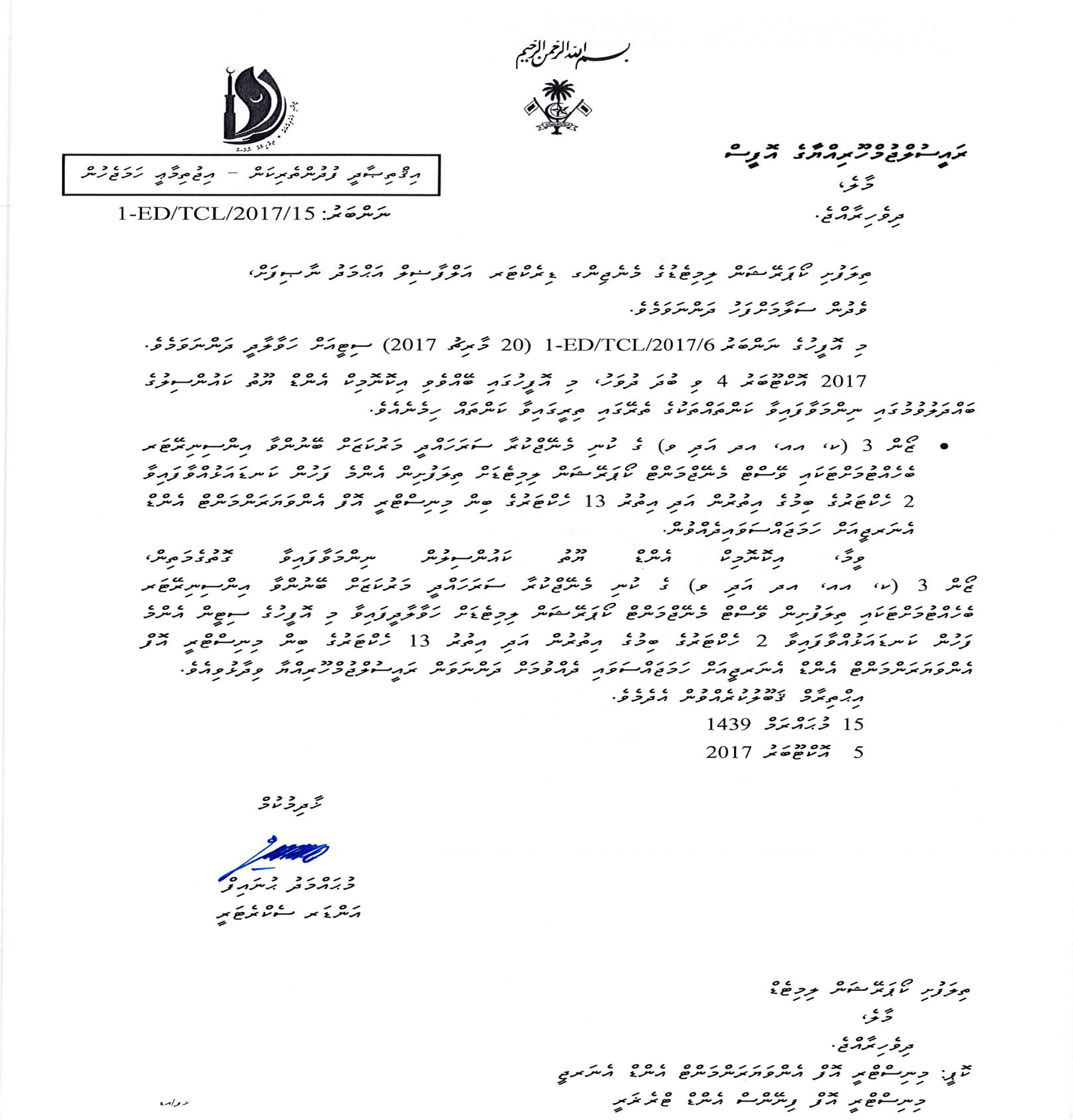
Name	**Gender**	**Country / Office**	**Contact**
Ahmed Faisal	M	Maldivian, Greater Male Industrial Zone	9930909
Mohamed Ziyaad	M	Maldivian, Greater Male Industrial Zone	7912228
Mohamed Adil	M	Maldivian, Greater Male Industrial Zone	7741234
Sheer Ahmed	M	Maldivian, Greater Male Industrial Zone	9558184
Ahmed Ihrish	M	Maldivian, Greater Male Industrial Zone	9724819
Ibrahim Razee	M	Maldivian, Greater Male Industrial Zone	7743049
Hassan Saeed	M	Maldivian, Greater Male Industrial Zone	7753347

Photos from the Focus Group Discussions 8

PHOTOGRAPHS OF ADB MISSION REVIEW MEETING HELD ON 5 AUGUST 2019

APPENDIX 3: LETTER FOR TRANSFER OF OWNERSHIP OF LAND TO MINISTRY OF ENVIRONMENT

Letter from President's Office sent to Thilafushi Corporation Limited (TCL, now GMIZL) regarding transfer of ownership of land to Ministry of Environment is provided it is only available in Dhivehi Language).



بسم الله الرحمن الرحيم

ރައީސުލްޖުމްހޫރިއްޔާގެ އޮފީސް
މާލެ،
ދިވެހިރާއްޖެ.

އިޤްތިޞާދީ ފުރުޞަތުތަކާއި – އިޖްތިމާޢީ ހަމަޖެހުން

ނަންބަރު: 1-ED/TCL/2017/15

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ވަރަށް ސަލާމަތްކަމާ ދަންނަވަމެވެ.

މި އޮފީހުގެ ނަންބަރު 1-ED/TCL/2017/6 (20 މާރިޗު 2017) ސިޓީއަށް ހަވާލާދީ ދަންނަވަމެވެ.

2017 އޮކްޓޫބަރު 4 ވީ ބުދަ ދުވަހު، މި އޮފީހުގައި ބޭއްވި އިޤްތިޞާދީ އެންމެ ދޫދު ކައުންސިލްގެ ބައްދަލުވުމުގައި ނިންމަވާފައިވާ ކަންތައްތަކުގެ ތެރޭގައި ތިރީގައިވާ ކަންތައް ހިމެނެއެވެ.

- ޒޯން 3 (ހ، ށ، ނ، ރ، ބ) ގެ ކުރި މެނޭޖްކުރާ ސަރަޙައްދުގައި މަރުކަޒުގައި ބޯޓުތަކާ އިންސިނަރޭޓަރ ބެހެއްޓުމަށްޓަކައި ވޭސްޓް މެނޭޖުމަންޓް ކޯޕަރޭޝަން ލިމިޓެޑަށް ތިލަފުށިން އެކަމާ ވަކިން ކަނޑައަޅައިފައިވާ 2 ހެކްޓަރުގެ ބިމުގެ އިތުރުން އަދި އިތުރު 13 ހެކްޓަރުގެ ބިން މިނިސްޓްރީ އޮފް އެންވަޔަރަމަންޓް އެންޑް އެނަރޖީއަށް ހަވާލުކުރެއްސަވައިދިނުން.

ވީމާ، އިޤްތިޞާދީ އެންމެ ދޫދު ކައުންސިލްގެ ނިންމަވާފައިވާ ގޮތުގެމަތިން، ޒޯން 3 (ހ، ށ، ނ، ރ، ބ) ގެ ކުރި މެނޭޖްކުރާ ސަރަޙައްދުގައި މަރުކަޒުގައި ބޯޓުތަކާ އިންސިނަރޭޓަރ ބެހެއްޓުމަށްޓަކައި ތިލަފުށިން ވޭސްޓް މެނޭޖުމަންޓް ކޯޕަރޭޝަން ލިމިޓެޑަށް ހަވާލުކުރެވިފައިވާ މި އޮފީހުގެ ސިޓީން އެކަމާ ވަކިން ކަނޑައަޅައިފައިވާ 2 ހެކްޓަރުގެ ބިމުގެ އިތުރުން އަދި އިތުރު 13 ހެކްޓަރުގެ ބިން މިނިސްޓްރީ އޮފް އެންވަޔަރަމަންޓް އެންޑް އެނަރޖީއަށް ހަވާލުކުރެއްސަވައިދެއްވުމަށް ދަންނަވަން ރައީސުލްޖުމްހޫރިއްޔާ ވިދާޅުވިއެވެ.

އިޙްތިރާމް ޤަބޫލުކުރައްވާނދޭވެ.

15 މުޙައްރަމް 1439
5 އޮކްޓޫބަރު 2017

ޚާދިމުކުމް

މުޙައްމަދު ޝަރީފް
އަންޑަރ ސެކްރެޓަރީ

ތިލަފުށި ކޯޕަރޭޝަން ލިމިޓެޑް
މާލެ،
ދިވެހިރާއްޖެ.

ކޮޕީ: މިނިސްޓްރީ އޮފް އެންވަޔަރަމަންޓް އެންޑް އެނަރޖީ
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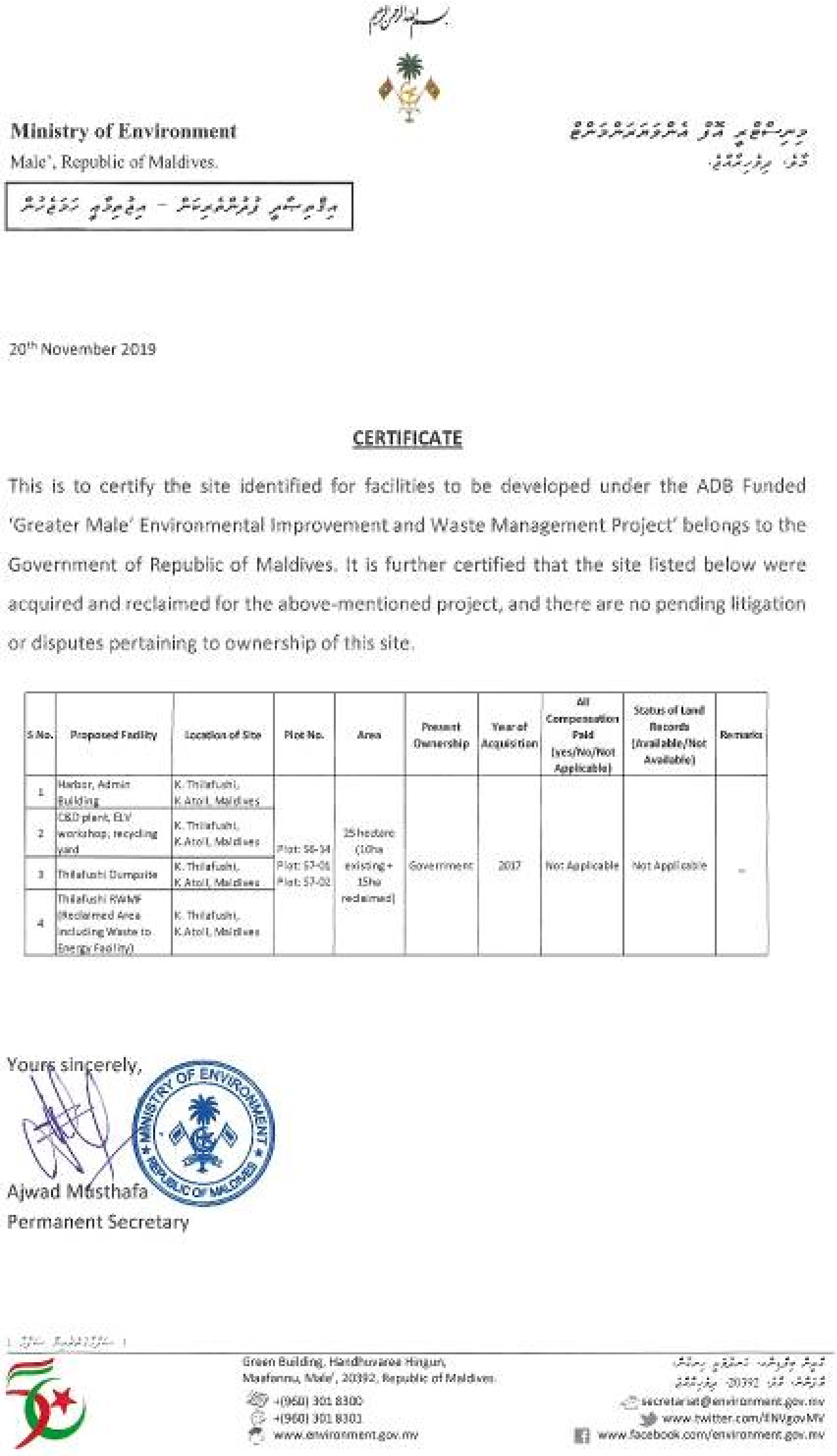
APPENDIX 4: CERTIFICATE OF LAND OWNERSHIP



Ministry of Environment
Male', Republic of Maldives.

20th November 2019

CERTIFICATE

This is to certify the site identified for facilities to be developed under the ADB Funded 'Greater Male' Environmental Improvement and Waste Management Project' belongs to the Government of Republic of Maldives. It is further certified that the site listed below were acquired and reclaimed for the above-mentioned project, and there are no pending litigation or disputes pertaining to ownership of this site.

S.No.	Proposed Facility	Location of Site	Plot No.	Area	Present Ownership	Year of Acquisition	All Compensation Paid (yes/No/Not Applicable)	Status of Land Records (Available/Not Available)	Remarks
1	Harbor, Admin Building	K. Thilafushi, K.Atoll, Maldives	Plot: 56-34 Plot: 57-01 Plot: 57-02	25 hectare (10ha existing + 15ha reclaimed)	Government	2017	Not Applicable	Not Applicable	-
2	C&D plant, ELV workshop, recycling yard	K. Thilafushi, K.Atoll, Maldives							
3	Thilafushi Dumpsite	K. Thilafushi, K.Atoll, Maldives							
4	Thilafushi RWMF (Reclaimed Area including Waste to Energy Facility)	K. Thilafushi, K.Atoll, Maldives							

Yours sincerely,

Ajwad Musthafa
Permanent Secretary