

October 2025



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# ABBREVIATIONS AND ACRONYMS

ADFD	Abu Dhabi Fund for Development						
BCPCR	1						
BOD	Blue Capital for Prosperity and Climate Resilience Biological Oxygen Demand						
CDC	Biological Oxygen Demand Centers for Disease Control and Prevention						
CEMS	Centers for Disease Control and Prevention Continuous Emissions Monitoring System						
C-ESMP	Contractor's Environmental and Social Management Plan Carbon Monoxide						
CO							
CO2	Carbon Dioxide						
dB	Decibels Decibels						
DO	Dissolved Oxygen						
EPA	Environmental Protection Agency						
ESF	Environmental and Social Framework						
ESIA	Environmental and Social Impact Assessment						
ESS	Environmental and Social Standard						
GEF	Global Environment Facility						
GoM	Government of Maldives						
GRM	Grievance Redress Mechanism						
ha	Hectares						
HCL	Hydrochloric Acid						
IHWSF	Interim Hazardous Waste Storage Facility						
MCEP	Maldives Clean Environment Project						
MEMP	Maldives Environmental Management Project						
MNDF	Maldives National Defence Force						
MNF	Maldives Nature Fund						
MoTE	Ministry of Tourism and Environment						
NOx	Oxides of Nitrogen						
O-ESMP	Operational Environmental and Social Management Plan						
ORP	Olive Ridely Project						
PCAP	Post Project Closure Safeguards Action Plan						
PM	Particulate Matter						
RO	Reverse Osmosis						
RWMF	Regional Waste Management Facility						
SO2	Sulphur Dioxide						
STMP	Sea Turtle Management Plan						
TDS	Total Dissolved Solids						
THC	Total Hydrocarbons						
TPH	Total Petroleum Hydrocarbons						
TSS	Total Suspended Solids						
UNDP	United Nations Development Programme						
URA	Utility Regulatory Authority						
WAMCO	Waste Management Corporation Ltd.						
WB	World Bank						
WMPCD	Waste Management and Pollution Control Department						
WtE	Waste to Energy						
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# **DECLARATION OF THE AUTHOR**

I certify that the statements made in this Environmental and Social Monitoring Report for the Upgrading of Infrastructure at R. Vandhoo RWMF, are true, accurate and complete to the best of my knowledge.

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Date: 15 October 2025

# 1. Introduction

This chapter covers the background and context of the ESIA monitoring report.

#### 1.1. Establishment of Vandhoo RWMF

The Government of Maldives took a decision to invest heavily in the waste sector with support from various donors and international agencies to build necessary infrastructure to develop an integrated and sustainable solid waste management system throughout the country on a zonal approach. This process was initiated in 2008 with the support of the World Bank to develop an integrated solid waste management (SWM) system for Zone II, namely the Maldives Environment Management Project (MEMP). This project was completed in 2015, by developing SWM systems on inhabited islands as well as a Regional Waste Management Facility (RWMF) in the uninhabited island of Raa Vandhoo. The facility was designed via a Best Practicable Environmental Options (BPEO) study conducted for the North Province Regional Waste Management Project (SENES and CDE, 2010).

Following completion of MEMP project, the Government of Maldives (GoM) applied for a grant from World Bank IDA for another regional waste management project, the Maldives Clean Environment Project (MCEP), which was approved by the World Bank Board and effective from September 2017. Sub-component 2a of MCEP supports investment activities in Zone II for operationalization of the facilities created under MEMP at the Vandhoo RWMF. This includes both human capacity building interventions as well as infrastructure development at the site. In addition, as the funding available via the MCEP is limited, the GoM has utilized various other credits/grants to develop ancillary infrastructure on the site as approved by the World Bank and subject to the World Bank's safeguards procedures as associated facilities.

#### 1.2. The Chronology of the Environmental and Social Assessment Process Followed

As part of the World Bank Safeguards Policy requirements and the National Environmental Impact Assessment Regulations of the Maldives and requirements mandated by the Environmental Protection Agency the interventions warranted a full Environmental and Social Impact Assessment (ESIA) process. As infrastructure development at the site has been phased, the original ESIA for the Vandhoo RWMF has undergone a first Addendum in 2019 and a second Addendum in 2022.

[Note: Although, the 2019 report is referred to as a first addendum to the 2012 ESIA as per World Bank's safeguards standards, it is considered as a standalone ESIA under the national Environmental Impact Assessment Regulation of the Maldives, since the validity terms of the 2012 ESIA had expired at the time of the preparation of the 2019 report (more than 5 years). And the second addendum report is considered as a first addendum to the 2019 ESIA as per the national regulatory requirements.].

The World Bank has agreed with GoM to align the project safeguards requirements with the national requirements which allows for addendums to be done. The ESIA process to date is summarized as follows.

• The original ESIA conducted in 2012 prepared and financed as part of the Bank-Financed MEMP project, implemented between 2008 to June 2016. The original ESIA was for the establishment of the Vandhoo RWMF based on the BPEO and Feasibility Study for the

Vandhoo RWMF. The ESIA was cleared by the EPA and the World Bank in 2013. The EPA of Maldives issued a decision note on 31st January 2013 and the World Bank approved the report in August 2013.

- The First Addendum to the Original ESIA was prepared for the additional interventions introduced by and financed under MCEP in 2019, which were mostly for storage and accommodation facilities. This standalone First Addendum Report was cleared by the Bank in 2019. The First Addendum was cleared by the World Bank on 10 June 2019. The report was also earlier approved by EPA on 14 February 2019.
- The Second Addendum to the ESIA was prepared to consider minor updates brought to the Original Master Plan for the RWMF, which includes the following revisions:
  - o Change to the proposed location of the fuel storage tanks (to relocate close to the powerhouse and incinerator).
  - o Arranging for Temporary fuel storage setup during construction
  - Minor extensions or connections to the road network as described in the original ESIA and the First Addendum.
  - o Preparation of a Traffic Management Plan; and
  - o Change of the sewerage system plan from a central system to the use of septic tanks.

The second addendum was cleared by the Bank on 20 January 2022 and by the EPA on 12 January 2022. Majority of the civil works covered under the First and Second Addendum financed by MCEP have been completed, although some minor civil works on the new fuel farm and RO plant remediation works (replacement of pumps) are still pending, along with the fire protection and detection system for the fuel farm. The civil works and remediation works are anticipated to be completed within Q4 of 2025, prior to closure of MCEP. However, the fire protection and detection system for the fuel farm will spill over to post MCEP closure and is expected to be completed within Q2 of 2026.

The decision statement issued by the EPA for these instruments are provided in **Annex 1**.

#### 1.3. Objectives and Content of the Monitoring Report

A detailed construction phase ESIA monitoring report under the First Addendum to the ESIA for Vandhoo RWMF (2019 ESIA) was prepared in November 2021. The report assessed the extent to which mitigation measures were implemented, evaluated the implementation of the Grievance Redress Mechanism (GRM), and documented vegetation clearance and translocation for sub-projects either completed or ongoing at that time. It also included marine assessments and compared current conditions with the original baseline environment. **Annex 2** provides summaries of construction phase monitoring reports produced as part of the ESIA process.

This is the second and final ESIA monitoring report for the construction phase of the Vandhoo RWMF under MCEP. It primarily focuses on sub-projects not covered in the first monitoring report, which were implemented between November 2021 and September 2025. However, it also provides updates on the overall 2:1 replantation status of all the sub-projects implemented during the MCEP period, which were pending at the time of the preparation of Monitoring Report 1. Therefore, this report is not a standalone report and should be read in conjunction with the Monitoring Report 1.

The overall objective of this report is to assess the implementation of mitigation measures and the effectiveness of environmental and social management during the execution of these sub-projects. It also evaluates whether any significant deviations from baseline conditions have occurred. This is achieved by comparing monitoring data collected during the implementation phase with the environmental baseline established in First ESIA Addendum (2019 ESIA) and the Second ESIA Addendum. **Table 1** in Section 2 summarizes the current implementation status of the sub-projects.

Field assessments and surveys were conducted on 14 August 2025. These includes measurements of groundwater and seawater quality, ambient air quality, noise levels, extent of vegetation clearance, and progress of 2:1 replantation effort.

Operational phase monitoring reports are being submitted by WAMCO (the current operator of the facility) to the Environmental Protection Agency (EPA), Utility Regulatory Authority (URA), and MCEP on a monthly basis through a tool developed by MCEP via the KoBo Toolbox application. Since March 2021, a total of 54 reports have been prepared. Groundwater quality testing, RO water quality and leachate water quality testing (effluents from the leachate pond) were omitted from this monitoring, as these are covered under the Operational ESMP monitoring. WAMCO conducts these analyses in accordance with the requirements of the O-ESMP.

### 1.4. Report Preparation

This report is prepared by Mr. Ahmed Hassaan Zuhair, the Environmental and Social Safeguards Specialist of MCEP. He is also a licensed EIA consultant registered in the Maldives EPA.

Field assessments were carried out on 14<sup>th</sup> August 2025. The consultant was assisted by the following key personal during data collection.

Table 1 ESIA monitoring team

#	Name	Position Held	Qualification a
1	Ahmed Hassaan Zuhair	Lead Consultant	Master of Urban and Environmental
		ESS Specialist, MCEP	Planning. 19 plus years of professional experience in the field of environment and social assessment. Licensed EIA consultant in EPA.
2	Ismail Shihab	Areial Imagery	Master of Professional Engineering, specialised in Structural Engineering.
		Civil Engineer, MCEP	
3	Razzan Ali	Monitoring Assistance	Bachelor of Arts in Business Management with Marketing. 1.5 years of professional
		Assistant Project	experience in the field of environment.
		Coordinator, MCEP	

# 2. Status of Sub-Projects Implementation

**Table 2** provides an update of the current implementation status of the sub-project activities covered in the First and Second Addendum.

Table 2 Status of Implementation of the proposed activities

SN	Sub-project	Implementing Agency	Funding	Progress Percentage	Comments
1	Guard House	MCEP	World Bank	100%	Completed
2	RO Plant Building	MCEP	World Bank	100%	Completed
3	Waste Storage Bunker	MCEP	World Bank	100%	Completed
4	Storeroom	MCEP	World Bank	100%	Completed
5	Extension of Bunker 1	MCEP	World Bank	100%	Completed
6	Utility Building Extension	MCEP	World Bank	100%	Completed
7	Landfill Rehabilitation	WAMCO	GoM	100%	Completed
8	RO Plant	MCEP	World Bank	100%	Completed in Q2 2025 following physical commissioning and was operated for a few months. However, had to be shutdown due to an issue with pumps that needs replacing. Remediation works are currently in progress through MWSC.
9	Water Tanks and Water Network	MCEP	World Bank	100%	Completed.
10	Fuel Storage Tanks	MCEP	World Bank	90%	Phase 1: pipe network, tank fabrication, pump station completed.  Phase 2: pipeline trenching, installation of additional pumps, and harbour dispenser unit tendered.  Expected to spillover from MCEP period. Funding from GoM received for the required works.
11	Fire detection and protection system for the fuel storage tanks	MCEP/WMPCD	GoM  (design – funded by MCEP)	10%	The design of the fire protection and detection system completed under an MCEP consultancy, which was approved by MNDF (regulator).  The procurement for this sub-project was initiated by MCEP with bids received. However, had to be dropped due to funding shortage and has now been shifted to GoM.  Funding received from MoF for the required works -

					MVR 2.5 million. Existing bids can be utilized.  Initial works expected to commence during MCEP period, however, completion will spillover to Q2 of 2026.
11	Accommodation Block	ADFT / IRENA	ADFD	5%	Project was on hold for an extended period due to an initial dispute between contractor and PMU on site demarcation and payment issues.  These issues have now been resolved. Contractor informed to mobilise to the site.
12	Sewer Network	WMPCD	GoM	0%	Funding not yest secured. However, this activity has been proposed in the GoM budget for 2026. Will not be initiated during MCEP project period.
13	Recycling Facility	WMPCD		0%	Funding not yet secured. Will not be initiated during MCEP project period.
14	Roads	WMPCD / WAMCO	GoM	0%	Funding not yet secured. However, this activity has been proposed in the GoM budget for 2026. Will not be initiated during MCEP project period.
15	Temporary fuel storage setup	MCEP / WAMCO	GoM	100%	Completed.
16	Traffic Management Plan	MCEP / WAMCO	GoM	50%	Plan prepared, but installation of traffic signages pending road construction.
17	Weighbridge	MCEP	World Bank	70%	Materials delivered to the site. However, pending installation.

# 3. Implementation of Mitigation Measures

The details of the subprojects covered in this report are provided below:

Table 3 Details of Projects Implemented during the reporting period

#	Sub-Project Name	Contractor	Commencement Date	<b>Completion Date</b>
1	Supply, Installation and Commissioning of Reverse Osmosis Desalination Plant with Borehole	Precision Engineering Services Pvt Ltd	07 February 2021	Decided to terminate due to non-performing issues.
2	Upgrading of Water Network and Storage Capacity	Precision Engineering Services Pvt Ltd	07 February 2021	Substantially completed.
3	Upgrading of Fuel Distribution Network and Fuel Storage Capacity	Dhivehi Company Pvt Ltd	11 December 2023	Substantial completion accepted and contract closed on 23 April 2025.
4	Weighbridge	FP Group Pvt Ltd	27 June 2024	Intention to Terminate issued on 10 June 2025 due to non-performing issues.

## **Bidding Stage**

The Environmental and Social (E&S) requirements that the contractor is expected to adhere to during project implementation, along with the Second ESIA addendum, and a summary of the ESIA specific to the project in question are included in the bid document (refer to **Annex 3**). During the pre-bid meeting, bidders are further briefed on these requirements, and the site conditions are explained in detail to ensure a clear understanding of the expected obligations.

Once a contractor is selected, a joint meeting is held with the selected contractor and the RWMF operator to provide a comprehensive briefing on the project's safeguard requirements. The signed contract includes specific clauses related to environmental and social safeguards, which are binding on the contractor throughout the project lifecycle.

The contract includes, but is not limited to, the following E&S safeguard clauses:

Table 4 E&S clauses included in the contracts

GCC Reference	Particular Conditions of the Contract
39	Payment claims made by the contractor should be accompanied by progress reports that reflect works complete and environmental and social mitigation measures implemented
45.2	Retention payment will be released after defects are rectified and compensating for any significant environmental and social violations
58.1	Termination  • If contractor fails to implement the mitigation measures proposed in the ESIA of the project

#### **Premobilisation**

The following pre-mobilisation documents were obtained from contractors and verified prior to granting site access:

- Staff list with identification documents
- Work permits and health insurance of expatriate staff
- Individual code of conducts signed by the staff
- Contractor's code of conducts signed and sealed by the company

Examples of pre-mobilisation documents are provided in **Annex 4** (with personal information blurred for confidentiality).

During the pandemic, additional requirements included:

- Proof of COVID-19 vaccination
- PCR negative test results prior to mobilization
- A list of health and safety items to be brought on-site

The MCEP-PMU designs the project site board including contractor's contact details and HSE sign boards and provide the contractor with soft copies. The contractor is expected to print and fix these boards at the project site during mobilisation.

#### **Contractor's ESMP Monitoring Reports**

Contractors are required to submit monthly Contractor-ESMP (C-ESMP) monitoring reports, which outline the status of implementation of environmental and social mitigation measures. To facilitate this process, the PMU has provided standardized reporting templates (refer to **Annex 5**). Interim payments are released only after the PMU verifies the completion of required remediation actions.

During the implementation of the sub-projects covered in this reporting period, certain environmental and social non-compliance issues were identified. However, all observed non-conformities were addressed and effectively remediated in a timely manner. A summary of the non-conforming issues observed is provided below:

#### 1. RO Plant and Water Distribution Network

Issue	Date	Remediation Action	Status	Date
Project Board and	01 Dec 2022	Informed the contractor in writing.	Resolved	25 Jan 2023
HSE board not being				
fixed				
Not using safety	29 May 2024	Informed the contractor in writing	Resolved	04 June 2024
harness during		and held meeting to brief further.		
erection of water		OHS refresher training to be held for		
tanks		all the worker through RWMF		
		manager (certified OHS auditor)		
Expired Work	04 June 2024	Informed the contractor in writing to	Resolved	01 July 2025
Permits		submit renewed work permits		
		conditioned to site access		

#### 2. Fuel Storage Tanks and Fuel Distribution Network

Issue	Date	Remediation Action	Status	Date
C-ESMP monitoring reports and vegetation clearance details not submitted	29 July 2024 Reminder 1: 01 Aug 2024	Requested contractor in writing to submit all the pending monitoring reports refereeing to the relevant contract clause.	Resolved	4 Aug 2024
		Withheld the interim payment until reports are submitted.		

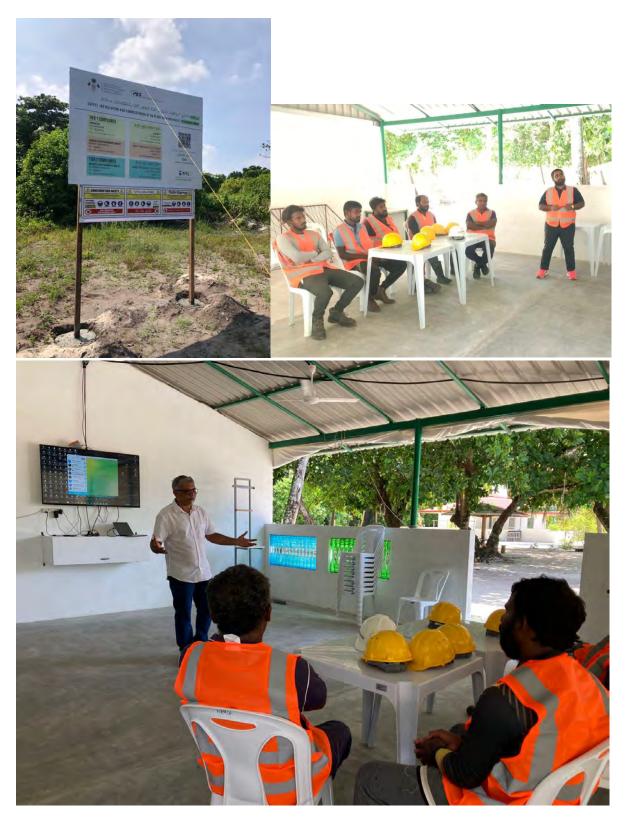


Figure 1 Remediation Actions implemented by RO plant contractor

# 4. Vegetation Clearence and 2:1 Replantation

### 4.1. Vegetation Clearence

Monitoring Report 1 includes vegetation clearance details from August 2019 to November 2021.

This report covers details of vegetation cleared for subprojects implemented after November 2021. A total of 11 vegetations were removed since August 2019 to date. **Table 5** provides the details of vegetation removed from the subproject plots where vegetations were found.

Table 5 Removed vegetations

Date	Type of Vegetation	Quantity	<b>Estimated Size</b>	Waste Disposal Method				
	RO Plant Installation							
21/09/2021	Coconut Plam	1	50ft	Manual excavation to remove the				
21/09/2021	Indian Almond	2	30ft	plant with the root bulb, trunk cut				
				into smaller pieces and stockpiled,				
				leaves left for natural degradation.				
		Water Distr	ibution Network					
06/08/2022	Coconut Plam	1	25ft	Manual excavation to remove the				
08/08/2022	Indian Almond	1	20ft	plant with the root bulb, trunk cut				
08/08/2022	Dhighaa	1	25ft	into smaller pieces and stockpiled,				
09/08/2022	Indian Almond	1	22ft	leaves left for natural degradation.				
09/08/2022	Dhighaa	1	20ft					
	Fuel T	anks and Fu	el Distribution Netw	ork				
06/03/2024	Coconut Plam	1	21ft	Manual excavation to remove the				
06/03/2024	Coconut Plam	1	22ft	plant with the root bulb, trunk cut				
06/03/2024	Coconut Plam	1	22ft	into smaller pieces and stockpiled,				
06/03/2024	Coconut Plam	1	22ft	leaves left for natural degradation.				
06/03/2024	Coconut Plam	1	17ft	-				
06/03/2024	Indian Almond	1	20ft					

## 4.2. 2:1 Replantation

A total of 25 vegetation was removed for developmental activities in Vandhoo, including the 14 documented in Monitoring Report 1. Due to the limited availability of empty space in Vandhoo, replantation was carried out on the neighbouring inhabited islands of R. Innamaadhoo and R. Rasmaadhoo.

In Innamaadhoo, replantation was conducted around the futsal ground, within the school compound, and behind the powerhouse. In Rasmaadhoo, it was carried out along the roadside and in the harbour area. A total of 225 trees were planted. **Figures 2** and **3** depict the replantation areas. Photos of replantation process are provided in **Annex 6**.



Figure 2 R. Rasmaadhoo Plantation Areas



Figure 3 R. Innamaadhoo Replantation Areas

### 5. Grievances

Grievance Redress Mechanism (GRM) of MCEP was functional at Vandhoo RWMF during the construction phase. The contractor and WAMCO jointly manages grievances at tier 1.

GRM at tier 2 is managed by the Environmental and Social Safeguards Specialist of MCEP (P: 301800, E: mcep@environment.gov.mv), while Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH) / Gender Based Violence (GBV) related incidents are to be reported directly to Family and Children Protection Centre of Raa Atoll functioning under Ministry of Gender, Family and Social Services (P: 3027636 / E: r.fcsc@gender.gov.mv). Any such cases that may get raised at tier 1 or tier 2 of the GRM should also be passed to the national service provider.

WAMCO and MCEP should maintain confidentiality in handling and reporting such cases.

Monitoring Report 1 documents two unofficial grievances received during the sub-project implementation, along with the measures taken to resolve them. No further grievances related to the construction phase or contractor's workers were reported. However, during the site visit conducted on 14th August 2025, the Vandhoo management raised some concerns. These have been documented as grievances in the table below.

Table 6 Management of Grievances

Grievance	Type	Aggrieved Party	Date	Status
Breakdown of pumps of the newly commissioned RO plant	Type Unofficial / Verbal	Vandhoo Facility Manager, and Operations Manager	Date 14 August 2025	IN PROGRESS: Although the RO plant was physically installed by the contractor (Precision Engineering Services Pvt Ltd), the commissioning process was not completed, and the plant has not been officially accepted by MoTE/MCEP. Key deliverables, such as the commissioning report, as-built drawings, water quality testing reports, and operations manual, remain pending despite multiple reminders and formal written warnings.  Due to the contractor's continued unresponsiveness, MoTE/MCEP has decided to terminate the contract and proceed with deductions for liquidated damages, contingency costs, and expenses related to damaged equipment.  In parallel, discussions are
				continued unresponsiveness, MoTE/MCEP has decided to terminate the contract and proceed with deductions for liquidated damages, contingency costs, and expenses related to damaged equipment.

				Sewerage Company (MWSC) to undertake remediation works on the plant. A technical assessment was completed on 10 September 2025, and the corresponding report was received on 28 September 2025.  As MWSC is a state-owned enterprise, the remediation works are expected to be expedited compared to proceeding through standard procurement channels.
Highlighted the	Unofficial /	Vandhoo Facility	14 August 2025	IN PROGRESS: It was
need for a central sewerage system	Verbal	Manager, and Operations Manager		clarified that the centralized sewerage system for Vandhoo was never part of the MCEP scope, even in the original plans. It was always intended to be implemented by GoM. However, the system was included in the First and Second ESIA Addenda to facilitate the ESIA clearance process, as it was initially scheduled to be implemented during the MCEP period, and as it would qualify as an associated facility under ESS1 of the ESF.
				The project was not implemented as planned due to the lack of funding from the central government budget. It was further noted that funding for the centralized sewerage system, including the pump station (to which existing septic tanks can be connected) and sea outfall, is proposed in the 2026 GoM budget.
				Potential temporary solutions that WAMCO can adopt for the interim were also discussed, along with explaining the underlying issue. It was highlighted that the occasional overflow from

the existing septic tanks is believed to be caused by the increased number of residents and non-residential staff at the facility. To address this issue, it is recommended to construct a larger septic tank with provisions for future connections to the island's sewerage network once a centralized sewerage system is established. This is preferable to discharging untreated raw sewage into the lagoon through a temporary pipeline (suggestion proposed Vandhoo staff). Another option is to install a small sewerage treatment plant prior to discharging effluents into the sea. It is suggested that explore WAMCO these options further and consult with WMPCD/MCEP, URA, and EPA to determine the most feasible temporary solution.

Any septic tank design should consider the current number of staff and future projections for 1-2 years. It should be designed consistent to the Guidelines given in "ANNEX-D Guidelines for Septic Tank and Soak Way Construction, Operations and Maintenance" of the "General Guideline: Domestic Wastewater Disposal" (URA 2002:2021). A similar septic tank design has been proposed for the new staff accommodation block the Second ESIA under Addendum, which WAMCO can refer to for guidance.



#### **Dhivehi Company PVT.LTD**

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#### UPGRADING OF DISTRIBUTION NETWORK AND FUEL STORAGE CAPACITY AT NORTHERN RWMF



Figure 4 GRM of Fuel Farm





٧٠ وَرُورٌ سَهُرَرُومٍ لَسِرُوسُ عُلَمُ وَيُولِغُ وَرِيدُ وَوُسُوعً مِ حُرُو رِسْ عَوْلَا يُودُ وَسَادُونُ

## SUPPLY, INSTALLATION AND COMMISSIONING OF RO PLANT WITH BOREHOLE | R.VANDHOO RWMF



Figure 5 GRM of RO plant

# 6. Fire Safety System

A fire detection and protection system for the facility was initially developed under the MEMP project. However, the system was not functional and was found to have multiple systemic issues during an assessment conducted in the early stages of MCEP. It was deemed beyond repair.

Therefore, a new fire detection and protection system was designed for the entire facility (including future developments in the pipeline) under MCEP through Riyan Pvt. Ltd., and subsequently approved by the regulator, MNDF. The implementation of this system was phased based on need. Detailed designs are provided in **Annex 7.** 

Phase 1, covering the existing built area of the facility, was planned to be established through ADFD financing; however, it has encountered some delays. Phase 2, targeting the fuel farm, was to be developed under MCEP, but due to funding shortages, it has been shifted to GoM funding. Phase 2 is currently at the procurement stage, with bids received and bid evaluation in progress. The contract is expected to be awarded by mid-October 2025.

In parallel, an interim system was established under MCEP in collaboration with WAMCO. This system was audited by the Fire and Rescue Services of MNDF (the fire safety regulator of the Maldives) on 30th August 2023. The audit concluded that the interim system was adequate for the facility's operations. No major issues were identified; however, some minor adjustments were required, such as relocating certain extinguishers and adding additional units in some areas for enhanced coverage.

The following is a summary of the audit findings:

- Additional fire extinguishers need to be installed at the mosque and guard house.
- The powerhouse is well designed to mitigate fire risks, with generators and the panel board housed in separate rooms. The existing extinguishers are adequate. However, tube lights need to be placed inside protective covers, and extinguishers near the day tank should be relocated slightly farther from the tank for easier access during an incident.
- Extinguishers and signboards at the existing fuel storage meet the requirements for a temporary setup.
- The chemical store requires some modifications to comply with chemical regulations. Tube lights should be enclosed in covers, and the wooden partition separating the chemical store from the timber store should be replaced with a brick wall.
- The CO<sub>2</sub> and DCP extinguishers inside the timber store should be moved outside for better accessibility.
- The warehouse (store) was found to have no issues.
- No issues were observed in the sorting, baling, and waste storage bunkers.
- At the incinerator building, existing extinguishers and signage provide adequate coverage, but additional DCP and CO<sub>2</sub> extinguishers are recommended near the day tank.

- Mobile pumps were tested and found to be functioning properly. Their location is effective, providing access to the most fire-critical areas (fuel storage and incinerator).
- The dry powder extinguisher at the kitchen should be replaced with a wet chemical extinguisher.
- The manual alarm system was tested and confirmed to be working well, with good coverage.
- Fire wardens at the facility are trained to respond to incidents. However, a minimum of four fire suits should be procured for firefighting personnel. The report also recommends forming a fire squad at the facility, equipped with the necessary certification.
- The audit team emphasized the need to install a fire hydrant system.

Following the audit, a timeline for completing the recommended remedial actions was developed and shared with WAMCO. All necessary actions were completed by March 2024. The full audit report and details of remediations activities completed are provided in **Annex 8**.

Additionally, nine staff members from the facility successfully completed the Industrial Fire Brigade Course of MNDF held from 10–21 March 2024. The details of the fire squad and their corresponding certificates are provided in **Annex 9**.







Figure 6 Audit report recommended actions conducted



 $\it Figure~7~Pictures~from~Industrial~Fire~Brigade~Course~conducted~for~RWMF~staff$ 

# 7. Monitoring Method

The monitoring visit was completed on 14<sup>th</sup> August 2025. Monitoring parameters and methodology used for monitoring are provided in **Table 7.** 

Table 7 Monitoring Methodology

Component	Parameters	<b>Monitoring Location</b>	Methodology
Air Quality	PM10, PM2.5, and CO2	Incinerator Stack and Powerhouse Stack	Handheld air quality monitoring device
Effluents (Leachate)	pH, TDS, BOD, Nitrogen Ammonia	At the leachate pond	Secondary Data from O-ESMP
Ground-water Quality	Temperature, pH, Electrical Conductivity, TDS, TSS, DO, Ammonia, Phosphate, Sulfphate, Zinc, Benzoic Acid, Phenols, Hydrocarbons	From a sampling well (Borewell east/Borewell west/ Well)	
Ground-water Quality	Temperature, Salinity, pH, Conductivity, Total Dissolved Solids (TDS), Total Petroleum Hydrocarbon (TPH)	Location of fuel storage tank	Digging until groundwater and collecting a sample from the site in a 500ml pet bottle by dipping and sending it to MWSC laboratory for analysis.
Ground-water Quality (Control)	Temperature, Salinity, pH, Conductivity, Total Dissolved Solids (TDS), Total Petroleum Hydrocarbon (TPH)	From sampling borewell (west)	Collecting a sample from the site in a 500ml pet bottle by dipping and sending it to MWSC laboratory for analysis.
Noise Level	Noise level	Powerhouse Incinerator Building Mosque (Control)	Noise level meter
Vegetation Clearance Impact Mitigation	Monitoring number of trees/palms removed. Record number replanted in Vandhoo and those planted elsewhere.	Project Site (Fuel storage tank site)	Drone assessment, vegetation log records and visual inspection.
Seawater Quality	Temperature, pH, Salinity, Electrical Conductivity, TDS, TSS, Turbidity, Ammonia, Phosphate, Sulfate, Total Coliform, Fecal Coliform	RO plant reject line (harbor basin or SW1),	Collecting a sample in a 500ml pet bottle by dipping and sending it to MWSC laboratory for analysis.
Workforce health and safety	General health and wellbeing of the workforce	Project Site	Through C-ESMP monitoring reports and site inspections throughout the project implementation phase.
Grievance Redress Mechanism	Grievances received by contractor's workers and/or general public.  Note: operational staff related grievances are not required to be	Project Site and Accommodation Site and Islands	By analyzing grievance log records.

covered as operation safeguards monitoring is undertaken separately through O-ESMP reporting.



Figure 8 Sampling Locations

Sampling Location	Geographic Coordinates	
G1 (Fuel Farm)	5°31'56.2"N 73°02'43.0"E	
GC (Control – sampling well)	5°31'51.8"N 73°02'36.0"E	
SWH (Harbour Basin)	5°31'59.7"N 73°02'37.8"E	
SW1	5°32'05.9"N 73°02'42.2"E	
LW (Leachate Pond)	5°31'49.3"N 73°02'43.0"E	
N1, A1 (Powerhouse)	5°31'55.1"N 73°02'41.0"E	
N2, A2 (Incinerator)	5°31'55.5"N 73°02'41.9"E	
NC, AC (Control – Mosque)	5°31'56.7"N 73°02'37.3"E	

### 7.1. Air Quality

Ambient air quality was measured near the powerhouse stack (A1), incinerator/WtE stack (A2) and mosque (control - AC). Results are provided in **Table 8.** 

Table 8 Air Quality

Location	Parameters				
	PM2.5 (μg/m3)	PM10 (μg/m3)	Particles (counts/L)	CO2 (ppm)	HCHO (mg/m3)
Incinerator/WtE	29.1	34.3	14350	381	0.045
Powerhouse	31.3	39.2	14846	375	0.047
Mosque (Control)	27.6	33.5	14085	370	0.052

The ambient air quality observed across Vandhoo is relatively consistent, with no significant differences between the incinerator/WtE, the powerhouse, and the control location. Both PM2.5 and PM10 levels are highest near the powerhouse, followed by the incinerator/WtE and then the control site, though the differences are only marginal.

The incinerator/WtE is currently not operational. However, during its operational period, stack emissions monitored through the installed Continuous Emissions Monitoring System (CEMS) consistently remained well below the EU standard limits. This confirms the effectiveness of the installed emission control system, which uses ceramic filters.

Emissions during the operational phase are monitored using the Protea P2000 In-Situ CEMS installed and commissioned at the incinerator/WtE. The monitoring parameters and emission limits are defined based on prior agreements with the World Bank and the Environmental Protection Agency (EPA), and are aligned with EU standards for municipal solid waste incineration (see **Table 9**). These limits are factory-locked and cannot be altered by the operator.

Monthly emission reports generated by the system are submitted to the EPA and the World Bank (via MCEP) by the operator, WAMCO.

Table 9 CEMS parameters and limits

Paramter	Units	EU Limit (24hrs)
Hydrogen Chloride - HCl	mg/m3	490
Sulphur Dioxide - SO2	mg/m3	430
Total Hydrocarbons - THC	mg/m3	250
Dust	Mg/Nm3	150
Oxides of Nitrogen - NOx	NOx mg/m3	400
Carbon Monoxide - CO	CO mg/Nm3	200



Figure 9 Incinerator/WtE, Powerhouse, Control (left to right)

# 7.2. Groundwater Quality

The groundwater quality was taken from the fuel farm location (G1), compared with control (GC - sampling well west) and ESIA baseline of October 2021. **Table 10** provides the details.

Table 10 Groundwater Quality Results

Sample Description	Fuel Farm	Control (west sampling well)	ESIA Baseline (Fuel Farm location)
Sample Type	Groundwater	Groundwater	Groundwater
Sampled Date and Time	14/08/2025 02:00 AM	14/08/2025 02:00 AM	11/10/2021 09:00 AM
Physical Appearance	Grey and opaque with particles	Clear with particles	Opaque and brown
PARAMETER		ANALYSIS RESULT	
Conductivity µS/cm	881	620	446
рН	7.3	7.3	7.5
Salinity ‰	0.43	0.30	0.21
Temperature °C	23.8	23.7	20.0
Total Dissolved Solids (TDS) mg/L	441	310	223
Total Petroleum Hydrocarbon (TPH) mg/L	0.13	0.23	-

Optimal conditions for drinking water as specified by EPA are provided in Table 11.

Table 11 Optimal range for drinking water (note: all parameters are not included)

Parameter	<b>EPA Reference Range</b>	<b>URA Reference Range</b>
pН	6.5-8.5	6.5-8.5
Physical Appearance	Clear and colourless	Clear and colourless
Conductivity	< 1500 μS/cm	< 1000 μS/cm
Total Dissolved Solids (TDS)	<1000 mg/l	<500 mg/l

Groundwater quality at the Fuel Farm is within acceptable limits set by both the EPA and URA for drinking and supply water (see **Table 11**), based on tested parameters including pH, conductivity, and TDS. However, additional water quality parameters would need to be tested, as required by EPA and

URA standards, to determine the groundwater's suitability for potable (drinking) use, which is not the objective of this investigation.

Slightly elevated levels of salinity, conductivity, and TDS compared to the control site and the 2021 ESIA baseline suggest possible saltwater intrusion, likely influenced by the site's coastal location. Very low levels of Total Petroleum Hydrocarbons (TPH) were detected, indicating minor petroleum presence but no immediate concern, as the concentration is even slightly lower than at the control site.

The grey and opaque appearance of the Fuel Farm sample is likely due to the sampling method, which involved digging into the water lens using a wheel loader, disturbing sediments and affecting clarity. Notably, the ESIA baseline sample also exhibited a similarly turbid appearance.

Groundwater quality test reports are provided in **Annex 10**.

### 7.3. Seawater Quality

The location of the brine outfall proposed at south side of Vandhoo in the 2019 ESIA was changed to harbour area due to budgetary limitations. This has been communicated with EPA and the approval received through their letter 203-ECA/438/2020/52 (24 August 2020) provided in **Annex 11.** 

Sewater quality samples were therefore taken at harbour basis (SWH) and compared with ESIA baseline of 2018 and monitoring report 1 (sample taken from SW1 location). SW1 location was considered as it is the closest sampling location to the harbour basin, although beyond the reef. **Table 12** provides the details.

Table 12 Seawater Quality Results

Sample Description	Harbour Basin	Monitoring Report 1 (SW1 location)	ESIA Baseline (SW1 location)
Sample Type	Seawater	Seawater	Sewater
Sampled Date and Time	14/08/2025 03:00 PM	01/10/2021 02:15 PM	16/11/2018
Physical Appearance	Clear with particles	Clear with particles	Clear with particles
PARAMETER		ANALYSIS RESULT	
Conductivity µS/cm	52300	52100	51906
рН	8.0	8.15	8.15
Salinity ‰	34.44	34.24	34.0
Temperature °C	23.6	23.1	29.45
Total Dissolved Solids (TDS) mg/L	26200	26000	25949
Total Suspended Solids TDS mg/L	<5 (LoQ 5 mg/L )	<5 (LoQ 5 mg/L )	<5 (LoQ 5 mg/L )
Turbidity NTU	8.90	0.233	0.162
Nitrogen Ammonia mg/L	0.06	<0.02 (LoQ 0.02 mg/L)	<0.02 (LoQ 0.02 mg/L)
Sulphate mg/L	3000	2600	3550
Phosphate mg/L	0.16	0.26	<0.05 (LoQ 0.05 mg/L)

**Table 13** provides widely accepted ranges for key seawater quality parameters, primarily based on global references such as UNESCO, WHO, UNEP, and oceanographic research literature.

Table 13 Optimal conditions for seawater

Parameter	Optimal Range	Remarks/Source
Conductivity μS/cm	50,000 – 60,000 μS/cm	Varies with temperature and salinity; higher in tropical oceans.
рН	7.8 – 8.4	Healthy ocean pH is around 8.1; <7.4 stresses marine life (UNESCO/WHO/UNEP, 1996).
Salinity ‰	33 – 37	Average ocean salinity ~35 PSU (Practical Salinity Units).
Temperature °C	18 – 32 °C ‰	Varies by region; tropical seas often 26–30°C. GBRMPA recommends max increase ≤1°C.
Total Dissolved Solids (TDS) mg/L	34,000 – 36,000 mg/L	TDS correlates with salinity; seawater is typically ~35,000 mg/L.
Total Suspended Solids TDS mg/L	<1 – 5 mg/L (natural levels)	Higher levels indicate sediment input or disturbance.
Turbidity NTU	<1 NTU (open ocean); ≤5 NTU (nearshore)	>5 NTU can cause stress to coral and filter feeders (Cooper et al., 2008).
Nitrogen Ammonia mg/L	≤0.02 mg/L natural; Max. 2 – 3 mg/L acceptable	Chronic exposure above 0.1 mg/L can be toxic to marine organisms.
Sulphate mg/L	2700 – 2800 mg/L	Normal in seawater; varies slightly with salinity.
Phosphate mg/L	<0.1 mg/L (natural)	Background levels usually <0.1 mg/L; elevated levels may indicate eutrophication (UNEP, 2004; Smith et al., 1999).

The results show that key water quality parameters at the harbour basin, including temperature, pH, salinity, conductivity, and total dissolved solids (TDS), fall within the expected natural ranges for seawater, indicating stable baseline conditions in terms of general water chemistry. Ammonia levels at the harbour basin were slightly elevated (0.06 mg/L) compared to SW1 (<0.02 mg/L), though still well below thresholds known to cause ecological harm. This suggests a minor degree of nutrient enrichment, possibly due to limited flushing or localized inputs in the confined harbour environment.

Sulphate levels at the harbour basin (3,000 mg/L) were slightly higher than typical oceanic levels (2,700–2,800 mg/L), potentially reflecting brine accumulation where dispersion is less effective. The level is higher than that observed in Monitoring Report 1 at the SW1 location (2,600 mg/L), but still significantly lower than the concentration recorded during the ESIA baseline (3,550 mg/L). While not immediately concerning, this trend should be monitored over time to assess potential long-term accumulation effects.

Phosphate concentrations at the harbour basin were measured at 0.16 mg/L, compared to 0.26 mg/L in the previous Monitoring Report 1 and <0.05 mg/L during the ESIA baseline. Notably, both reference values were recorded at the SW1 location in the open ocean, while the current sample was taken from the more enclosed harbour basin. Natural phosphate levels in unpolluted open ocean waters are generally below 0.1 mg/L, and concentrations exceeding this threshold may contribute to nutrient enrichment and increase the risk of eutrophication. Although the current level is lower than that observed in the previous monitoring cycle, it still reflects an elevated nutrient input relative to background conditions. This enrichment is likely due to localized anthropogenic sources or the limited water exchange characteristic of harbour environments. While not acutely harmful, persistently elevated phosphate levels can promote algal blooms and reduce dissolved oxygen, potentially impacting marine ecosystems over time. Continued monitoring is therefore recommended to assess long-term trends and manage potential ecological risks.

The most notable concern is the elevated turbidity within the harbour basin, which was recorded at 8.90 NTU, well above the typical nearshore seawater range of ≤5 NTU. In comparison, the SW1 location, although the closest reference point, is located beyond the reef in the open ocean, where natural water circulation is stronger and turbidity is significantly lower (0.233 NTU). The more enclosed nature of the harbour basin, coupled with limited wave action and flushing, likely contributes to higher sediment suspension and turbidity levels. This can impair light penetration, negatively affecting marine ecosystems such as coral reefs, seagrass beds, and other benthic habitats within or near the harbour area.

In summary, most seawater parameters at the harbour basin are within natural ranges, with slight increases in ammonia and sulphate likely due to limited dispersion. However, elevated turbidity, much higher than at the nearby open-ocean site, indicates reduced water circulation and potential local impacts. Continued monitoring is essential to manage and mitigate any long-term environmental effects.

Seawater quality test reports are provided in **Annex 12.** 

#### 7.4. Leachate Water Quality

Leachate water quality is being regularly tested on a quarterly basis through the existing Operational ESMP monitoring arrangement in place. **Table 14** presents the results of the most recent test results.

Table	14	Leachate	Water	Quality	,
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Sample Description	Leachate Pond
Sample Type	Waste Water
Sampled Date and Time	17/08/2025 03:00 PM
Physical Appearance	Pale yellow with particles
PARAMETER	
рН	9.1
Temperature °C	26.5 °C
Total Dissolved Solids (TDS) mg/L	162.7
Nitrogen Ammonia mg/L	0.26
Biological Oxygen Demand (BDO) mg/L	234

The sample was collected on 17 August 2025 from the leachate pond, which retains runoff from the bottom ash disposal landfill. This pond is part of a closed-loop system where leachate is recirculated back onto the landfill through a sprinkler system to irrigate the bottom ash. The leachate appeared pale yellow with visible particles, which is typical of water influenced by ash. The pH measured at 9.1 confirms a strongly alkaline environment, which is expected due to the presence of lime and other alkaline compounds in incineration ash. The temperature of 26.5°C is within normal range for exposed leachate in open ponds.

The Total Dissolved Solids (TDS) level was relatively low at 162.7 mg/L, suggesting limited salt accumulation or dilution from rainfall or operational water. Ammonia concentration was also low at 0.26 mg/L, which aligns with expectations, as bottom ash contains little to no biodegradable nitrogenous compounds. However, the Biological Oxygen Demand (BOD) was notably high at 234 mg/L. This is unusual for ash leachate, which typically has low organic content. The elevated BOD could indicate external contamination, possibly from organic matter entering the pond, biofilm formation, or decomposition of airborne organic material accumulating in the system over time.

Overall, the leachate quality reflects conditions typical of ash leachate in a recirculating system, corresponding to high pH, low ammonia, and low TDS. The high BOD, however, is an anomaly that should be investigated further through ongoing monitoring.

# 7.5. Vegetation Clearence Impacts

The details of vegetation clearance for the sub-project implementation are covered comprehensively in Chapter 4. During the site visit, drone assessments were conducted to further evaluate the extent of vegetation removal across the project sites, including the RO plant and the Fuel Farm. These assessments confirmed that vegetation was cleared only within the designated project sites, while the vegetation at the periphery and surrounding areas remained intact.



Figure 10 RO plant



Figure 11 Fuel Farm

Furthermore, the assessment reveals that the vegetation buffer surrounding the island has been maintained in accordance with ESIA requirements, except for the harbour and slipway areas. (Note: The slipway project does not qualify as an associated facility under the Environmental and Social Framework (ESF) and is covered under a separate Environmental Impact Assessment (EIA) conducted by the developer to fulfil national requirements.)



Figure 12 Vegetation buffer

## 7.6. Noise Level

Noise levels were taken from the most noise sensitive areas of operations which is the incinerator/WtE room, and the powerhouse and compared with control. Results are provided in **Table 15.** 

Table 15 Sound meter reading

Location	Construction Phase Monitoring 1		
	Average Sound	Maximum Sound	
	Level in dB	Level in dB	
Incinerator/WtE	54.3	64.0	
Powerhouse	64.9	66.5	
Mosque (control)	52.7	61.2	

The chart below depicts potential impacts of noise (Centres for Disease Control and Prevention, 2019).

Table 16 Noise Level Chart

Description	Average Sound level in decibels	Typical Response (after routine or repeated exposure)
Softest sound that can be heard	0	Sounds at these dB levels typically
Normal breathing	10	does not cause any hearing damages
Tickling watch	20	
Soft whisper	30	
Refrigerator hum	40	
Normal Conversation	60	
City traffic (inside the car)	80-85	You may feel annoyed
Gas-powered lawnmowers and leaf blowers	85-100	Damage to hearing possible after 2 hours of exposure

Car horn at 5 meters	100	Hearing loss possible after 15 minutes
Maximum volume for personal listening	105-110	Hearing loss possible in less than 5
devices		minutes
Shouting in the ear	110	Hearing loss possible in less than 2
		minutes
Standing beside or near sirens	120	Pain and injury
Fire crackers	140-150	Pain and injury

The powerhouse recorded the highest noise levels, with an average of 64.9 dB and a maximum of 66.5 dB. The incinerator/WtE room followed with an average of 54.3 dB and a maximum of 64.0 dB. The control site (mosque) had the lowest readings, with an average of 52.7 dB and a maximum of 61.2 dB.

Based on the Centers for Disease Control and Prevention (CDC) noise level chart, all recorded levels fall below 70 dB, which is considered safe and not harmful to human hearing, even with prolonged exposure

In summary, the noise levels at all monitored locations are within acceptable limits for occupational and environmental health.

## 8. Sea Turtle Conservation Efforts

In 2006, R. Vandhoo was identified as one of the 14 most significant nesting hotspots in the country by the Ministry of Fisheries, which banned the harvesting of sea turtle eggs from this site. However, at the time, there was no effective mechanism in place to monitor or enforce the protection measures.

In August 2010, an area of 0.15 km² (15 ha) was allocated to MoTE for development of a RWMF for Zone 2 via the World Bank-financed Maldives Environmental Management Project (MEMP), implemented from 2008 to 2016. The importance of Vandhoo beaches as a prominent turtle nesting site was highlighted through the ESIA process of MEMP, following which a Sea Turtle Management Plan (STMP) was prepared and implemented to some extent prior to the project's closure.

As a larger area was required for the operations of the facility with the perceived expansion of services to Zone 1, the entire island was handed over to MoTE in March 2017 by the President's Office. After MCEP became effective in September 2017, the PMU spearheaded the implementation of the STMP. Activities such as light and sound management on beaches, fixing protected beach boards, maintaining a solid vegetation buffer surrounding the island, limiting working hours of civil works contractors from 6 am to 6 pm (till sundown), restricting access of operators and contractors to nesting beaches, prohibiting movement of heavy vehicles on the beaches, mandating contractor workers to sign CoCs reflecting STMP requirements, etc., were implemented under this plan. The main objectives were to ensure minimal interference with the sea turtle nesting habitat and to address safety concerns while the RWMF is operated.

In 2021, MCEP, in collaboration with the EPA, launched a three-month pilot ranger programme involving students from R. Innamaadhoo. The students received technical training from the Olive Ridley Project (ORP) and, during the survey period, identified four suspected nests and one false crawl.

In 2022, MCEP initiated discussions with ORP to establish a standardized mechanism for collecting sea turtle nesting data. This led to the signing of a collaborative Memorandum of Understanding (MoU), in March 2023, between ORP (providing technical expertise), MoTE via MCEP (leading environmental stewardship), and WAMCO (the site operator responsible for environmental management at Vandhoo). As part of this initiative, ORP trained one Assistant Environmental Safeguards Officer (AESO) and three WAMCO staff as field assistants. All four personnel, stationed on Vandhoo, were registered as rangers with the EPA and tasked with monitoring nesting activity and protecting sea turtles and their

eggs. The AESO's data collection activities are jointly supervised by ORP and MCEP. MoTE and MCEP have provided much-needed funding for the programme, including equipment, training, and overall technical support via the Environmental and Social Safeguards Specialist, EPA, and the World Bank.

To date, over 28 nests have been documented and monitored in R. Vandhoo through this collaborative initiative, ensuring they are protected from natural threats such as weather and erosion, as well as external threats like poaching. MCEP has also installed live, night-vision motion detection cameras at high-risk nesting locations to enhance protection efforts. Through the combined efforts of the rangers and project partners, 502 hatchlings have safely reached the ocean, while ORP continues to monitor regional turtle populations.

MCEP is currently working on establishing a framework for continuation of the collaboration beyond project closure. The following actions have been included in the draft post-project action plan:

- Upon project closure, MCEP's responsibilities will be transitioned to the Biodiversity Section of MoTE. This handover has been agreed in principle by all MoU partners.
- A dedicated annual budget will be proposed under the Government of Maldives (GoM) to support:
  - o Quarterly training sessions and awareness programs;
  - o Monthly field supervision by an ORP marine biologist; and
  - o Recurring costs for data packages to operate the three motion detection cameras.
- In the longer term, additional financing could be explored through the Maldives Nature Fund (MNF), to be established under the Blue Capital for Prosperity and Climate Resilience (BCPCR) project financed by the Global Environment Facility (GEF) and the World Bank (currently at the preparatory phase).
- Given that core equipment such as GPS units and monitoring cameras are already in place, the program is not expected to incur significant recurring costs. It is estimated that it can be sustained with an annual budget of MVR 150,000 (approximately USD 10,000) to MVR 200,000 (approximately USD 13,000).



Figure 13 Sea Turtle Nest Monitoring Activities at R. Vandhoo

# 9. Post Project Closure Safeguards Action Plan

A Post-MCEP Project Closure Safeguards Action Plan (PCAP) has been prepared by the MCEP-PMU to outline activities likely to extend beyond the project period that may have environmental and social safeguards implications. These activities are expected to be completed through GoM financing. The draft PCAP has been submitted to the World Bank for review and comments.

During the final MCEP mission, scheduled for the last week of October 2025, the World Bank and the GoM will discuss and agree on the implementation approach for the PCAP.

The PCAP includes key activities such as:

- Establishing a governance structure for monitoring and reporting in line with the ESF requirements for the Interim Hazardous Waste Storage Facility (IHWSF) being developed at R. Vandhoo. This facility is funded through GEF and jointly implemented by the Environment Department of MoTE and UNDP. It is considered an associated facility under Environmental and Social Standard 1 (ESS1) of the ESF, thereby requiring ongoing safeguards oversight and reporting to the World Bank.
- Ensuring the continued operation of the Vandhoo RWMF by engaging a qualified and experienced international operator.
- Institutionalizing turtle conservation activities initiated under MCEP to ensure their sustainability beyond project closure.

A draft version of the PCAP, including current status updates for each activity, is provided in **Annex 13.** 

## 10. Conclusion

This second and final ESIA monitoring report for the construction phase of the Vandhoo Regional Waste Management Facility (RWMF), under the Maldives Clean Environment Project (MCEP), provides a comprehensive assessment of sub-projects implemented between November 2021 and September 2025 that were not covered in the first monitoring report. As such, this report is not standalone and should be read in conjunction with Monitoring Report 1 for a complete understanding of ESIA compliance during the construction phase.

Operational environmental and social compliance aspects are monitored separately under the Operational Environmental and Social Management Plan (O-ESMP), which includes regular reporting to MCEP, EPA, and the World Bank, covering parameters such as leachate, groundwater, RO water quality, and continuous emissions data (CEMS).

Environmental monitoring results indicate that no major changes or significant negative impacts have occurred in comparison to baseline environmental conditions established in the ESIA:

- Seawater quality near the RO brine discharge point remains within natural background ranges, with minor increases in ammonia and sulphate, likely due to limited dispersion. Elevated turbidity was observed but is attributed to natural factors such as reduced water circulation.
- Groundwater quality at the fuel farm area showed slightly elevated levels of salinity, conductivity, and total dissolved solids (TDS), consistent with its coastal location and within acceptable tolerances.

- Leachate quality remains within acceptable limits, reflecting conditions typical of ash leachate in a recirculating system.
- Noise levels at the most sensitive locations remained below 70 dB, well within occupational and environmental safety standards, and not expected to cause nuisance or discomfort.
- Ambient air quality measurements across key locations (including the incinerator/WtE facility, powerhouse, and control location) showed no significant variations and remained within acceptable environmental thresholds.

Vegetation clearance was strictly limited to designated project boundaries. Drone assessments confirmed that the surrounding vegetation and island buffer zones were intact and consistent with ESIA requirements. In total, 25 plants were removed, and a 2:1 replantation program was carried out in R. Innamaadhoo and R. Rasmaadhoo, resulting in the planting of 225 new trees, thereby significantly exceeding the minimum requirement.

In terms of social safeguards, the project continued to implement Occupational Health and Safety (OHS) training and monitoring. The facility currently operates with an interim fire safety system, which was audited and approved by the Maldives National Defence Force (MNDF), the national fire safety regulator, and deemed adequate for the current operational needs of the RWMF. In parallel, a permanent fire detection and protection system was designed under the project and approved by MNDF, with installation works expected to commence shortly, supported through funding secured from the Government of Maldives (GoM) budget and the Abu Dhabi Fund for Development (ADFD). This will ensure long-term fire safety compliance and operational resilience.

No official grievances were recorded during this period. However, a few unofficial, operation-related concerns were raised during stakeholder consultations held during the monitoring visit. These concerns are currently being addressed, with a way forward being proposed in coordination with relevant stakeholders and the facility operator.

The project also made strong contributions to biodiversity conservation, particularly in relation to sea turtle protection. R. Vandhoo is a known nesting site for Hawksbill and Green Sea Turtles, and ongoing collaboration with the Olive Ridley Project has led to the documentation of 28 turtle nests, with 502 hatchlings safely released into the ocean, demonstrating the project's commitment to marine conservation alongside infrastructure development.

To ensure that environmental and social safeguards continue to be managed post MCEP closure, a Post Project Closure Safeguards Action Plan (PCAP) has been developed by the MCEP-PMU. The PCAP outlines several key actions, including: establishing a governance structure for monitoring and reporting in line with World Bank Environmental and Social Framework (ESF) requirements for the Interim Hazardous Waste Storage Facility (IHWSF), which is considered an associated facility under ESS1; ensuring the continued operation of the Vandhoo RWMF through engagement of a qualified international operator; and institutionalizing the turtle conservation efforts initiated under MCEP to ensure their long-term sustainability beyond project closure.

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## ANNEX 1

EPA Decision Statements and World Bank's approvals of First (2019 ESIA) and Second ESIA Addenda (First Addendum)





# אַכּפֿראַ אַ אַרְאָל אַ אָלְיל אַ אַלְיל אַ אַלּאָל אַ אַלְיל אַ אַלּאָל אַ אַלְיל אַ אַלּאָל אַ אַלְיל אַ אַל אַנער אַ APPROVAL OF ENVIRONMENTAL IMPACT ASSESSMENT

سَرُسُونَ فِي 203-EIARES/438/2019/17

This Environmental Decision Statement is issued for the purpose of communicating the decision regarding the Environmental Impact Assessment for Upgrading of Infrastructure at Regional Waste Management Facility Zone II, Vandhoo, Raa Atoll, which was submitted for evaluation on 27th January 2019 by Ministry of Environment. The EIA consultant of this project is Mr.

Hussein Zahir (EIA P04/2007).

1. This Environmental Decision Statement has been issued on behalf of the Environmental Protection Agency (hereinafter referred to as the Ministry) pursuant to the Environmental Impact Assessment Regulations 2012 (2012/R-27) to advise that the Ministry has decided that the proposed Development Proposal can proceed according to the Environmental Impact Assessment Report.

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ر ولالاور وتزوره الدونول لاستا ويتاووها وسبريا بدونا ويودي والوو وسالا



2. The decision has been made by the Ministry on the following conditions:

2. د زهر دس عهر مردوس مردد ده क्षेत्रहर्देश देवल्यं

i. The proposed Beach accommodation blocks should be relocated to the suggested in page 108 of the EIA report

front 75 108 sees 4.99.9 52225 3 .i ازرى وزورة دور د دخورد ورد existing ביל ביל לאלים העלבים העלבים ביל פאלים מו existing accommodation block area as مُوَرِّدُ مُوَدِّ مُرَّدُ مُوَدِّ مُوَدِّ عُرِّمَ عُرِّمًا عَمْدُ عُرِّمًا عَمْدُ مُوَدِّ عُمْدُ مُوَدِّ عُمْدُ عُرِّمًا عُمْدُ مُعْدِينًا وَمُعْمِدُ مُوْدِينًا وَمُعْمِدُ عُمْدُ مُعْدِينًا مِنْ اللَّهِ عَلَيْهِ عَلَيْهِ اللَّهِ عَلَيْهِ عَلَيْهِ اللَّهِ عَلَيْهِ عَلِي عَلَيْهِ عَلِي عَلَيْهِ عَلِي عَلَيْهِ عَلَيْهِ عَلَيْهِ عَلَيْه בר לע שענתבצתפי

ii. The road network must be constructed as per the 'alternative road network' given in the report (page 109, figure 42). And the meters (as per the alternative given in the report)

ii. ووَسَعْمِرُونُ وَرُسُ رَوْسُرُونَ عُرِورُونَ وَوَدُو وَوَ رَوْسُوسُ مِنْ وَدُم ( سَوْرٌ 109 ودَم 42 פתונים ביל יצפר בל פפריגנים ( צמיל הא כצל לל בילצה למילת 10 width of the road must be 10 ' وَهُ وَعُرُو الْمُوا عُدُهُ الْمُوا اللَّهُ عَلَى اللَّهُ اللّلْمُ اللَّهُ اللَّا اللَّالِي اللَّهُ اللَّهُ اللَّهُ اللَّهُ اللَّهُ اللَّهُ الل שבי ביל בת בת ביל בל בל בלכת בלכת).

iii. Building footprint must be shifted to avoid the protected banyan trees as suggested in page 114 of the EIA report.

iii. وَمُعْرِيدُ مُعِرِمُونُ مُرْوَرُهُ رُونُونُ رُونُونُ اللهِ יאור בנה לג ובת משונה על פון באים באלים הפציע של באים באלים באלים באלים צעתם הל בנל בתיתית פילול (ת. הנ. ו" אנשל 114 פיל שוניצה כני בנותפנים")

iv. In the event the project activity has not commenced within one (1) year from the date of issue, or if the duration of this Environmental Decision Statement has not been

iV. מל פתצצמת תעתרצמצ בתת בעות מעות מצינת وُرِيْ 1 (مُرْمُ) مُرَاثِ وُوْرُدُ وَمِدُدُ לים אנה ב הלך בשהמה מניתה של شروم مرومری دوس سرسرد دهد و اردی وروز مورسرورو و مورور دورور extended, this Environmental بر المراجعة المراجعة والمراجعة والمر



Decision Statement shall be considered null and void. In order to of this extend the duration Environmental Decision Statement, the Proponent shall write to the Minister for an extension according to clause 14 of the Environmental Impact Assessment Regulation 2012.

سرس مَدُورُ وَ وَرَدُو وَ رَدُورُ هُورُورُ وَدُورُورُ وَدُورُ وَالْمُورُ وَالِهُ وَالْمُورُورُ وَالْمُورُ وَالِمُ وَالْمُورُ وَال

v. In the event the project activities have been delayed for more than one (1) year due to unforeseen circumstances, the Ministry shall have the discretion to extend the duration of the Environmental Decision Statement, or to terminate it. In such circumstances the proponent shall write to the Minister for an extension clearly stating out the reasons for the delay.

ال ال المراد المرد المراد المراد المرد المراد المراد المراد المراد المراد المراد المراد المراد المر

vi. The Minister, or his designate, may issue a cessation order requiring persons working on a Development Proposal to cease working until the order is withdrawn, if:

a) This Environmental Decision Statement has been withdrawn or; ر) و هرونزدده شرسروده و براس هروندش شروم OB

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ر. وَسُرْوَدُ دُرُورُدُو الرياسُ وَ وَسُوعُ وَسُرُو وَسُوعٍ وَسُرِعٍ دُمُورُ وَمُدُادٍ تُمَوَّدُ وَسُمُونٍ



b) There has been a breach of the conditions of this Environmental Decision Statement.

٣) و مود ورد دهر سرسرو ده و ورد د ١٥٠ د مود و ده ده سرسرو ده د ورد د

vii. It is the Developer's responsibility to undertake all project activities in accordance with the relevant laws and regulations of the Maldives.

VII دَمَهُ بِهِ مِرْدُوْمِ دُوْرِدِهِ بِهِ مُرْدِهِ بِهِ مُرْدِهِ بِهِ مُرْدِهِ بِهِ مُرْدِهِ بِهِ مُرْدِهِ بِهِ مُرْدُومِ مُرْدِهِ مُرْدِهِ مُرْدِهِ مُرْدِهِ مُرْدِهِ مُرْدِهِ مُرْدِهِ مُرْدِهُ مِنْ مِرْدُومٍ مُرْدِهِ مُرْدُودُ مِنْ مُرْدِهِ مُرَدِهِ مُرْدِهِ مُرْدِهِ مُرْدِهِ مُرَدِهِ مُرَدِهِ مُرَدِهِ مُرَدِي مُرَدِهِ مُرَدِهُ مُرَدِهِ مُرَدِهِ مُرَدِهِ مُرَدِهِ مُرَدِهِ مُرَدِهِ مُرَدِهِ مُر

viii. The Developer shall submit environmental monitoring report as outlined in Paragraph viii of this Environmental Decision Statement. Failure to submit the requisite monitoring report may result in the suspension or revocation of the permit under this Decision Statement.

VIII). د مِدَّوْرِدُدُوْرُ سِرِسُرُدِدُوْدُ وِرِرْدُوْ اللهِ وَسَرَ بُرُورُورُ اللهِ وَسُرَّعُ وَسُرَعُ مُرْدُمُورُ مُورُورُهُ مُرْدُورُهُ مُرَوْمُورُ بُرِيرُورُورُ مُرَدُمُورُ مِنْ مِرْمَرُ مِرْدُرُورُ مُرَدُرُورُ مُرَدُرُورُ مُرْدُورُ مُرْدُورُ مُرْدُورُ وَسُرُورُ

ix. The Developer is aware that under the National Environment Protection Act (Law no. 4/93) and the Environmental Impact Assessment Regulations the Ministry reserves the right to terminate any activity without compensation if found that such an activity has caused significant, irreversible impacts the on environment.

ن دُور مُرَدُون وَرَدُور مُرَدُون وَرَدُورُونَ وَرَدُورُونَ وَرَدُرُونَ وَرَدُورُونَ وَرَدُونَ وَالْمُونَ وَالْمُونَ وَلَانَ وَرَدُونَ وَالْمُونَ وَلَانَ وَرَونَا وَالْمُونَ وَلَانِهُ وَلَانِهُ وَلَانِهُ وَلَانَا وَلَانِهُ وَلَانِهُ وَلَانِهُ وَلَانِهُ وَلَانَانِ وَلَوانَ وَالْمُونَ وَلَانِهُ و





- the project shall fully be implemented.
- x. All mitigation measures proposed in مِوَّ وَمُرْعَدُ وَمُرْعَدُ وَمُرْعَدُ وَمُرْعَدُ مَا اللَّهُ عَالَمُ عَالًا عَالَمُ اللَّهُ عَالَمُ عَالًا عَلَمُ عَالًا عَلَمُ عَالًا عَلَمُ عَالًا عَلَمُ عَالًا عَلَمُ عَلِمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلِمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلِمُ عَلَمُ عَلِمُ عَلَمُ عَلِمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلِمُ عَلَمُ عَلَمُ عَلَمُ عَلَمُ عَلِمُ عَلَمُ عَلِمُ عَلَمُ عَلَمُ عَلِمُ عَلِمُ عَلِمُ عَلِمُ عَلِمُ عَلِمُ عَلِمُ ع פנפתשת עתנית תומתה עוצינת הניתבר לצו נחפעה אנשלה שתייעית בר ב בפי הלייפיתהם.
- xi. The program outlined in the Environmental Impact Assessment Report shall be undertaken and implemented and summary environmental monitoring reports shall be submitted to the Ministry.
- xi. مِرَّةُ وَمُوْعَ رُسَائِدُ وَمُرْسَرُ وَسُرُونَدُ عَارُسُرُنَالًا monitoring מפושה המתוכם שבו היות ב המתוכמת שבל באר במצבצ נפים משת הת ליל ללתלים שלהם.
- xii. The date of expiry stated in this Environmental Decision Statement is the duration given to commence the project activities approved under this Environmental Decision Statement.
- XII. בפלפתל תמכצבל בתלצת לתלם לכם פציל עלי באת שלעל בנחופת כלהם وردرورو در درورو درو درو درو درورورو
- xiii. Once the project activities have started, the Proponent must inform Environmental Protection the Agency, the date of commencement of project activities.
- ווֹצ. כֹשׁמָלֶג בֹשׁמִים נַתְּפְׁבֶּלְנִי נָתִּפ לתכת התצתפתחת





Date of Issue: 14th February 2019

פניית פתול : 14 נפילהת 2019

Date of expiry: 14th February 2020

בּרֵבֹה כבב באת: 14 נפינת 2020

Name: Ibrahim Mohamed

33213 3/20 :55

**Designation:** Deputy Director General

פציב אפראב באון ב :353

Signature:

:,×





# مِوَّ وَهُمَّ مُرَ مُرَامِدُ كُوْمُورُ مُرَّامِرُ مُرَّامِرُ مُرَّامِرُ مُرَّامِرُ مُرَّامِرُ مُرَّامِرُ مُرَامِرُ مُرَامِ مُرَامِرُ مُرَامِ مُرَامِرُ مُرَامِ مُرَامِرُ مُرَامِرُ مُرَامِرُ مُرَامِرُ مُرَامِرُ مُرَامِرُ مُرَامِ مُرَامِ مُرَامِي مُرَامِي APPROVAL OF ENVIRONMENTAL IMPACT ASSESSMENT

سَرُسُرُتُ ثِرُ: 203-ECA/438/2022/3 : مُرُدُدُ عُرِيْنَ عُرِيْنِ عُمْنِيْنَ عُمْنِيْنَ عُمْنِيْنَ عُمْنِيْنَ عُمْنِيْنَ عُمْنِينَ عُمْنِيْنَ عُمْنِيْنِ عَلَيْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عَلَيْنِ عُمْنِيْنِ عُمْنِيْنِ عَلَيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عَلَيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عُمْنِيْنِ عَلَيْنِ عُمْنِيْنِ عَلَيْنِ عَلْمِي عَلَيْنِ عَلَيْنِ عَلَيْنِ عَلَيْنِ عَلَيْنِ عَلْ

مِوْوَرِهُ وَهُرُهُ رِهُرُهُ وَرَهُرُ وَرَهُرُ وَرَهُرُ وَرَهُرُ وَرَهُرُ وَرَهُمُ وَمُوْ وَسُوعُ وَسُوعُ وَسُوعُ وَمُرَوَ وَمُرَاءُ وَمُرَوَ وَمُرَاءُ وَمُرَوَ وَمُرَاءُ وَمُراءُ وَمُراءُ وَمُرَاءُ وَمُراءُ وَمُرَاءُ وَمُرَاءُ وَمُرَاءُ وَمُرَاءُ وَمُراءً وَمُراءً وَمُراءُ وَمُرَاءُ وَمُراءُ وَمُواءُ وَمُواءُ وَمُواءً وَمُواءً وَمُواءً وَمُواءً وَمُواءً وَمُواءً وَمُواءً وَمُواءً ومُراءً ومُواءً ومُواءًا ومُواءًا ومُمُواءً ومُواءًا ومُواءًا ومُواءً ومُواءً ومُواءً ومُواءً ومُواءًا

This Environmental Decision Statement is issued for the purpose of communicating the decision regarding the First addendum to the Environmental Impact Assessment for the Upgrading of Infrastructure at Regional Waste Management Facility Zone 2, Raa Vandhoo, which was submitted for evaluation on 22<sup>nd</sup> December 2021, Ministry of Environment, Climate Change and Technology. The EIA consultant of this project is Mr. Hussain Zahir (EIA P04/2007).

1. This Environmental Decision Statement has been issued on behalf of the Environmental Protection Agency (hereinafter referred to as the Ministry) pursuant to the Environmental Impact Assessment Regulations 2012 (2012/R-27) to advise that the Ministry has decided that the proposed Development Proposal can proceed according to the

ا مِدُوْرُوعُ رُسَدُ وَعُرْسُ وِسُونُ صُرَّسُونُ عُرِيْعَ رُورُومُ رُسَاءً عَرِيْعَ رُورُومُ مَا مَا مُورِهِ وَ وَرُدُورُ وَ وَ وَرُدُورُ وَ وَ وَرُدُورُ وَ وَ وَرُسُوعِ عِرَدُ مِرْسُوعِ عِرَدُ مُرْسُوعِ مِرَدُ وَ مُرْسُوعِ مِرْسُونِ مُرْسُونِ مُرَسُونِ مُرْسُونِ مُرْسُونِ مُرَسُونِ مُرْسُون

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بر. وَسَرَدُورُ رَوْ بِي عَسَرُو وَسَوْعُ وَسِرْعُ وَسَرْعُ بِدِورِي وَسَرْدُودُ وَسَفْتُرُدُدُ ( وَمَهُو دُورُوعُ )



Environmental Impact Assessment Report.

- 2. The decision has been made by the Ministry on the following conditions:
- 2. دِ دُرْمُ دِسِوْعُ بِرِسْ مِرْدُرُوسِ مِبِرَدُرِ دِوَّ سَوْبُرُمُونَ 2
- i. In the event the project activity has not commenced within one (1) year from the date of issue, or if the duration of this Environmental Decision Statement has not been Environmental Decision write to the Minister for an extension according to clause 14 of Environmental Assessment Regulation 2012.
- ין פל פת ב ב פת היי היי ב היי היי ב הי ב היי ב ב ב היי ב הי مُعْرِدْسُ وَبِرِيْسُ 1 (مُنْمُ) مُرَيْمُ وَرُورُدُ سِرِسْرُدِ خَمْءُ وِالْمُدَّارِ الْمَارِ وِ وِالْمُوْءُ 1 وَسَرَ extended, this Environmental Decision Statement shall be سَرُسُونَ مُرْدُدُ مِنْ مُرْدُونُ سُرُمُونُ عَلَى اللهِ اللهِ اللهُ جِ مِوْدُ وَرِدُ لَا يَعْرِيرُ لَا يَحْدُونُ مِرِسْرِهِ خِوْدُ لَا وَرَدْدُ وَرُدُونُ وَلَانُونُ وَلَانُونُ وَلِهُ وَلَانُونُ وَلَانُونُ وَلَانُونُ وَلِي وَلَانُونُ وَلَانُونُ وَلِي إِلْمُ وَلِي وَلِي إِلْمُ وَلِي إِلْمُ لِلْمُ لِي إِلْمُ لِلْمُ لِلْمُ لِلْمُ لِلْمُ لِي إِلَانُ لِلْمُ ل to extend the duration of this הُوَوْرَا مُرَسُوِّ مِر مُوَّوُهُ عَامُ to extend the duration of this هُمْ تَوَّدِهُمْ 2012ءُ 14 وَسَرَ دَّدُمُّرَدُبِوً Statement, the Proponent shall 2000

- ii. In the event the project activities one (1) year due to unforeseen circumstances, the Ministry shall have the discretion to extend the
- ii وَسَرُ سَرُسُوهُ يُرَدُرُو لَلْمُورِدُ وَرُورِدُ وَرُرُسُو have been delayed for more than (رُمُناهُ مِرْوُرِ 1 (رُمُناهُ) מני לייני ליים ב אים ליינים או מעצ رِدْمِرِّيْرُ وِسِ مُهْمِرِرُرْ وِسِ وُسْرُوْرُوْ. وِ وَوَرَ

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بر. وَسَرْدُورُ رَوْ بِرِغَسُرُو وَسَاعٌ وَسِرْغُ وَسُرْغُ سَرْغُي مِرْدُينَ لَالْوَدُ وَسَائِرُمُ الْ أَلْمُورُ مُؤْسِنَا وَلَا



Decision Statement, or to terminate it. In such circumstances the proponent shall write to the Minister for an extension clearly stating out the reasons for the delay.

מנגם המוסגם מנור מ המרם הצמת סחייתמת הפחל ב צלפית כת הפת תל תות פתח פ

- persons working on until the order is working withdrawn, if:
  - a) This Environmental Decision Statement has been withdrawn or; b) There has been a breach of the conditions of this Environmental **Decision Statement.**
- iii. The Minister, or his designate, may مِيرِ وَهُ مُرَّسُرُ مُ مُرَّدُهُ مُرَدًا اللهِ iii. The Minister, or his designate, may ھَرُمَارُ رُوَ سُوْرِيْ رُوْسُ وَرُسُ وَرُسُ رُسُورُسُ وَرُسُ مُسْرَدُسُ وَسُورُسُ وَرُسُ مُسْرَدُسُ وَسُورُسُ ·91/20 0 0 0 1 60 2 ر) د مودوسرد ده میرسرد ده د و ارسر ر) د مودوسرد ده میرسرد ده د و ارسیر 222 0222 0 2000 000 000 000 سر) د مود فررد دهد سرسرد دهد د برادد د

- to undertake all project activities in accordance with the relevant laws and regulations of the Maldives.
- iv. It is the Developer's responsibility وَصُورُدُ رِبِهُ وَوُرْمِرِ، مُرَدِّعِهُ مَرِدِ اللهِ عَالَمَ عَلَيْ وَالْعَالَمُ اللهِ عَلَيْهُ وَاللهِ اللهِ الل מאלים ליסים בינים גם בינ מתצפת בישתמם מאבת ביתבתרבע מ מרצע ב מתכמעם.
- v. The Developer shall submit environmental monitoring report as outlined in Paragraph viii of this Environmental Decision Statement. Failure to submit the requisite monitoring report may
- ۰۷ ج مِرِّهُ فَهِرِ مُدَّدُهُمْ سِرْسُرَجِ خُرْدُهُ وَرِرُوْدُهُ ١١١٧ وَسَرَ מינו מינו מינו בינים ۇسررۇ.

Northy



result in the suspension revocation of the permit under this Decision Statement.

- vi. The Developer is aware that under National Environment Protection Act (Law no. 4/93) and Environmental **Impact** Assessment Regulations Ministry reserves the right to terminate any activity without compensation if found that such an activity has caused significant, irreversible impacts on the environment.
- in the EIA report for all the phases implemented.
- ئىن دە دۇرى ئۇردى (سرسۇمۇر 4/93 گەر 106111 000 061 61621 0611 12 112 0611 606101 1 1 63 NHV VINS NHS 5NSVNF 2 9N3 9XV 0/ 3 730 / 44203 0/0// LAXV AXP 2 49EA/ 8VAP 2 מ ל מל מ מע ב מ ע .

٧١٠ ورور مراه د وروم مردم

- vii. All mitigation measures proposed بِوَرُوْمِرُ وَمِرُومِرُ وَمِرُومِرُ عَرَّرُومِرُ عَرَّرُومِرُ 15000000 17 30000 15000 مِوَّةُ وَرُحَ عُرُ مُّ مُرَّةً مِنْ رَسَهُ مُورُدُ لَا يَا لَهُ مُورُدُ وَ f the project shall be fully
- program outlined in implemented and summary environmental monitoring reports shall be submitted to the Ministry.

viii. The environmental monitoring مِوَّ وُمْرَعُ مُ رَسَعُمُ وَمُوْمِ مُ وَمُوْمِ مُ مُرَامِعُ viii. The environmental monitoring بانانا the مُرْمَدُهُ صُوْمَ مُرْمَدُ مُرْمِدُ مُرْمِ قَرْسُرَى مُوْوَرُدُ مَّرُورُ وَرُولُ وَبُرِسُرَى مُرَّسُرُ مُسْرَوَرُولُ Environmental Impact Assessment فَرْسُرَى مُورِدُ مُنْ وَرُولُ وَمُرْسُرُ مُسْرَوَرُولُ تَسْرَعَيْدُ مُورُدُ وَبِرِرَوُ لَا يُرْوَارُورُهُ وَرُحْهِرُ وَاللَّهِ Report shall be undertaken and ים ירם נו יוכים אינכני כנו !! המתמכמב שבת בפח בממב בציים מנים מרו במנים לימים מתחפי



ix. The date of expiry stated in this **Environmental Decision Statement** is the duration given to commence the project activities approved under this Environmental Decision Statement.

مُرِدُ مُرَدُ مُرَّسُمُ مُرَّدُ وَرِدُوسِ وِردُورُ ده ۱۱۱۶ و وزوموسری

started, the Proponent must inform the Environmental Protection Agency, the date of commencement of project activities.

Date of Issue: 12th January 2022

Date of expiry: 12th January 2023

Name: Mr. Ibrahim Naeem

**Designation:** Director General

مُرْمَا مِنْ مُرْمِرِدُ: 12 خَسْرَوَمِ 2022

وْرْعَرْمْ رَوْقٌ مُرْمِرْدُ: 12 غَيْرُوْمِ 2023

مرمر: رُوزُ سَوْ رِصْرُرُو مررو

פני ב אלים א ב שלים

Signature:





### Fwd: FOR CLEARANCE:P160739-MCEP-2nd Addendum to the ESIA for the Vandhoo RWMF Report

From Mokshana Nerandika Wijeyeratne <mwijeyeratne@worldbank.org>

Date Thu 1/20/2022 8:06 AM

To Ahmed Hassaan <ahmed.hassaan@environment.gov.mv>

Cc Ahmed Nizam <ahmed.nizam@mote.gov.mv>; Shanek Mario Fernando <sfernando6@worldbank.org>; Anuja Shukla <ashukla7@worldbank.org>; Karin Shepardson <kshepardson@worldbank.org>; Nadeera Rajapakse <nrajapakse@worldbank.org>; Gangadari Ranawaka <granawaka@worldbank.org>; Kasun Randika Jayasuriya <kjayasuriya@worldbank.org>

Dear Hassan,

The Vandhoo ESIA is cleared by the RSA:) Please go ahead. As always great job on this to you and the consultants team.

Trust when commences there will be Kobo based monitoring here as well.

Do keep us informed of disclosure as well.

Best

Mokshana

Begin forwarded message:

From: Pablo Cardinale <pcardinale@worldbank.org>

**Date:** January 20, 2022 at 5:44:49 AM GMT+5

To: Mokshana Nerandika Wijeyeratne <mwijeyeratne@worldbank.org>, Charles Ankisiba

<cankisiba@worldbank.org>, Roselind Rajan <rrajan@worldbank.org>

Cc: Karin Shepardson <kshepardson@worldbank.org>, Josefo Tuyor

<jtuyor@worldbank.org>, Shanek Mario Fernando <sfernando6@worldbank.org>, Kristine

Schwebach < kschwebach@worldbank.org >, Nadeera Rajapakse

<nrajapakse@worldbank.org>, Anuja Shukla <ashukla7@worldbank.org>, SARSafeguards

<sarsafeguards\_internal\_use\_only@worldbank.org>, Venkata Subbara Nukala

<vnukala@worldbank.org>, Miki Terasawa <mterasawa@worldbank.org>, Anuja Shukla

<ashukla7@worldbank.org>, Gangadari Ranawaka <granawaka@worldbank.org>

Subject: RE: FOR CLEARANCE:P160739-MCEP-2nd Addendum to the ESIA for the Vandhoo RWMF Report

Thanks Mokshana and team No further comments from our side, please proceed. Best,

Pablo Cardinale, Ph.D.

Regional Advisor

**Environmental and Social Standards** 

#### **South Asia Region**

T +1(202)460-8074

E pcardinale@worldbank.org

W www.worldbank.org



From: Mokshana Nerandika Wijeyeratne <mwijeyeratne@worldbank.org>

Sent: Wednesday, January 19, 2022 1:54 PM

**To:** Pablo Cardinale <pcardinale@worldbank.org>; Charles Ankisiba <cankisiba@worldbank.org>; Roselind Rajan <rrajan@worldbank.org>

Cc: Karin Shepardson <kshepardson@worldbank.org>; Josefo Tuyor <jtuyor@worldbank.org>; Shanek Mario Fernando <sfernando6@worldbank.org>; Kristine Schwebach <kschwebach@worldbank.org>; Nadeera Rajapakse <nrajapakse@worldbank.org>; Anuja Shukla <ashukla7@worldbank.org>; SARSafeguards <sarsafeguards\_internal\_use\_only@worldbank.org>; Venkata Subbara Nukala <vnukala@worldbank.org>; Miki Terasawa <mterasawa@worldbank.org>; Anuja Shukla <ashukla7@worldbank.org>; Gangadari Ranawaka <granawaka@worldbank.org>

**Subject:** RE: FOR CLEARANCE:P160739-MCEP-2nd Addendum to the ESIA for the Vandhoo RWMF Report

Dear Pablo and team,

Many thanks for the comments and suggested edits. The client team has addressed all the comments and responded to clarifications via the attached Matrix for your reference.

The updated Version of the documents and their submission document is also attached for records. Shanek and I have worked with them closely and reviewed the updates as well post these versions were submitted.

Please confirm if we can proceed with confirming to them this is cleared so they may move to the next steps. The Maldives EPA has also

Provided their clearance on the same last week, sharing email confirmation from the client as well.

Best

Mokshana (for the team)

Sent: Friday, December 24, 2021 12:11 AM

To: Mokshana Nerandika Wijeyeratne < <a href="mwijeyeratne@worldbank.org">mwijeyeratne@worldbank.org</a>; Charles Ankisiba

<cankisiba@worldbank.org>; Roselind Rajan <rrajan@worldbank.org>

Cc: Karin Shepardson < kshepardson@worldbank.org>; Josefo Tuyor < jtuyor@worldbank.org>; Shanek Mario Fernando < sfernando6@worldbank.org>; Kristine Schwebach < kschwebach@worldbank.org>; Nadeera Rajapakse < nrajapakse@worldbank.org>; Anuja Shukla < ashukla7@worldbank.org>; SARSafeguards < sarsafeguards internal use only@worldbank.org>; Venkata Subbara Nukala < nukala@worldbank.org>; Miki Terasawa < nterasawa@worldbank.org>; Anuja Shukla < ashukla7@worldbank.org>; Gangadari Ranawaka < nterasawa@worldbank.org>

**Subject:** RE: FOR CLEARANCE:P160739-MCEP-2nd Addendum to the ESIA for the Vandhoo RWMF Report

Dear Mokshana and team

(Thanks Tayo and Charles for their support reviewing these documents)

Thanks for sending this updated version of the Addendum to ESIA for RSA review. The addendum is detailed and effectively identifies risks and mitigations, though our review was somewhat limited because the Appendices were not provided for review. The report can be strengthened by providing further clarity or detail on the points below:

- Structure of the report: Please review the Executive summary and the introductory chapter to make it clearer that this is an update to ESIA Addendum. Perhaps no need to state First or Second, as this update now supersedes provisions in the earlier Addendum. We note there may have been some misunderstanding of our previous comments on the proposed standalone of the Second Addendum to ESIA. For clarity, this updated Addendum could have been prepared and attached to the original ESIA, but perhaps it was not clear in our communication when we stated that the ESIA should not be a standalone document but should be linked to the previous version.
- Land access and potential impacts on livelihoods: Under s.2.3 (and related sections) please explain whether there are any E&S implications for the proposed change in location for fuel storage tanks and the minor road extension works to human settlements and use/or restriction of use of land. Would there be any impacts to livelihoods of current users (formal or informal) of the 15-ha of land? We note that taking the land would affect some trees of economic value including about 74 coconut palms and pandanus trees, country almond, etc. (refer to pg. 2-23 and 2-27). Who owns these trees and what mitigation measures are proposed to address this loss? E.g., who is entitled to compensation for the loss of trees, or would there be compensatory tree off-sets?
- Stakeholder consultations is an ongoing process throughout the project's life: thus, we recommend that Chapter 6 should be expanded to include an outline strategy /plan with timelines and methods for continuous stakeholder engagement that meets the needs of the different stakeholders during project implementation (This should also be reflected in the ESMP (Table 14).
- **GRM:** section 12 should be updated with information about the operationalization of the GRM since the project became effective by providing a summary of the key lessons learned and challenges and areas that may require improvement. Please explain how the GRM established by the MCEP links with the contractor level GRMs to make it functional and effective (e.g., resolution and reporting of complaints from contractor's work force). Please note that no Annexes have been attached so we did not have the benefit to review the GRM established by the PMU.
- Monitoring: Please review monitoring parameters outlined in Table 15 to evaluate all impacts identified in Table 14 – monitoring of soil, air, effluent and effluent discharge point as practicable, and update monitoring frequencies in line with GIIP.
- Edits: Please incorporate section 1.2 into the introductory section and delete section 1.3 (since a detail ToR for the assignment is attached as Annex 2, although this is currently not attached)

Kind Regards and happy holidays

#### Pablo Cardinale, Ph.D.

**Regional Advisor** 

**Environmental and Social Standards** 

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From: Mokshana Nerandika Wijeyeratne < mwijeyeratne@worldbank.org>

Sent: Tuesday, December 21, 2021 2:06 PM

To: Pablo Cardinale pcardinale@worldbank.org; Charles Ankisiba cankisiba@worldbank.org Roselind Rajan < <a href="mailto:rrajan@worldbank.org">rrajan@worldbank.org</a>>

Cc: Karin Shepardson < <a href="mailto:kshepardson@worldbank.org">kshepardson@worldbank.org</a>; Josefo Tuyor < <a href="mailto:jtuyor@worldbank.org">jtuyor@worldbank.org</a>; Shanek Mario Fernando <sfernando6@worldbank.org>; Kristine Schwebach <kschwebach@worldbank.org>; Nadeera Rajapakse <a href="mailto:nrajapakse@worldbank.org">nrajapakse@worldbank.org</a>; Anuja Shukla <a href="mailto:ashukla7@worldbank.org">ashukla7@worldbank.org</a>; SARSafeguards <sarsafeguards internal use only@worldbank.org>; Venkata Subbara Nukala <<u>vnukala@worldbank.org</u>>; Miki Terasawa <<u>mterasawa@worldbank.org</u>>; Anuja Shukla <ashukla7@worldbank.org>; Gangadari Ranawaka <granawaka@worldbank.org>

Subject: FOR CLEARANCE:P160739-MCEP-2nd Addendum to the ESIA for the Vandhoo RWMF Report

#### Dear Pablo and RSA team,

We are sharing on behalf of the Maldives Clean Environment Project, P160739 the 2<sup>nd</sup> Addendum to the Vandhoo Regional Waste Management Facility ESIA for your review and clearance. The reference to the cleared TOR, Word and PDF Versions of the client submitted ESIA is attached. Shanek and myself have reviewed the first draft and this version Is post addressing our comments as well.

The client has also shared for your reference if needed during review the original Vandhoo ESIA and 1st Addendum done via the attached folder.

### Vandhoo ESIA

We look forward to your valuable comments to finalize this report and move to the implementation.

Wishing you all also a wonderful and blessed holiday season  $\stackrel{\square}{=}$ 



Warmest Regards and Thanks in Advance,

Mokshana and Shanek (For the Team)

### Mokshana Nerandika Wijeyeratne

Senior Environmental Specialist

#### **Environment, Natural Resources and Blue Economy**

+94-11-2448070

+94-770102747

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#### mwijeyeratne@worldbank.org

Hilton Colombo, 6th Floor,

No: 2 Chittampalam A Gardiner Mawatha

Colombo, Sri Lanka



From: Ahmed Hassaan <a href="mailto:ahmed.hassaan@environment.gov.mv">ahmed.hassaan@environment.gov.mv</a>

**Sent:** Sunday, December 12, 2021 9:52 AM

To: Mokshana Nerandika Wijeyeratne <a href="mwijeyeratne@worldbank.org">mwijeyeratne@worldbank.org</a>; Shanek Mario Fernando

<sfernando6@worldbank.org>

**Cc:** Ahmed Murthaza <a href="mailto:ahmed.murthaza@environment.gov.mv">; ahmed.nizam@environment.gov.mv">; ahmed.nizam@environment.gov.mv</a>; Abdul Raheem Mohamed <a href="mailto:abdul.raheem@environment.gov.mv">ahmed.saleem@environment.gov.mv</a>>; Mohamed Afraz <a href="mailto:mohamed.afraz@environment.gov.mv">mohamed.afraz@environment.gov.mv</a>>

Subject: Vandhoo ESIA Second Addendum Report\_FINAL DRAFT

[External]

Dear Mokshana and Shanek,

Please find attached both the word and the pdf files of the final ESIA second addendum report and the response matrix submitted by the consultant. As discussed over the phone, we will submit the report for EPA's review in parallel to the RSA, where the review comments received from both the parties will be addressed in the same main report and disclosed in our website when cleared.

Hence, kindly give me an indication when the submission is made to the RSA, so I can submit it to EPA in parallel on the same day.

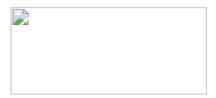
Best Regards,

Ahmed Hassaan Zuhair

Environmental and Social Safeguards Specialist

Maldives Clean Environment Project

Ministry of Environment, Climate Change and Technology



Ministry of Environment, Climate Change and Technology, Ameenee Magu, Maafannu, Male', 20392, Maldives.

Office (Direct): +(960) 3018446 | Office (PABX): +(960) 3018300 | Fax: +(960) 3018301 Email: <a href="mailto:ahmed.hassaan@environment.gov.mv">ahmed.hassaan@environment.gov.mv</a> | Web: <a href="https://www.environment.gov.mv">www.environment.gov.mv</a>

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# ANNEX 2

Summary of Construction Phase Monitoring Reports

#### SUMMARY OF CONSTRUCTION PHASE ESIA MONITORING REPORTS

### Construction Phase ESIA Monitoring - Original ESIA of Vandhoo RWMF

A total of 6 interim construction phase monitoring reports were prepared in compliance with the monitoring schedule given in the 2012 ESIA. A 7th consolidated report (final report) summarising the finding of the individual reports was prepared in September 2016 and submitted to the World Bank and EPA. Following are the main components investigated as part of the monitoring, along with a summary of monitoring results:

- Compliance to the mitigation measures proposed: analysed through a series of field visits through qualitative (visual) and quantitative observations. The overall compliance to the mitigation measures proposed were found to be satisfactory. The wetland area has been surveyed and demarcated, while a buffer of vegetation belt has been established at the 15ha area allocated for the RWMF. Additionally, it was found that less than the proposed area for vegetation clearance was actually cleared (7.1ha was cleared, while 7.6ha was proposed in the ESIA) thereby minimising the negative impacts to terrestrial biodiversity even further. Replantation of coconut palms were also carried out.
- Shoreline survey/beach profiles: Vegetation line, low tide line (beach toe), high tideline (beach berm) was resurveyed and compared with the baseline data.

  Beach profiles were taken from 4 locations and compared with the baseline profiles taken in 2012. The results show that there is a net decrease in beach sedimentation over the surveyed period, suggesting that there is erosion at these sites.
- Reef Assessment: Underwater photography was used to conduct quantitative reef surveys in order to assess the overall condition of the reef. Monitoring surveys were performed four times on March 2014, Mach 2015, October 2015 and July 2016 and the overall results indicate that the reef is in good and healthy condition. It was found that the coral cover has increased from the ESIA baseline (2012 data) from 43% and 25% to 61% and 59% at site 1 and site 2 respectively at 3 meters depth in March 2014. Subsequent survey in October 2015 showed a slight reduction in coral cover as compared to March 2014. Coral cover increased in March 2015 with a significant reduction in cover in July 2016. The change in cover can be attributed to natural variability or construction related impacts.
- Water quality Assessment: Water quality samples were taken for marine waters and groundwater and compared with the baseline water quality conditions.
  - The groundwater samples taken for monitoring from the 3 sampling wells show that it was relatively saline and low in Dissolved Oxygen (DO) content. The period of sampling was identified as the mostly like reason for high salinity rather than excessive saltwater intrusion. However, based on the monitoring results it was deduced that the groundwater is not suitable for portable use and can only be used for non-portable use.
  - Seawater quality monitoring results show no significant difference from the ESIA baseline.
- Turtle Management Plan: Repeated surveys of the beach, especially the 15-hectare portion of the island was carried out to document any nesting activity and also to compare findings of the baseline survey. A sea turtle management plan for rehabilitating nesting turtle population and protection of eggs was prepared and annexed to the report. Implementation details are covered in section 3.1.

### Construction Phase ESIA Monitoring – First Addendum to ESIA of Vandhoo RWMF (2019 ESIA)

A detailed construction phase ESIA monitoring report under the First Addendum to the ESIA of Vandhoo RWMF (2019 ESIA) were prepared in 2021. This report covers the status of implementation at the time of report writing of activities proposed under the subject ESIA addendum, the level of implementation of mitigation measures, grievance redressal mechanism imposed, and vegetation removal and replantation details.

The following technical marine assessments were undertaken:

Component	Parameter	Monitoring location	Methodology
Reef	Coral cover (diversity)	RS1 RS2	Snorkelling around the reef and taking photo quadrants using an underwater camera at depth of 2-3m, in a belt measuring 200m by 5m, at each site.
	Fish community (abundance and trophic groups)		Fish community abundance was analysed at the family level, with the focus on estimating the presence of major fish groups and predominant species.
Seawater	Temperature; pH; Salinity Electrical conductivity; TDS; TSS; Turbidity Ammonia; Phosphate; Sulfate	SW1 SW2	Seawater quality tests were done at SW1 and SW2.
Shoreline	High tideline; Low tideline Vegetation line	Shoreline of the island	Shoreline of the island was re-surveyed using a DJI RTK drone and processed using the application software.  High tideline, low tideline and vegetation line were retaken and compared with baseline.

During the field investigations, the reef and seawater quality north of the island were monitored at RS1/SW1 and RS2/SW2 locations. An additional seawater sample was also taken from the harbour basin considering the change in the proposed brine outfall location from SW4 to harbour basin. The marine environment at RS3/SW3 and SW4 were not monitored at this stage due to that fact that none of the proposed developments have commenced at south side of the island. Seawater at SW4 will be monitored as per the monitoring schedule when the sewer outfall has been constructed.

# ANNEX 3

E&S Requirements for Bid Documents and Summary of ESIA specific to the project (summary document prepared for fuel farm project is provided as an example)

# **Environmental and Social (ES) Requirement**

## 1. Specific Requirements

### 1.1. Prior to Bidding

- The Ministry of Tourism and Environment (MoTE) will include the First Addendum to the Environmental and Social Impact Assessment Report for Upgrading of Infrastructure at Zone 2 RWMF, R. Vandhoo (addressing changes brought to the previously proposed location of fuel storage tanks and other components) in the bid document to assist the bidders to accurately cost for the implementation of the ESMP.
- A summary of the ESIA Addendum specific to the construction phase of the fuel storage tanks is enclosed with the bid document.
- The following safeguards instruments are provided in **Annex**.
  - a) Full ESIA Addendum cleared by the EPA and the World Bank. The decision statement issued by EPA is attached to the Report.
  - b) Summary of the ESIA Addendum which includes mitigation measures specific to the construction phase of the project, along with a Dhivehi translation.

### 1.2. Prior to Contract Awarding

- MoTE shall ensure that a full-fledged ESIA addendum is prepared for the project and subsequently cleared from the EPA and the World Bank.
- The cleared ESIA Addendum should form part of the contract agreement.

### 1.3. Post Contract Awarding

- The successful bidder will be responsible for adhering to all environmental and social requirements stipulated in the contractual agreement as recommended in the respective ESIA Addendum cleared by the EPA and the World Bank.
- The successful bidder shall ensure the following:
  - The ESIA Addendum is fully implemented and complied during the execution of the project.
  - b) Submit monthly monitoring reports as per the ESIA Addendum to the MoTE, which shall tie to the release of interim payments.
  - c) Designate a focal point to assume Environmental and Social Safeguards responsibilities and to laisse with the community for managing grievances. The details of this staff should be provided to MoTE and he/she must be competent in verbal and written Dhivehi and English. The site supervisor may assume the on-site responsibility of the environment and social focal point, subject to being adequately trained and having thorough knowledge of safeguards requirements.
  - d) All sites will be subject to independent supervision by MoTE during project implementation stage for adherence to the ESIA requirements.

### 2. General Requirements

### 2.1. Environmental and Social Assessment and Management Framework

In addition to site specific requirements, the Contractor is required to adhere to Environmental and Social Assessment and Management Framework (ESAMF) of the Maldives Clean Environment Project (MCEP), as well as other applicable national and international policies and laws.

The ESAMF of MCEP can be downloaded from the link below:

http://documents.worldbank.org/curated/en/137111487714352928/FINAL-MCEP-ESAMF-Exec-Summary-Clean-2-3-17-02172017.docx

### 2.2. Grievance Redress Mechanism

The contractor will be required to designate a person to deal with public grievances and the information of the person responsible needs to be provided to Employer. Log records of grievances should be maintained.

The GRM of MCEP can be downloaded from the below link

https://www.environment.gov.mv/v2/en/download/7189

Information on the project and the GRM should be displayed in the project site board, council noticed board as well as other communal place as much as possible.

#### 2.3. Labor Code of Conduct

To mitigate conflict that may arise due to the arrival of expatriate workers, the contractor in consultation with MoTE should develop a "Code of Conduct" outlining the set of rules that that the workers must follow to persevere the social norms and religious values of the society. It should also specify penalties for breaching these rules and should be thoroughly communicated to workers prior to mobilization.

The Code of Conduct should also cover good environmental governance and responsibilities workers have to follow to safeguard the environment. Though the number may be minimal, code of conduct and awareness in HIV related issues need to be considered. The contractor should ensure that all communications to the workers are presented in the local language. If expatriate workers are employed communications should be made in a language that they understand.

Sample code of conducts are provided in the ESIA Addendum.

# Summary of ESIA Addendum for the proposed construction of fuel farm and fuel tanks at R. Vandhoo

### 1. Project Description

The fuel storage tanks are to be located on the northeastern side of the island, within the area initially developed in the 15ha (Figure 1). An area of approximately 150m<sup>2</sup> has been allocated for the purpose (dimensions of the plot are given in Figure 2, Annex 1 gives large scale drawings of the design).



Figure 1. Proposed location of fuel tanks (yellow highlight), septic tank (green highlight) and road connections (red hatch). The purple hatch shows roads proposed in earlier reports

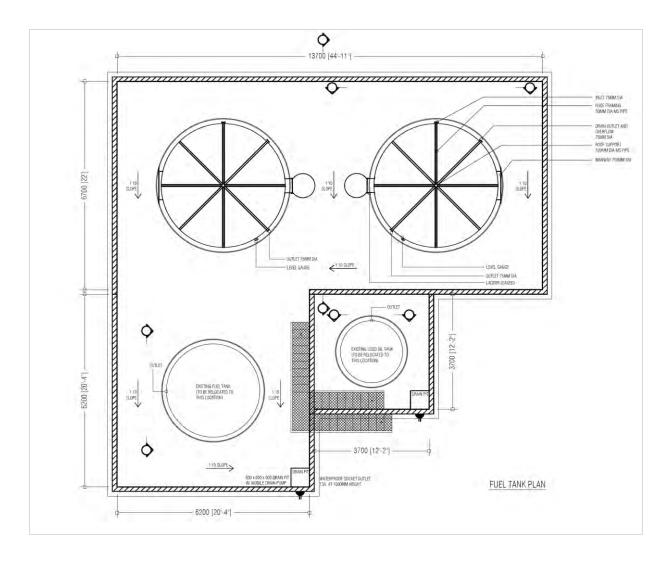


Figure 2. Fuel tank plan

It is proposed to construct 2 fuel tanks of 50m³ (4m x 4m height and width) each at the location. The existing 24m³ fuel storage tank that will be decommissioned after temporary fuel storage setup is established, will also be moved to the newly proposed storage area, hence having a total capacity of 124m³. The fuel storage tanks will be constructed with 8mm thick MS tank plate wall with 10mm thick MS plate tank base for placement on concrete foundation (200mm RC slab). The tanks have a flanged nozzle of diameter 75mm at the top as the inlet and at the bottom as the outlet. Refer to Figure 3 and the drawing in Annex 1 for the fuel tank design and location of inlet and outlet pipes of fuel transfer. The existing 8m³ used oil tank will also be decommissioned and moved to the fuel farm to be established.

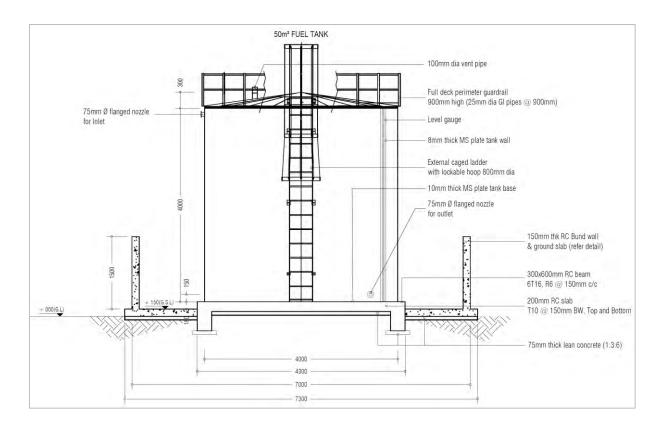


Figure 3. Fuel tank design

Pipes will be laid underground in trenches (Figure 4). The pipeline from the harbour front area to the fuel farm will be laid in Trench of depth 550mm and width 850mm. The trench has RC walls and a cover, all with a thickness of 150mm. All 4 pipelines (for diesel inlet / outlet and used oil inlet / outlet) will be laid alongside each other on a PVC pipe support slab (50 mm thick). The pipelines all have a diameter of 75mm and are 3mm thick.

The pipeline from the fuel storage area to the powerhouse will be laid on concrete support, although a segment of it close to the powerhouse will be in a 550mm deep, 600m wide trench (type C). Designs of the fuel trenches are given in Figure 5 and Annex 1.

The pipeline plan inside the fuel storage area is shown in Figure 6 (larger diagram in Annex 1), which shows that the inlet pipeline for both diesel and used oil, connect to the respective storage tanks, with the diesel inlet pipeline having 3 separate connections to the three storage tanks. From the storage tanks, a pipeline runs to the respective pump within the facility. Pipeline going out from the pumps connect to the main pipeline and continue as shown in Trench layout diagrams.

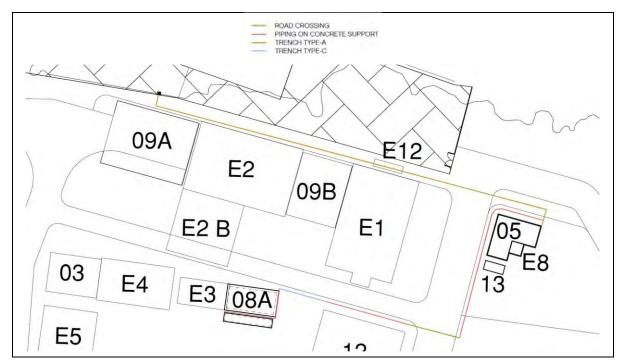


Figure 4. Fuel pipeline from harbor to fuel storage tanks and from fuel storage tanks to powerhouse

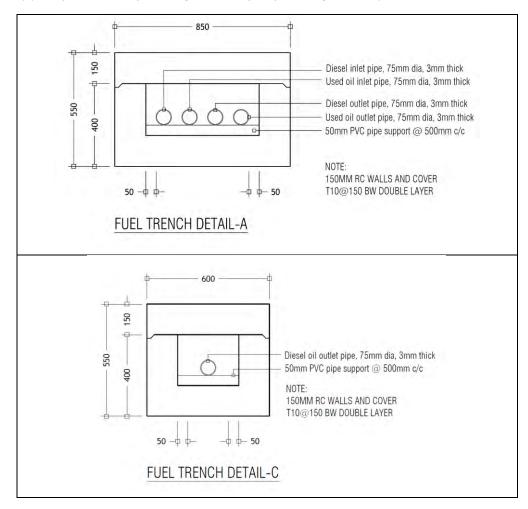


Figure 5. Trench layout diagrams (large scale diagrams given in Annex 1)

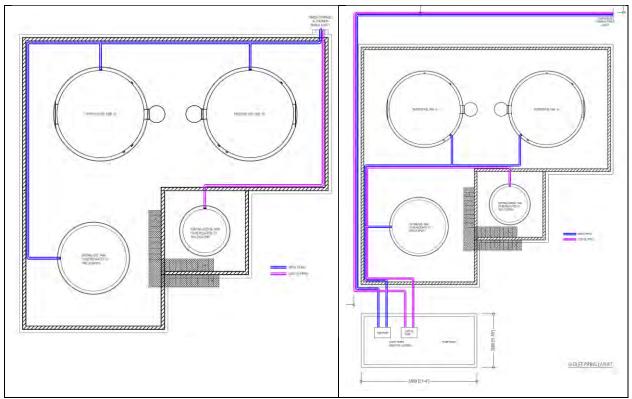


Figure 6. Piping plan inside the fuel storage area (pink: used oil pipeline, blue: diesel pipeline) (Left: Inlet piping plan, right: outlet piping plan) (large scale drawings given in Annex 1)

A 150mm thick bund wall and ground slab will first be constructed at the location proposed for fuel tank construction. The bund wall has a height of 1.5m. Once the bund wall is completed, the fuel tank (50m³ steel tanks) will be installed at the proposed location using a crane. Concrete bund wall is designed to encase any leak from the tanks; the volume encased by the bund walls will be able to hold the full volume of the storage tanks.

Although the fuel tanks are proposed to be moved to an area within the initially allocated 15ha of land on Vandhoo, the area was at the time demarcated for future use and hence not cleared. Details of vegetation present at the site and that which need to be cleared is given in Section 5.4.1 of this report. Key types of vegetation found were Coconut palms and Pandanus trees. Vegetation clearance will be undertaken with the use of excavators and wheel loaders and as per the guideline provided by PMU (given in 5). As the whole island of Vandhoo has now been handed over to MoECCT, all vegetation on the island belongs to the Ministry and hence there is no requirement for payment of compensation for any vegetation which needs to be cleared.

# 2. Material Storage Area

Construction materials can be stored at the area shown below.



Figure 7 Proposed area for material storage

## 3. Vegetation at the Project Site

The table below provides the details of vegetation present at the project site, which needs to be cleared by the contractor.

Location	Name of plant	Scientific name	Local Name	Qty (Nos.) / Area (sqm)
Proposed new location of Fuel	Pandanus tree	Pandanus tectorus/ P.zeylanicus	Boa-kashikeyo	8
storage	Coconut palm	Cocos nucifera	Dhivehi ruh	8
	Sea hibiscus	Hibiscus tiliaceus	Dhigga	7
	Country Almond	Terminalia catappa	Midhili	2



Figure 8 Areas which require vegetation clearance (the fuel farm contractor will need to clear the site only. Road clearance will be done by a s separate contractor)

The method to follow during vegetation clearance is provided in Annex 2.

# 4. Mitigation Measures for Construction Phase

Annex 3 provides the mitigation measures proposed in the ESMP for the construction phase. A Dhivehi translation is provided in Annex 4.

# ANNEX 3: Construction Phase Mitigation Measures

Table 14. Mitigation measures proposed for the project (ESMP matrix)

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
Detailed design and Planning P	Phase				
Improper design of the	Ensure detailed design takes into account	Proponent	NA	NA	
proposed fuel tank, traffic	details of the proposed layouts and all				
management plant and septic	designs are as per specifications required,				
tank system and associated	taking into account the environmental				
environmental impacts	components that may be affected.				
Coastal erosion due to removal	Vegetation buffer of 20m should be	Proponent	NA	NA	
of vegetation buffer on	maintained and road extension work				
northern side of proposed fuel	should be carried out as per selected				
farm, for road extension	Alternative in Section 8.1.1				
Pre-construction Phase					
Impact on marine and	Material should be sourced from the	Contractor	N/A	N/A	
terrestrial environment during	closest point or should be brought in bulk	(implementation)			
handling and transport of	and transported to the island.	Proponent			
construction materials	Detailed BOQ shall be made and should	(supervision)			
	be followed to reduce the waste and to				
	reduce the number of trips made to the				
	island to provide the resources				
	• Ensure all materials being transferred are				
	packed properly with no loose materials				
	Oil spills should be monitored and				
	recorded				
	Maintenance work on machinery should				
	be carried out as per a set schedule				

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
	<ul> <li>Oil spill contingency plans should be formulated prior to work commencement</li> <li>Oil spill preparedness and response plan with recovery equipment should be maintained</li> </ul>				
Impact on environment due to improper storage of materials	<ul> <li>Storage areas for construction materials should have an impermeable surface and should be covered</li> <li>Hazardous / toxic materials should be stored in appropriate containers</li> <li>Storage area should be regularly monitored for any leaks</li> <li>Storage facility should be setup within or close by to project site to minimize vehicle movements</li> </ul>	Contractor (implementation) Proponent (supervision)	N/A	N/A	
Impact on flora, fauna and groundwater due to handling of construction related materials and equipment	<ul> <li>Ensure workforce are trained and supervised to handle materials during transfer, and unloading so as to minimize accidental spills, littering etc.</li> <li>Ensure materials are properly packed and any oil/fuel is properly stored in containers used for that purpose</li> </ul>	Contractor (implementation) Proponent (supervision)	N/A	N/A	Pre- construction – site preparation phase
Sociocultural impact due to arrival of workforce	Ensure that priority is given to local companies and Maldivians when hiring contractors for the work	Contractor (implementation) Proponent (supervision)	Grievance Redress Mechanism given Section 9.4 to be enforced.		Council / MCEP PMU staff to be assigned as

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
	<ul> <li>Ensure contractor complies with Maldives national labor laws when hiring staff such as: provision of contracts to workers, complying with terms and conditions related to hours of work, wages, overtime, etc</li> <li>Ensure any expatriates in the workforce have all the required documentation and work visa and are not illegal immigrants</li> <li>Workforce should be sensitized to the social norms and acceptable behaviour of the Maldivian culture, through a training programme conducted by the Contractor. This training should also cover topics related to Gender-based violence (GBV).</li> <li>When arranging accommodations in neighboring Islands:         <ul> <li>Contractor should consult with Island Councils before arranging accommodation facilities.</li> <li>Contractor should make community aware about the project and health/safety risks management / GBV prevention measure and GRM that will be put in place.</li> </ul> </li> </ul>				focal points hence no additional cost for implementation of GRM

Contractor should identify a focal point to coordinate with Island Councils on an ongoing basis to address any labor issues.      Contractor should set up gender segregated safe accommodation/ toilet facilities     Workforce should be fully aware of the Do's and Don'ts of the Maldivian culture.      Contractor's Code of Conduct (CoC) should be developed and signed by the workers (sample Code of Conduct formulated by PMU as per World Bank standards given in Appendix 10)      Grievance Redress mechanism given in the report should be established. Information displaying contact details of the focal points (Tier 1 and Tier 2), contractor's HS supervisor and work supervisor should be displayed on the	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
project board. QR code for downloading the forms and information on GRM should be given in each of the media used  Construction Phase		point to coordinate with Island Councils on an ongoing basis to address any labor issues.  Contractor should set up gender segregated safe accommodation/ toilet facilities  Workforce should be fully aware of the Do's and Don'ts of the Maldivian culture.  Contractor's Code of Conduct (CoC) should be developed and signed by the workers (sample Code of Conduct formulated by PMU as per World Bank standards given in Appendix 10)  Grievance Redress mechanism given in the report should be established. Information displaying contact details of the focal points (Tier 1 and Tier 2), contractor's HS supervisor and work supervisor should be displayed on the project board. QR code for downloading the forms and information on GRM should be given in each of the media				

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
Vegetation clearance impacts	<ul> <li>Palms which need to be removed should be transplanted and 2 palms for every palm which needs to be cut down should be replanted (if possible on Vandhoo)</li> <li>Palms which cannot be planted at Vandhoo should be translocated to Dhuvaafaru, where a space has already been allocated for these palms at the newly reclaimed area</li> <li>Vegetation falling outside project boundary shall not be harmed in any way.</li> <li>For the larger palms which cannot be replanted at Vandhoo or taken to Dhuvaafaru, felling should be undertaken as per the guideline provided by the proponent - the branches and root bulbs are to be cut using a chainsaw and the trunks stockpiled for selling or used for construction purpose. Branches shall be cut to a manageable size while leaves should be left for sun drying. Root bulbs can be used for backfilling during construction</li> </ul>	Proponent / Contractor Island Council (Dhuvaafaru)	N/A	N/A	Transplantation work and cost should be included in construction contract
Noise pollution	Machinery should only be operated during daytime hours (6am to 6pm)	Contractor (implementation)	N/A	N/A	

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		Proponent (supervision)			
Air pollution / Dust	<ul> <li>Maintenance work on machinery should be undertaken regularly so as to reduce emissions</li> <li>Workers should be provided with masks and other required protective gear</li> <li>The worksite should be watered regularly to minimize dust (after work every day)</li> </ul>	Contractor (implementation) Proponent (supervision)	As per operational manual of machinery	N/A	Should be included in the construction contract
Impact on groundwater quality due to construction and temporary fuel storage setup	<ul> <li>Ensure the temporary fuel storage setup is functional with the proper bunds in place and properly sealed containers</li> <li>Oil spill contingency plans should be formulated prior to work commencement</li> <li>Oil spill preparedness and response plan with recovery equipment should be maintained</li> <li>MNDF's fuel handling procedure should be followed</li> </ul>	Contractor (implementation) Proponent (supervision)	N/A	N/A	
Impact on health and safety of workforce	Occupational Health and Safety measures  Contractor shall comply with the requirements for safety of the workers as per the national laws and regulations relevant to labour and working conditions (to the extent that those are applicable to this contract).	Contractor / (implementation) Proponent (supervision)	Contractor to provide Health and Safety Plan	N/A	Should be included in the construction contract

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
	<ul> <li>Ensure workers are well briefed on the health and safety measures to be followed during the project. Basic onsite safety training should be conducted for all laborers during the EMP training prior to the start of the construction activities.</li> <li>Ensure work force are given all the appropriate safety equipment and gear required for the work (safety hats, boots, glasses, masks and gloves). In addition, the contractor shall maintain in stock at the site office, gloves, earmuffs, goggles, dust masks, safety harness and any other equipment considered necessary.</li> <li>PPE requirement board should be displayed at site. The boards should show which PPE is required by the workers when carrying out different tasks of the construction work</li> <li>Minimal use of manual lifting must be practiced.</li> <li>Ensure set up of easy access toilets, wash basins at the site, either through rental from nearby area or installation of a portable toilet.</li> </ul>				

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
	<ul> <li>Ensure provision of regular meals breaks, potable water supply on site and an onsite resting area for the workers, where they can rest during the breaks</li> <li>Ensure provision of first aid kit on site and ensure readily available transfer in instances of emergency use. Signage providing instructions on first aid management, emergency contact and emergency operational procedures in local languages should be prominently displayed at the site</li> <li>Ensure workforce are accommodated in appropriate quarters where they are not cramped.</li> <li>All staff handling hazardous materials should be given the proper protective gear (protective eye gear, protective gloves)</li> <li>The site supervisor shall undertake toolbox talks prior to commencement of daily work, where the workers should be briefed / reminded about the health and safety requirements and COVID19 measures.</li> </ul>				

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
	During paving work: Dermal exposure should be prevented Facial masks (to cover mouth and nose) and eye protection gear should be used The application temperature of heated asphalt should be kept as low as possible Engineering controls and good work practices should be used at all work sites to minimize worker exposure to asphalt fumes				
	<ul> <li>COVID 19 related preventative measures</li> <li>Ensure that there is set number of workers in each room so as to allow social distancing</li> <li>Ensure that workforce follows all HPA guidelines at all times, with respect to COVID 19 pandemic.</li> <li>Measures should be in place to undertake daily temperature checks of workforce and enable social distancing at the accommodation facilities and work site</li> </ul>				

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
Impact on health and safety of	Regular toolbox talks should be carried out on prevention measures specific to COVID 19     Shift rosters for workforce should be implemented     Ensure workforce have completed vaccination dose  Project areas should be clearly	Contractor	N/A	N/A	Should be
other personnel at Vandhoo RWMF	<ul> <li>Project areas should be clearly demarcated</li> <li>Ensure that non-contractor staff do not have access to the project site and appropriate signs are put up at the required areas</li> <li>Grievance Redress mechanism given in the report should be established. Information displaying contact details of the focal points (Tier 1 and Tier 2), contractor's HS supervisor and work supervisor should be displayed on the project board. QR code for downloading the forms and information on GRM should be given in each of the media used.</li> </ul>	(implementation) Proponent (supervision)	IN/A	N/A	included in the project cost
Fire safety	Ensure construction workforce are trained in firefighting so as to address any fire hazards promptly	Contractor (implementation)	Firefighting equipment at Vandhoo RWMF to be setup as per that	Should be included in	

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
	A portable fire extinguisher should be	Proponent	identified in Riyan Pvt	the project	
	used at the site.	(supervision)	Ltd. 2021	cost	
	A fire hydrant / water point should be installation at the work site				
Waste Management During	Construction waste should be segregated	Contractor /	N/A	N/A	Should be
Construction Phase	on site and then disposed off at the	Island Proponent			included in the
	facility according to the current practice.	(supervision)			project cost

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
Marine environment contamination due to release of sewage	<ul> <li>The outfall should be constructed beyond the reef edge at the required depth (15m)</li> <li>Ensure that the wastewater is treated at the primary level through a septic tank prior to releasing to the lagoon.</li> <li>Ensure that sludge is removed and only effluents pass to the network.</li> <li>Ensure outfall pipes are intact and in place with rigid anchoring.</li> <li>Water quality at the outfall areas should be monitored and checked for optimal range of parameters</li> <li>Monitor reef health at outfall site as per monitoring programme</li> <li>Provision for future connection to the full sewer network proposed in the First Addendum (ESIA 2019) should be made when designing the network. The full sewer network should ensure secondary treatment of wastewater prior to releasing via outfall. The full sewer network shall be developed if additional accommodation blocks as proposed in the First Addendum (ESIA 2019) are considered</li> </ul>	Waste Facility Operator (implementation)	N/A	N/A	Should be included in the project cost

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
Health and safety of workforce, especially fuel farm operators	<ul> <li>Proper and complete training should be provided to operators (in all aspects of operations)</li> <li>All required PPE should be provided to the staff</li> </ul>	Waste Facility Operator (implementation)	N/A	N/A	Should be included in the project cost
Socio-cultural conflicts	<ul> <li>Ensure locals are hired (especially from nearby island communities) in the instance additional staff are required for operations</li> <li>Operator should set up gender segregated safe accommodation/ toilet facilities</li> <li>Grievance Redress mechanism given in the report should be established.         Information displaying contact details of the focal points (Tier 1 and Tier 2), WAMCO's HS supervisor and work supervisor should be displayed on the project board. QR code for downloading the forms and information on GRM should be given in each of the media used.     </li> <li>Ensure that staff contracts reflect SH and GBV clauses OR code of conducts are signed by staff</li> </ul>	Waste Facility Operator (implementation)	Costs associated with the contract	Not known	Should be included in project cost

Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
Workplace safety	<ul> <li>All required sign boards as per the Waste Management regulation should be set up around the site</li> <li>Ensure all firefighting equipment required for the facility are in place and in good condition</li> <li>All required protective gears should be provided to the workers.</li> <li>PPE requirement board should be displayed at site. The boards should show which PPE is required by the workers when carrying out different tasks of the construction work</li> <li>Ensure provision of a first aid kit on site so as to attend to any medical emergencies immediately.</li> <li>Open wounds should be covered to prevent contact with the incoming loads</li> <li>Emergency response plan and Health and Safety SOPs should be developed and implemented.</li> <li>Ensure that a certified Occupational Health and Safety specialist and a first aid provider is present in the RWMF at all times.</li> </ul>	Waste Facility Operator (implementation)	Fire safety equipment to be installed as identified in Riyan Pvt Ltd (2021)	N/A	Should be include in project cost

Health and Safety should be covered in daily toolbox talks.      Ensure that transport to a nearby heath	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
care provider is readily available at all times, to immediately address more serious incidents requiring critical medical attention.  • Regardless of the size or type of vehicle, operators should implement the manufacturer recommended engine maintenance programs  • Drivers should be instructed on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured acceleration and driving within safe speed		<ul> <li>daily toolbox talks.</li> <li>Ensure that transport to a nearby heath care provider is readily available at all times, to immediately address more serious incidents requiring critical medical attention.</li> <li>Regardless of the size or type of vehicle, operators should implement the manufacturer recommended engine maintenance programs</li> <li>Drivers should be instructed on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured</li> </ul>				

# ANNEX 4

Premobilisation Document Set (Example – fuel farm)

H. Tedral, 3B, Lonuziyaarai Magu 20052, Male', Maldives

## R. Vandhoo Fuel Storage Construction Works Project Staff List

#	Staff Name	Designation	Nationality	ID / WP No	Passport No	Age	WP Valid Date
1	Ahmed Siraj	Managing Director	Maldivian			55	
2	Mohamed Jubair	Director	Maldivian			47	
3	Abdulla Siraj	Project Manager	Maldivian			48	
4	Faruhad Aboobakru	Site Manager	Maldivian			46	
5	Senthilkumar Mani	Civil Engineer	Indian			26	6-Mar-24
6	Brijesh	Welder	Indian			21	2-Feb-24
7	Kanhaiya Kumar Bharti	Welder	Indian			21	14-Feb-24
8	Naresh	Labourer	Indian			23	10-Feb-24
9	Sahvan	Labourer	Indian			37	10-Feb-24
10	Rajender	Labourer	Indian			33	10-Feb-24
11	Rajbabu	Labourer	Indian			25	10-Feb-24
12	Mukesh Sahani	Labourer	Indian			28	10-Feb-24
13	Rahmatullah Ansari	Mason	Indian			32	23-Jun-24

Company Registration No.: C-136/2005 H. Tedral, 2nd Floor, 2B, Lonuziyaarai Magu Phone: 9996999, 9969600 Email: dhivehicompany@yahoo.com

20052, Male', Maldives

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## Company Code of Conduct Implementing ESHS and OHS Standards Preventing Gender Based Violence

The company is committed to ensuring that the project is implemented in such a way which minimizes any negative impacts on the local environment, communities, and its workers. This will be done by respecting the environmental, social, health and safety (ESHS) standards, and ensuring appropriate occupational health and safety (OHS) standards are met. The company is also committed to creating and maintaining an environment where children under the age of 18 will be protected, and where Sexual Exploitation and Abuse (SEA) and sexual harassment have no place. Improper actions towards children, SEA and sexual harassment are acts of Gender Based Violence (GBV) and as such will not be tolerated by any employee, sub-contractors, supplier, associate, or representative of the company.

Therefore, to ensure that all those engaged in the project are aware of this commitment, the company commits to the following core principles and minimum standards of behavior that will apply to all company employees, associates, and representatives, including sub-contractors and suppliers, without exception:

## General

- 1. The company—and therefore all employees, associates, representatives, sub-contractors and suppliers—commits to complying with all relevant national laws, rules and regulations.
- 2. The company commits to full implementing the "Construction Phase Mitigation Measures" given in the "First Addendum to Environmental and Social Impact Assessment (ESIA) for the Upgrading of Infrastructure at the Regional Waste Management Facility Zone 2, Raa, Vandhoo" (2022) which forms part of the contract. Hereafter referred to as ESIA.
- 3. The company commits to fully implement the turtle management plan of the ESIA.
- 4. The company commits to treating women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Acts of GBV are in violation of this commitment.
- 5. The company shall ensure that interactions with local community members are done with respect and non-discrimination.
- 6. Demeaning, threatening, harassing, abusive, culturally inappropriate, or sexually provocative language and behavior are prohibited among all company employees, associates, and its representatives, including sub-contractors and suppliers.
- 7. The company will follow all reasonable work instructions (including regarding environmental and social norms).
- 8. The company will protect and ensure proper use of property (for example, to prohibit theft, carelessness or waste).



## **Health and Safety**

- 9. The company will ensure that the project's OHS Management Plan is effectively implemented by company's staff, as well as sub-contractors and suppliers.
- 10. The company will ensure that all persons on-site wear prescribed and appropriate personal protective equipment, preventing avoidable accidents, and reporting conditions or practices that pose a safety hazard or threaten the environment.
- 11. The company will prohibit the use of alcohol, narcotics or other substances which can impair faculties at all times.
- 12. The company will ensure that project's grievance redress mechanism is implemented.
- 13. The company will not hire children under the age of 18 for construction work, or allow them on the work site, due to the hazardous nature of construction sites.
- 14. The company will ensure that adequate sanitation facilities are available on site and at any worker accommodations provided to those working on the project.

## **Gender Based Violence**

- 15. Acts of GBV constitute gross misconduct and are therefore grounds for sanctions, which may include penalties and/or termination of employment and, if appropriate, referral to the Police for further action.
- 16. All forms of GBV, are unacceptable, regardless of whether they take place on the work site, the work site surroundings, at worker's camps or within the local community.
- 17. Sexual harassment of work personnel and staff (e.g. making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature) are acts of GBV and are prohibited.
- 18. Sexual favors (e.g. making promises of favorable treatment such as promotions, threats of unfavorable treatment such as losing a job, payments in kind or in cash dependent on sexual acts) and any form of humiliating, degrading or exploitative behavior are prohibited.
- 19. The use of prostitution in any form at any time is strictly prohibited.
- 20. Sexual contact or activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.
- 21. Unless there is full consent<sup>1</sup> by all parties involved in the sexual act, sexual interactions between the company's employees (at any level) and members of the communities surrounding the work place are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex (including prostitution). Such sexual activity is considered "non-consensual" within the scope of this Code.
- 22. In addition to company sanctions, legal prosecution of those who commit acts of GBV will be pursued if appropriate.
- 23. All employees, including volunteers and sub-contractors are highly encouraged to report suspected or actual acts of GBV by a fellow worker, whether in the same company or not. Reports must be made in accordance with project's GBV Allegation Procedures.
- 24. Managers are required to report and act to address suspected or actual acts of GBV as they have a responsibility to uphold company commitments and hold their direct reports responsible.

## **Implementation**

To ensure that the above principles are implemented effectively the company commits to:

- 25. Ensuring that all managers sign the project's 'Manager's Code of Conduct' detailing their responsibilities for implementing the company's commitments and enforcing the responsibilities in the 'Individual Code of Conduct'.
- 26. Ensuring that all employees sign the project's 'Individual Code of Conduct' confirming their agreement to comply with ESHS and OHS standards, and not to engage in activities resulting in GBV, child endangerment or abuse, or sexual harassment.
- 27. Displaying the Company and Individual Codes of Conduct prominently and in clear view at workers' camps, offices, and in in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas and health clinics.
- 28. Ensuring that posted and distributed copies of the Company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
- 29. Ensuring that an appropriate person is nominated as the company's 'Focal Point' for addressing ESHS, OHS and GBV issues.
- 30. Ensuring that all employees are properly brief and that they are familiar with the company's commitments to ESHS and OHS standards, and the project's GBV Codes of Conduct.

## Sanction

In case of a major breach of this Code of Conduct, the client is entitled to take disciplinary action against the company (as per the contract) which could include:

- 31. Informal warning.
- 32. Formal warning.
- 33. Withholding of payments.
- 34. Deduction from retention payment.
- 35. Termination of contract.
- 36. Report to the Police if warranted.

I do hereby acknowledge that I have read the foregoing Company Code of Conduct, and on behalf of the company agree to comply with the standards contained therein. I understand my role and responsibilities to support the project's OHS and ESHS standards, and to prevent and respond to GBV. I understand that any action inconsistent with this Company Code of Conduct or failure to act mandated by this Company Code of Conduct may result in disciplinary action.

Signature:

Printed Name:

ID or PP No:

Date:

Company name: Dhivehi Company Private Limited



## **Certificate of Expatriate Medical Insurance**

THE COMPANY, hereby agree, in consideration of payment to us or on behalf of the Assured of the premium specified in the Schedule, to insure against loss, damage, liability or expense in the manner as shown in the Schedule and on the reverse hereof.

## Schedule

**Certificate No: Policy No: Endorsement No:** Date:

**Period of Insurance:** 

ID/Reg No: **Insured Name: Postal Address:** 



#	Beneficiary Name	Gender	Date of Birth	Passport Number	Nationality
#1	Rahmatullah Ansari	male	1991-10-10		Indian

## 1. Outpatient Benefits up to MVR 2,000.00

## 2. Inpatient Benefits up to MVR 100,000.00

- Pre-existing conditions covered
- Repatriation cost of mortal remains to home country from Maldives or burial cost within Maldives

## 1. Outpatient Expenses

- Government medical centres: Co-pay 5%
- Non-Government medical centres: Co-pay 15%

## 2. Inpatient Expenses

- Government medical centres: Co-pay 0%
- Non-Government medical centres: Co-pay 15%

Policy Currency:	MVR
Exchange Rate:	1.00

MVR 100,000.00 (Maldivian Rufiya One Hundred Thousand only) **Total Limit of Indemnity:** 

**Total Premium:** MVR 800.00 (Maldivian Rufiya Eight Hundred only)

> For and on behalf of Dhivehi Insurance Company Pvt Ltd

medley

Company Registration No.: C-136/2005 H. Tedral, 2nd Floor, 2B, Lonuziyaarai Magu Phone: 9996999, 9969600 Email: dhivehicompany@yahoo.com 20052, Male', Maldives

# Individual Code of Conduct Implementing ESHS and OHS Standards Preventing Gender Based Violence

I, **Rahmatullah Ansari**, acknowledge that adhering to environmental, social, health and safety (ESHS) standards, following the project's occupational health and safety (OHS) requirements, and preventing Gender Based Violence (GBV) is important.

The Company considers that failure to follow ESHS and OHS standards, or to partake in activities constituting GBV—be it on the work site, the work site surroundings, at workers' camps, or the surrounding communities—constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. Prosecution by the Police of those who commit GBV may be pursued if appropriate.

I agree that while working on the project I will:

- 1. Consent to Police background check.
- 2. Attend and actively partake in training courses related to ESHS, OHS, and GBV as requested by my employer.
- 3. Will wear my personal protective equipment (PPE) at all times when at the work site or engaged in project related activities.
- 4. Take all practical steps to implement the "Construction Phase Mitigation Measures" given in the "First Addendum to Environmental and Social Impact Assessment for the Upgrading of Infrastructure at the Regional Waste Management Facility Zone 2, Raa, Vandhoo (2022)" referred to as ESIA here after.
- 5. Implement the OHS Management Plan as per the ESIA.
- 6. Implement the Turtle Management Plan as per the ESIA.
- Refrain from the use of alcohol, narcotics or other substances which can impair faculties at all times.
- 8. Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- 9. Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- 10. Not sexually exploit or abuse project beneficiaries and members of the surrounding communities.
- 11. Not engage in sexual harassment of work personnel and staff —for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature is prohibited. E.g. looking somebody up and down; kissing, howling or smacking sounds; hanging around somebody; whistling and catcalls; in some instances, giving personal gifts.
- 12. Not engage in sexual favors —for instance, making promises of favorable treatment (e.g. promotion), threats of unfavorable treatment (e.g. loss of job) or payments in kind or in cash, dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior.
- 13. Not use prostitution in any form at any time.

Company Registration No.: C-136/2005 H. Tedral, 2nd Floor, 2B, Lonuziyaarai Magu Phone: 9996999, 9969600 Email: dhivehicompany@yahoo.com 20052, Male', Maldives

14. Not participate in sexual contact or activity with children under the age of 18—including grooming, or contact through digital media. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.

15. Unless there is the full consent¹ by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex (including prostitution). Such sexual activity is considered "non-consensual" within the scope of this Code.

16. Consider reporting through the GRM or to my manager any suspected or actual GBV by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.

## With regard to children under the age of 18:

- 17. Bring to the attention of my manager the presence of any children on the construction site orengaged in hazardous activities.
- 18. Wherever possible, ensure that another adult is present when working in the proximity of children.
- 19. Not invite unaccompanied children unrelated to my family into my home, unless they are at immediate risk of injury or in physical danger.
- 20. Not use any computers, mobile phones, video and digital cameras or any other medium to exploit or harass children or to access child pornography (see also "Use of children's images for work related purposes" below).
- 21. Refrain from physical punishment or discipline of children.
- 22. Refrain from hiring children for domestic or other labor below the minimum age of 14 unless national law specifies a higher age, or which places them at significant risk of injury.
- 23. Comply with all relevant local legislation, including labor laws in relation to child labor and World Bank's safeguard policies on child labor and minimum age.
- 24. Take appropriate caution when photographing or filming children (See Annex 2 for details).

## Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- 25. Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
- 26. Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.
- 27. Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- 28. Ensure images are honest representations of the context and the facts.
- 29. Ensure file labels do not reveal identifying information about a child when sending images electronically.

Company Registration No.: C-136/2005 H. Tedral, 2nd Floor, 2B, Lonuziyaarai Magu

Phone: 9996999, 9969600

Email: dhivehicompany@yahoo.com

20052, Male', Maldives

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## Sanctions

I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include:

- 30. Informal warning.
- 31. Formal warning.
- 32. Additional Training.
- 33. Loss of up to one week's salary.
- 34. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
- 35. Termination of employment.
- 36. Report to the Police if warranted.

I understand that it is my responsibility to ensure that the environmental, social, health and safety standards are met. That I will adhere to the occupational health and safety management plan. That I will avoid actions or behaviors that could be construed as GBV. Any such actions will be a breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS, GBV issues. I understand that any action inconsistent with this Individual Code of Conduct or failure to act mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature:
Printed Name:
ID or PP No:
Date:

# ANNEX 5

**E&S Reporting Template for Contractors** 

## **ESIA Reporting Templates**

## Infrastructure Upgrading at R. Vandhoo RWMF

C 1			
Cont	racto	)r:	 

The contactor must ensure that the mitigation measures proposed in the ESIA are fully implemented and the Ministry/PMU should closely monitor the project activities to ensure that the contractor adheres to these requirements.

## 1. PRECONSTRUCTION / PREPARATORY PHASE

## **ACTIONS NEEDED PRIOR TO MOBILIZATION**

The contractor should appoint a health and safety (HS) supervisor and a work supervisor. The work supervisor and the HS supervisor can be the same staff tasked to perform these two functions. Undertaking daily HS toolbox talks to the project team and ensuring compliance to the ESMP are their responsibilities.

The complete LIST OF PROJECT TEAM (using the template provided in **Form 1**) should be provided along with the following supporting documents prior to site mobilization.

- Copies of National Identification Cards of local staff.
- Copies of Passport and Work Permits of expatriate staff.
- Health Insurance copies of expatriate staff.
- Signed Company Code of Conduct (refer to the sample provided in the ESIA).
- Individual Code of Conduct signed by all the project staff (refer to sample provided in the ESIA)

The information presented in this section must be provided to the Ministry/PMU prior to mobilization. The contractor should not mobilize to the site or travel to the project island until Ministry/PMU reviews and provide approval to the project team.

## 2. CONSTUCTION PHASE

## **GRIEVANCE REDRESS MECHANISM**

Project site boards should contain contact details of the work supervisor, health and safety supervisor and the project manager overseeing the project from the contractor's head office, which should be first lines of contact to submit a complaint. Log records of all grievances received should be maintained, which shall include the following:

- Date of Receiving the Complaint
- Details of who received the Complaint: Name, Designation, Company
- Details of the Aggrieved Party: Name, Address, Contact Number or Email

- Details of the Complaint
- Status: Resolved or Unresolved
- How it was resolved or why it is unresolved

In addition to this, the contact details of WAMCO and PMU focal points should be included, as they will be the second lines of contact. The contractor should display the project board at the project site.

A template that can be used to record grievances are provided in Form 2.

## IMPLEMENTATION OF CONSTRUCTION PHASE MITIGATION MEASURES

The contractor is required to implement the construction phase mitigation measures presented in the ESIA. Monthly ESIA implementation reports shall be submitted to the Ministry/PMU using the template provided in Form 3.

The Ministry/PMU will ensure that the contractor had submitted the monitoring reports in a timely manner prior to processing payment claims made by the contractor. The Ministry/PMU has the right to withhold a part or the full amount of the retention payment to compensate for any damage caused by the contractor to the environment.

## FORM 1: PROJECT TEAM INFORMATION

Cont	ractor:					
#	Staff Name	Role	Nationality	ID Card / Work Permit No	Age	Health Insurance
1		Work Supervisor				
2		Health and Safety				
		Supervisor				
3						
_						

Note: This form shall be completed and submitted along with copies of National Identification Cards / Passports and Work Permits of the project team prior to mobilization to the site. The contractor should only proceed with mobilization after attaining approval in writing from the Ministry/PMU for the project team.

## **Details of the Respondent**

**Project Title:** 

Name:
Designation:
Signature:
Company Seal:

Date:

## **FORM 2: FORMAT FOR GRM**

	Contractor:						
#	Date of Receiving the Complaint	Details of who received the Complaint (Name, Designation and Company)	Details of Aggrieved Party (Name, Address)	Contact Details of Aggrieved Party (Phone, Email)	Details of Complaint	Status (Resolved / Unresolved with date)	How it was Resolved or Why it is unresolved
Ex	2 May 2020	Ahmed Mohamed, Work Supervisor,	Ahmed Shafiu, Vaijeheyge, R. Maakurathu	P: 788888 E: shafiu@gmail.com	Regarding the workers moving around the island without any purpose	Resolved on 10 May 2020	The workers who were doing this was identified and given advised not to do this anymore. The aggrieved party was informed via phone.
1							
2							
3							
4							
5							
6							

Note: Any grievances received to the contractor from the public along with details of actions taken should be recorded using this form. The Ministry should be regularly updated regarding the progress of resolving the grievances.

## **Details of the Respondent**

**Project Title:** 

Name:
Designation:
Signature:
Company Seal:

Date:

# FORM 3: MONTHLY ESIA MONITORING REPORT TEMPLATE (CONSTRUCTION PHASE)

Project Title:	Report No:
Contractor:	Date:

Activity	No.	Potential impacts	Mitigation Measures	Location/ Time frame	Status (√/X)	Comments
CONSTRUCTION	N PHA	SE				
Maintenance and refueling of project support vehicles	PC3	Accidental spills of hydrocarbon on and under the island associated with motorized support-vehicles	Construct concrete line maintenance areas with capacity to collect and use-recycle used hydrocarbons. Ensure proper maintenance of machinery, appropriate workshop facilities, appropriate handling of all waste (store in a safe place for later removal / incineration in the incinerator).	Maintenance areas/ Prior, during and after construction phase		
Construction activities	EO4 EO5	Air pollution and noise impacts	Avoid unnecessary operation of machinery and equipment. Limit use of heavy machinery to project site only. Regular maintenance of machinery	Whole islands/ during construction phase		
Clearing of vegetation in the project area and guest accommodation	BE5	Vegetation removed from most of the site	Erosion and dust control devices in place prior to construction. Ensure protection of the vegetation buffer zone along the coast (50 m wide) and around the wetland. The buffer should be 70 m in the area where the wetland is found.	RWMF site/ During construction		
Overall construction and operation of the project	BE6	Changes in turtle nesting patterns due to changes in beach areas due to construction, noise and lights	Document the relative importance of the beaches as nesting areas for each turtle species, if considered important, take measures such as infrared lights at night, turtle protection measures. No trespassing signs shall be enacted at the turtle conservation area and the area should not be disturbed by any means. Any exploitation, if reported shall be punished.  Construction equipment must not be allowed to operate on the beach,	Turtle conservation area		

		remove sand from the beach, or in any way degrade nesting habitat.  Ensure that no beach lights are erected on the beach.  Implement, enforce, evaluate lighting regulations or other lighting control measures where appropriate - Shielding of the light source, screening with vegetation, placing lights at lowered elevations and in some cases the use of limited spectrum low wavelength lighting (e.g. low-pressure sodium vapor lights) are possible solutions to beach lighting problems.  Ensure that structures do not block the turtle's access to the beach, change beach dynamics, or encourage human activities that might interfere with the nesting process.  Ensure that vehicular driving on nesting beaches are prohibited.  Reduce directed take of turtles and harvesting turtle eggs through conducting public education and information sessions to the staffs.  Ensure protection of the vegetation buffer zone along the coast (50 m wide).		
Road traffic	Risk of accidents as construction works and current operational works will happen simultaneously	Enact traffic signage on the roads where lanes cross over. Set the speed limit at 25 km/hour. Assign different lanes for construction vehicles and operational vehicles. Construction areas should be fenced out to operational staff with proper safety signage. Prior to commencement of construction works, proper onsite traffic	Construction site/ During construction phase	

Material transfer	Ocean pollution	management plan shall be prepared and staff on site shall be briefed on its content.  Ensure any construction material does not make its way into the ocean. Keep the material properly and securely stocked on the supply vessel/barge.	Ocean transfer route/ During construction
Influx of laborers (especially foreign) for construction activities to neighboring islands Rasmaadhoo and Innamaadhoo	Social issues	Allocate a staff/ HR manager on each island.  Brief the foreigners about the Maldivian culture.  Encourage hire of local construction workers from the islands.	During construction
Dust generated during construction	Worker's health may be affected		Site specific
Noise from machinery / construction	Worker's health may be affected	Workers should have protective gear including earmuffs.	Site specific
Work accidents	Worker's health may be affected	Establish and enforce appropriate safety rules and work routines and compulsory use of safety equipment (helmets, protective wear). First aid kit accessible on site, routines for emergencies established and known to all.	Site specific

Note: Attach supporting photographs in an additional sheet.

## **Details of the Respondent**

Name:
Designation:
Signature:
Company Seal:

# Construction Accommodation Building at Nothern RWMF, R. Vandhoo Vegetation Clearance Details

## 1. Estimated Quantity and Type of Vegetation

The table below provides the estimated types and quantities of vegetation transecting the area allocated for the development of the fuel farm in R. Vandhoo. The data is extracted from ESIA Addendum 2022.

Location	Name of plant	Scientific name	Local Name	Qty (Nos.) / Area (sqm)
Proposed new location of Fuel	Pandanus tree	Pandanus tectorus/ P.zeylanicus	Boa-kashikeyo	8
storage	Coconut palm	Cocos nucifera	Dhivehi ruh	8
	Sea hibiscus	Hibiscus tiliaceus	Dhigga	7
	Country Almond	Terminalia catappa	Midhili	2



Figure 1 Area which require vegetation clearance

## 2. Demarcation of Boundary

Only the vegetation that falls in the footprint of the infrastructure shall be removed. Vegetation falling outside the boundary shall not be removed in any circumstance.

## 3. Relocation of Palms

Coconut palms below 20ft in length shall be carefully removed, with minimal root disturbances and replanted at Vandhoo or at a nearby islands. Potential islands identified for replantation are Dhuvaafaru, Eydhafushi and Thulhaadhoo. The root ball shall be burlapped and the leaves should be tied in a bundle, and then transported and stacked at the harbor area, where it will be transported out of the island in landing crafts.

Further information on method for relocation is provided below.

## Trees for relocation

Trees identified for re-location shall be removed with extreme care as palms are not very tolerant of extreme root disturbances. According to literature, for palms less than fifteen feet in height, a root ball of shovel-width radius from the trunk is a common industry average for size of root ball that needs to be carefully extracted. This would provide for adequate root survival chance once the tree is replanted elsewhere (Broschat & Meerow, 1997).

Soils that cling to the root ball are the most amenable to mechanized harvest. Prior to digging, the soil around the root system will be thoroughly wetted to help keep the root ball together. Palms grown on sandy soils will usually need to have their root balls burlapped after digging, while palms grown on soils with greater structural integrity may not require burlapping. Excess sand shall be removed prior to burlapping. However, since trees will be stacked for some time before being transported to replanting site, it is recommended to burlap all palm trees removed for relocation. A supporting splint will be required to tie each trunk and this will extend up to the foliage to protect the bud.

The greatest loss of water in newly dug palms occurs from transpiration through the leaves. To minimize this, one half or more of the older leaves will be removed at the time of digging. The remaining leaves will be tied together in a bundle around the bud with a twine.

Once the palm tree is carefully extracted it will be transported and stacked at the harbour area, where it will be transported out of the island by concerned parties. The root ball cavity will be filled and levelled. Sand shall be used as a fill material for the root cavities before levelling. (See Figure 8 for an illustration of uprooting method)

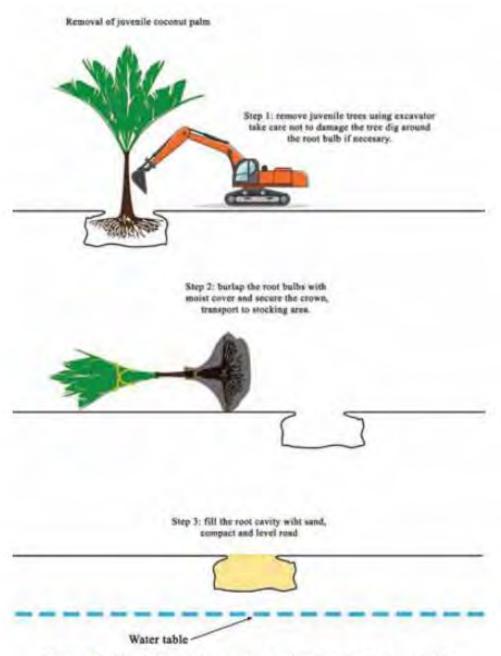


Figure 8: Illustration of uprooting palm trees for re-plantation

## 4. Felling of palms and Mature Trees

Coconut palms above 20ft in length and mature trees found at the site shall be felled and stocked in Vandhoo to be sold as timber or firewood. The branches and root bulbs should be cut using a chainsaw and the trunks stockpiled for selling or used for construction purpose. Branches shall be cut to a manageable size while leaves should be left for sun drying. Root bulbs can be used for backfilling during construction.

## Trees for timber

All fronds and root bulb and base of the trunk of the tree that is felled for timber or firewood shall be cut using a chainsaw and only trunk will be transported to the stockpiling area to be sold. Parts of the root bulb will be used for backfilling of the depression created (See Figure 9 for illustration of removal method). The use of root bulbs for backfilling or grinding the stump of the root bulb will minimise waste generated during site clearance, maintain original soil conditions as well as minimise additional sand needed for filling. All fronds and nuts will be removed from the terminal bulb and piled up separately. Nuts will be sold and fronds will be left to dry and eventually burned. All residual waste shall be disposed of as described in Section 2.3.16.

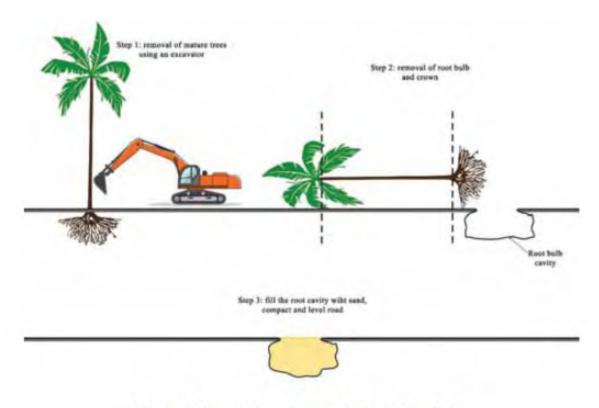


Figure 9: Illustration of removal of trees for timber

## **VEGETATION REMOVAL FORM**

## R. Vandhoo RWMF

Date	Type of Vegetation	Estimated Size (m/ft)	Disposal Method (Translocation / Removal)

Note: Maintain records of any major vegetation that has to be removed (other than shrubs). In addition to shrubs, only intersecting large palms (more than 20ft in height) and other types of trees can be removed. Palms less that 20ft in height are required to be translocated as per the EIA. Large Banyan Trees or any other protected tree shall not be removed.

Attach supporting photographs in an additional sheet.

<u>Details of the Respondent</u>			
Name:			
Designation:			
Office:			
Signature:			

## ANNEX 6

**Replantation Photos** 













# ANNEX 7

Fire System Detailed Design (MNDF approved)

Detailed design for fire protection system in R.Vandhoo and Supervision at regional waste management facility

FIRE PROTECTION DRAWINGS

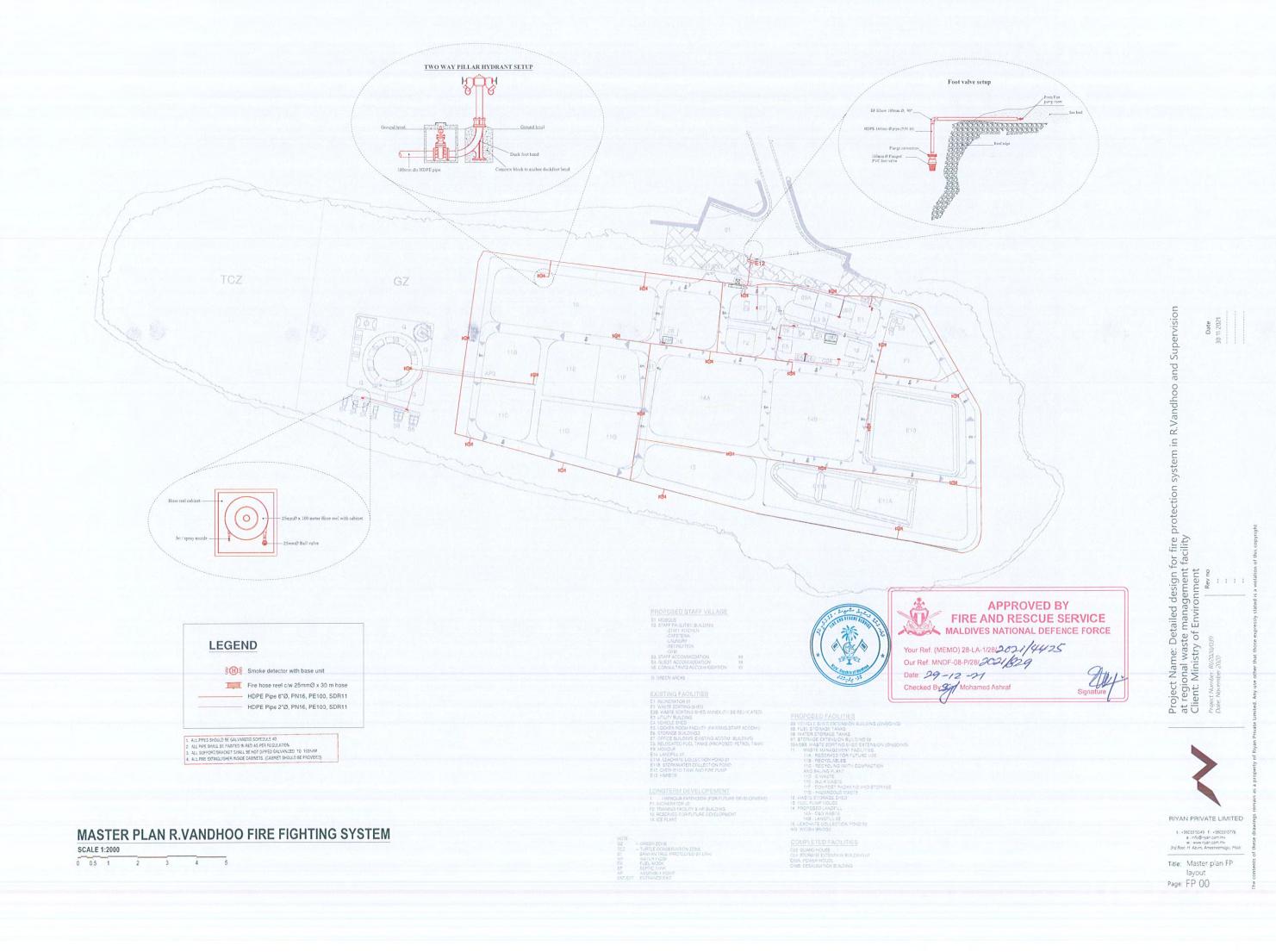
Client: Ministry of Environment

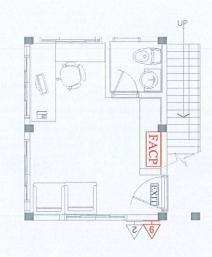


RIYAN PRIVAT

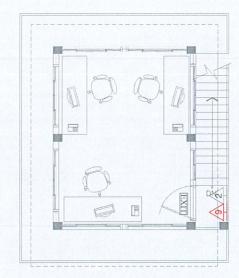
e : info@riyan com mv w : www.riyan com mv 3rd floor, H. Azum, Ameeneemagu, Male'

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**GROUND FLOOR** 



FIRST FLOOR



1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.

2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387 ,LOW SMOKE (FRLS), CWZ TYPE.
AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.





Your Ref: (MEMO) 28-LA-1/28/2021/4425 Our Ref. MNDF-08-P/28/2021/829

Date: 29 -/2 -> Checked By: Mohamed Ashraf

Signature

>

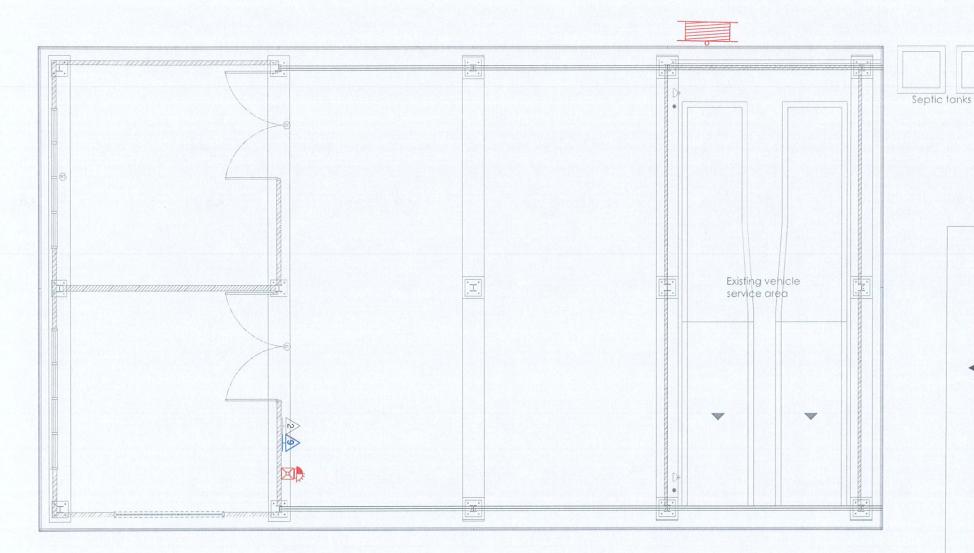
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Title: Security Shed FP layout
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Your Ref: (MEMO) 28-LA-1/28/2021/4425
Our Ref: MNDF-08-P/28/2021/829
Date: 29-/2-21
Checked By Syd-Mohamed Ashraf



1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.

2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

- 3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM
- 4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

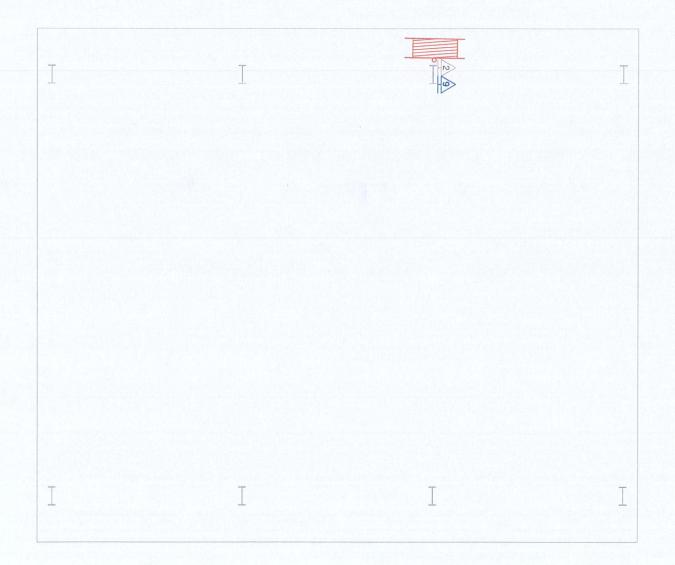
ALL FIRE CABLES SHOULD BE FIRE RATED BS6387,LOW SMOKE (FRLS), CWZ TYPE.
AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

and Supervision 

**VEHICLE SHED FP LAYOUT** SCALE 1:100

RIYAN PRIVATE LIMITED

Title: Vehicle Shed FP Page: FP 02







2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387, LOW SMOKE (FRLS), CWZ TYPE. AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

Project Name: Detailed design for fire protection system in R.Vandhoo and Supervision at regional waste management facility

Client: Ministry of Environment

Project Number: R.Vandhoo and Supervision

Client: Ministry of Environment

Project Number: R.Vandhoo and Supervision

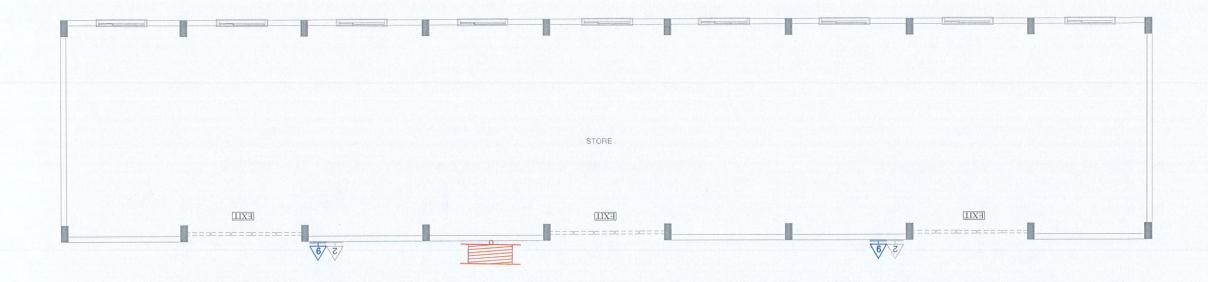
30 112021...

RIYAN PRIVATE LIMITED

Title: Vehicle Shed Extension FP layout Page: FP 03

## **VEHICLE SHED EXTENSION FP LAYOUT**

SCALE 1:100





- 2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.
- 3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM
- 4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387,LOW SMOKE (FRLS), CWZ TYPE.
AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.





**APPROVED BY** FIRE AND RESCUE SERVICE

Your Ref: (MEMO) 28-LA-1/28/2021/4425
Our Ref: MNDF-08-P/28/2021/829
Date 29 = 12 - 21
Checked By Steff Mohamed Ashraf
Signature



### **LEGEND**

Smoke detector with base unit H Heat detector (ROR) with base unit ×

Manual Call point

Sounder with strobe light

Exit sign lights with backup batteries

EXIT Exit sign light (Directional) with backup batteries **▼**EXIT

Water fire extinguisher (9 liters)

CO2 fire extinguisher (2 kg)

DCP fire extinguisher (9 kg) DCP fire extinguisher trolley (50 kg)

DCP fire extinguisher (2 kg)

Foam fire extinguisher trolley (25 Liters)

Foam fire extinguisher trolley (50 Liters)

FB

Wet chemical fire extinguisher (6 Liters)

Fire hose reel c/w 25mmØ x 30 m hose

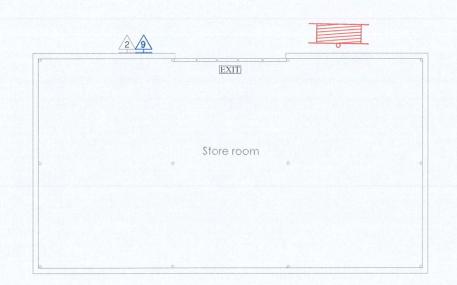
Foam Monitor

RIYAN PRIVATE LIMITED

t:+9603315049 f:+9603310776 e:info@riyan.com.mv w:www.ryan.com.mv 3rd floor, H. Azum, Ameeneemagu, Male\*

Title: Storage shed Extension FP layout Page: FP 04

# STORAGE SHED EXTENSION / MECHANICAL FP LAYOUT







- 1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.
- 2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.
- 3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM
- 4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387,LOW SMOKE (FRLS), CWZ TYPE.
AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

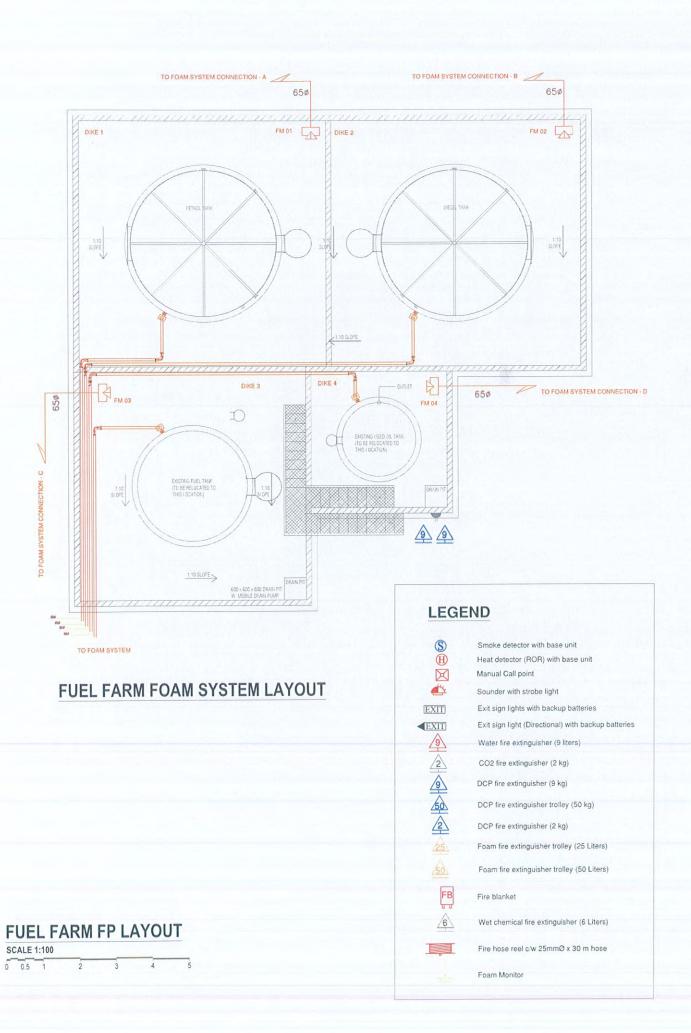
RIYAN PRIVATE LIMITED

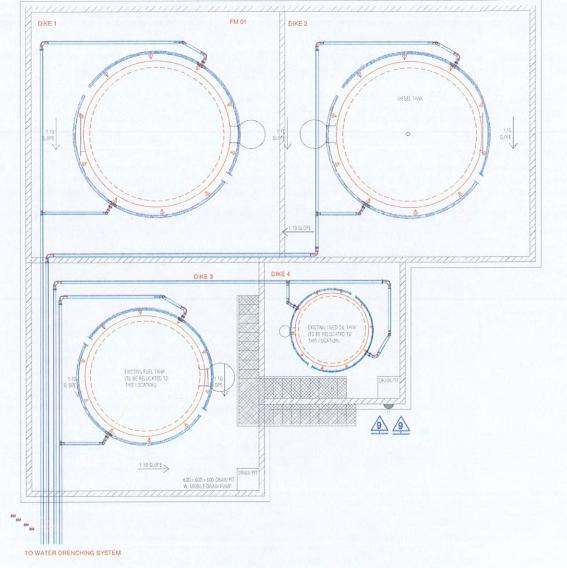
t:+9603315049 f:+960 e:info@riyan.com.r w:www.riyan.com.r

Title: Existing store FP layout
Page: FP 05

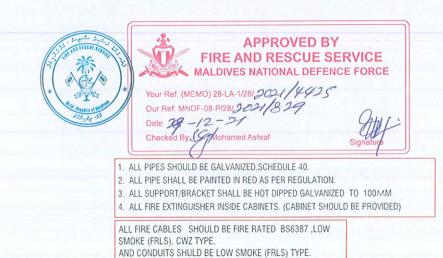
**EXISTING STORE FP LAYOUT** 

SCALE 1:100





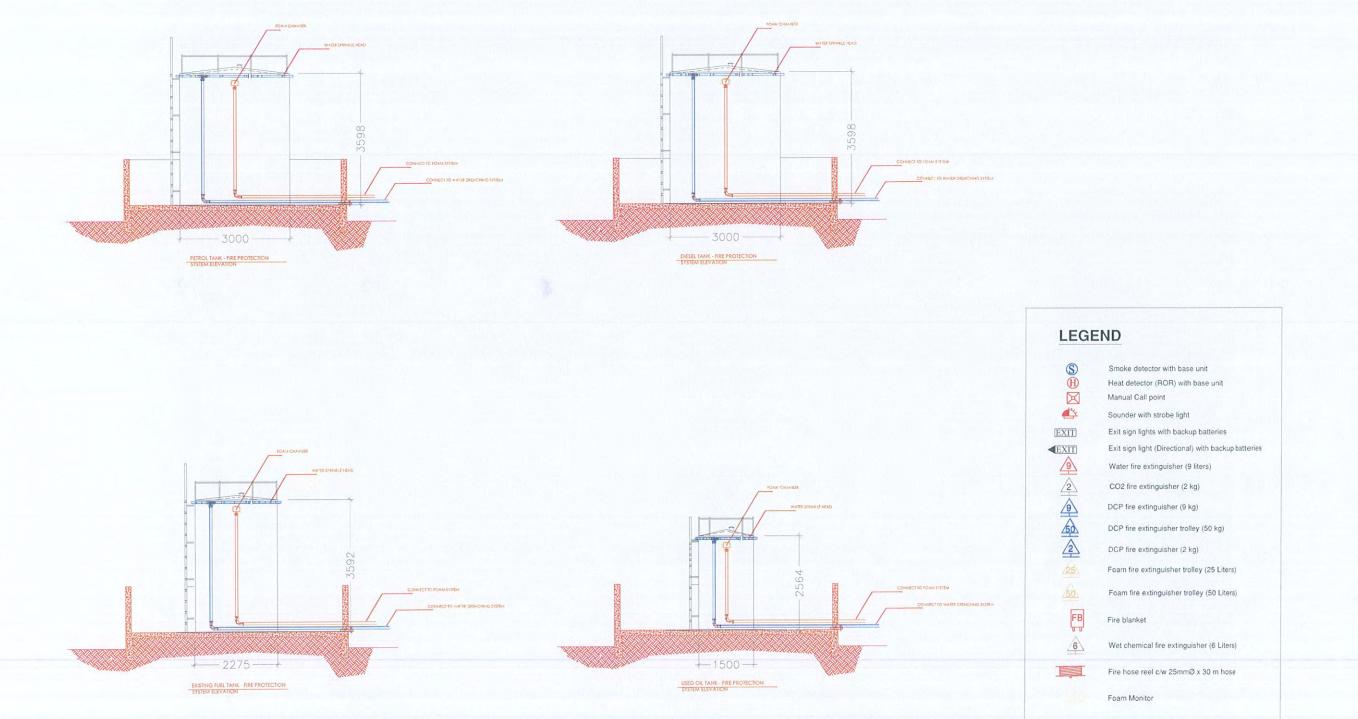
## **FUEL FARM WATER DRENCHING SYSTEM LAYOUT**



RIYAN PRIVATE LIMITED

Title: Fuel Farm FP layout

Page: FP 06.1





SCALE 1:100 0 0.5 1 2 3 4 5



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FIRE AND RESCUE SERVICE
MALDIVES NATIONAL DEFENCE FORCE

Your Ref: (MEMO) 28-LA-1/28/ 2021/4425
Our Ref: MNDF-08-P/28/ 2021/829
Date: 29 - 12 - 21
Checked By Sept Mohamed Ashraf



- 1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.
- 2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.
- 3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM
- 4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387, LOW SMOKE (FRLS), CWZ TYPE.

AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

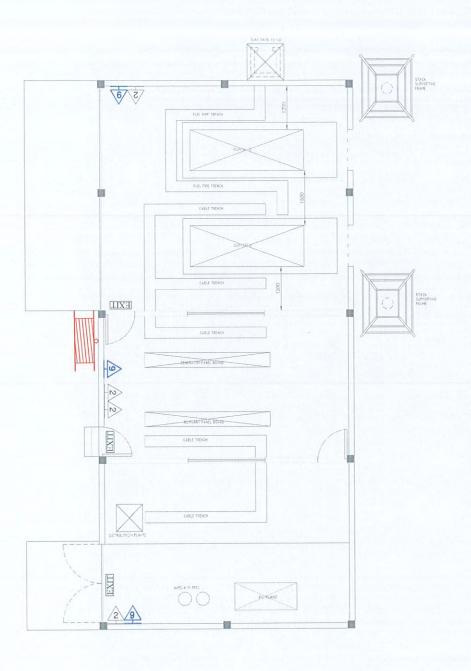
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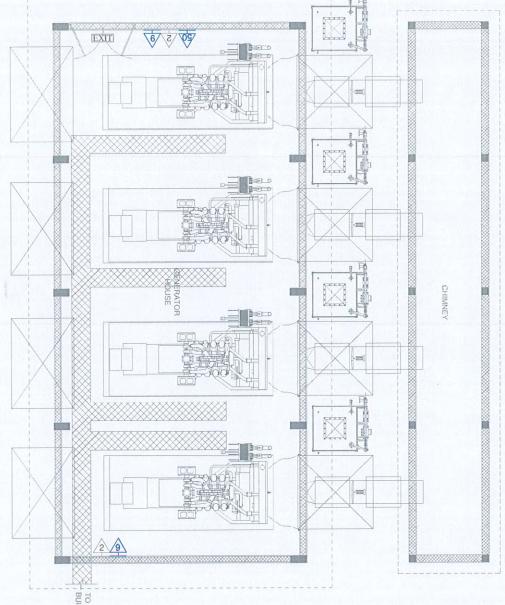
RIYAN PRIVATE LIMITED t:+9603315049 f:+9603310776

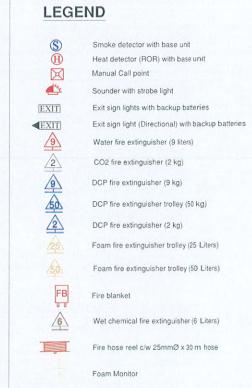
t:+9603315049 f:+9603310776 e:info@riyan.com.mv w:www.riyan.com.mv 3rd floor, H. Azum, Ameeneemagu, Male'

Title: Fuel Farm FP layout

Page: FP 06 . 2







## **EXISTING POWER HOUSE**

### **EXTENSION OF POWER HOUSE**



1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40. 2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

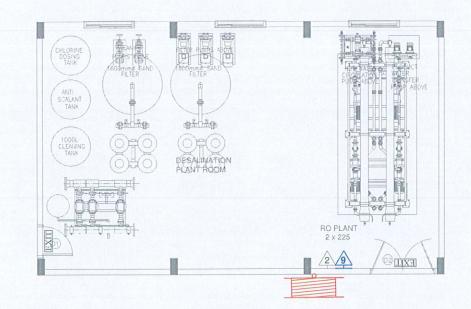
4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387 ,LOW SMOKE (FRLS), CWZ TYPE. AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE

RIYAN PRIVATE LIMITED

Title: Power house FP layout Page: FP 07

POWER HOUSE FP LAYOUT







- 1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.
- 2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.
- 3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM
- 4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387, LOW SMOKE (FRLS), CWZ TYPE. AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE



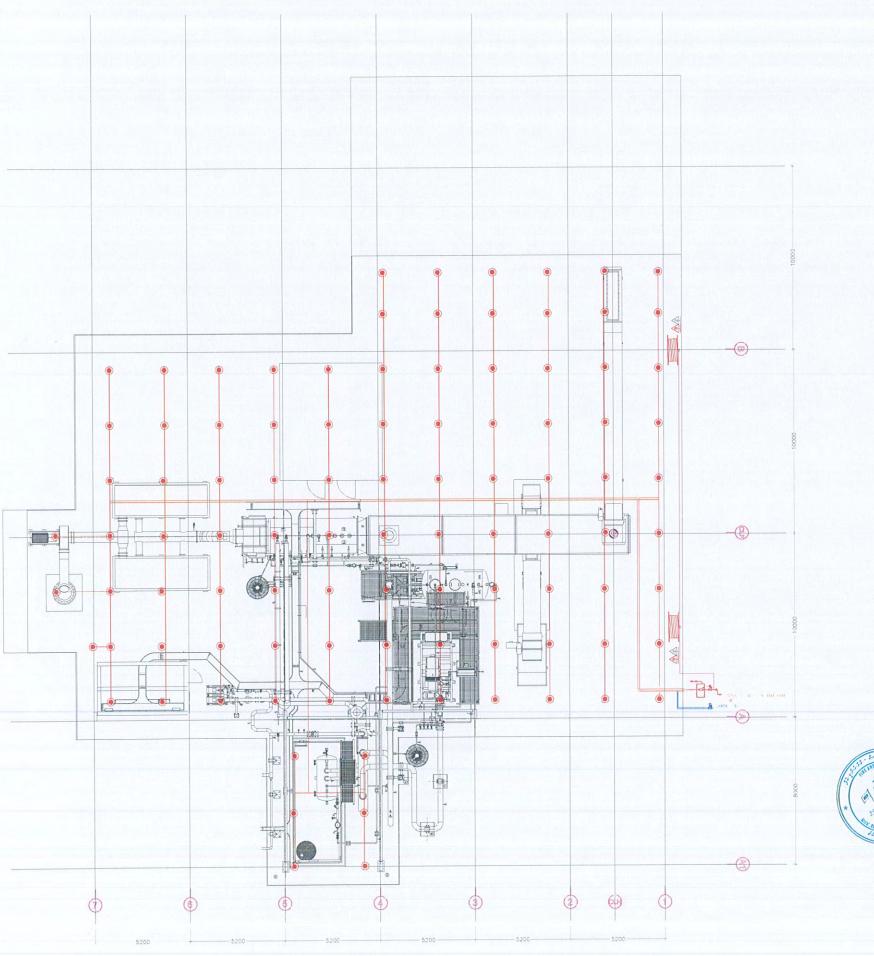
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Title: RO plant FP layout

Page: FP 08

**RO PLANT FP LAYOUT** 





ALL PPES SHOULD BE GALVANIED SCHEDULE 40.

2. ALL PPE SHALL BE PARTER IN RED AS PER REGULATION.

3. ALL SPEPER REGARDET SHALL BE NO PPEPE GALVANIED TO 100 MM.

4. ALL SPEE EXTRIGAMENT SHOULD BE THOUGHTS. (CASHIET SHOULD BE PROVIDED).

ALL SPEE CASHLES. SHOULD BE FIRE RATED BESSET LOW.

SYNCE FRISI, OKUT THE.

AND CONDUITS SHULD BE LOW SWOKE (FRIS). TYPE.

APPROVED BY
FIRE AND RESCUE SERVICE
MALDIVES NATIONAL DEFENCE FORCE Your Ref: (MEMO) 28-LA-1/28/2021 /44/25
Our Ref: MNDF-08-P/28/ 2021 / 3-29
Date: 29 - 12 - 21
Checked By SS Mohamed Ashraf

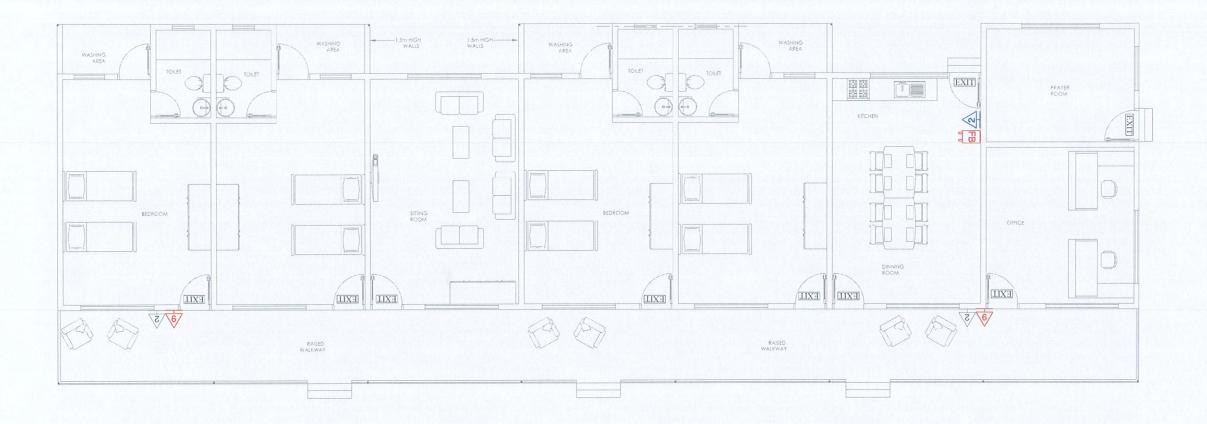
# **INCINERATOR BUILDING FP LAYOUT**

SCALE 1:100 0 0.5 1 2 3 4 5 system in R.Vandhoo and Supervision

RIYAN PRIVATE LIMITED

t:-9603315049 f:-9603310776
e::nfo@riyan.com.mv
w::www.riyan.com.mv
3rd floor, H. Azum, Ameeneemagu, Male

Title: Incinerator building FP layout Page: FP 09







2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387, LOW SMOKE (FRLS), CWZ TYPE. AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

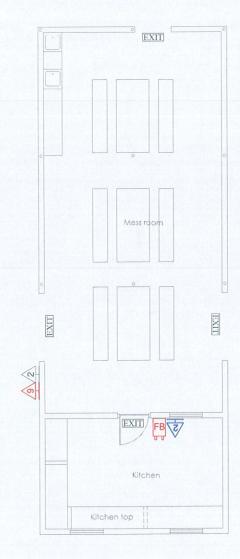
RIYAN PRIVATE LIMITED

Title: Locker room facility FP layout Page: FP 10

LOCKER ROOM FACILITY FP LAYOUT

0 0.5 1

SCALE 1:100



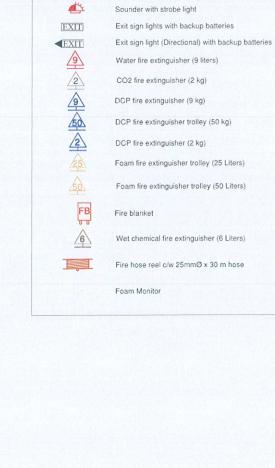
FLOOR PLAN



2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM 4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387,LOW SMOKE (FRLS), CWZ TYPE.
AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.



**LEGEND** 

Smoke detector with base unit Heat detector (ROR) with base unit

Manual Call point

(S)

×



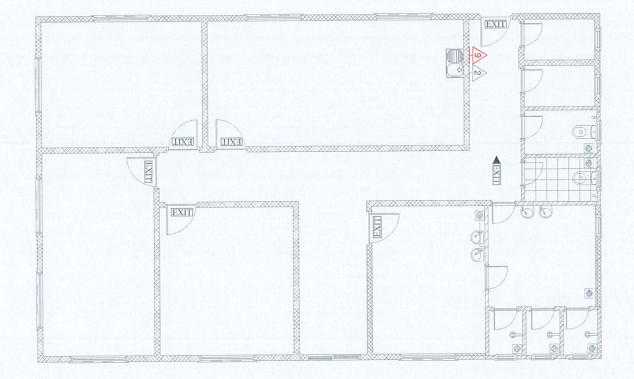


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t:+9603315049 f:+9603310776 e:info®riyan.com mv w: www.riyan.com mv 3rd floor, H. Azum, Arneeneemagu, Mole'

Title: Mess room FP layout Page: FP 11

MESS ROOM FP LAYOUT







2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

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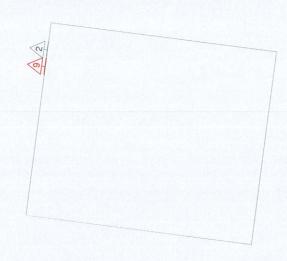
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t:+9603315049 f:+9603310776 e:info@riyan.com.mv w:www.rlyan.com.mv 3rd floor, H. Azum, Ameeneenagu, Male'

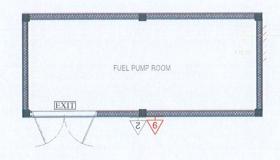
Title: Admin building FP layout Page: FP 12

ADMIN BUILDING FP LAYOUT

0 0.5 1 2 3 4 5



### MOSQUE



**PUMP ROOM** 





TO FOAM SYSTEM CONNECTION - E

65ø

1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.

2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387,LOW SMOKE (FRLS), CWZ TYPE.

Project Name: Detailed design for fire protection system in R.Vandhoo and Supervision at regional waste management facility

Client: Ministry of Environment

Project Number RY20200339 | Rev no

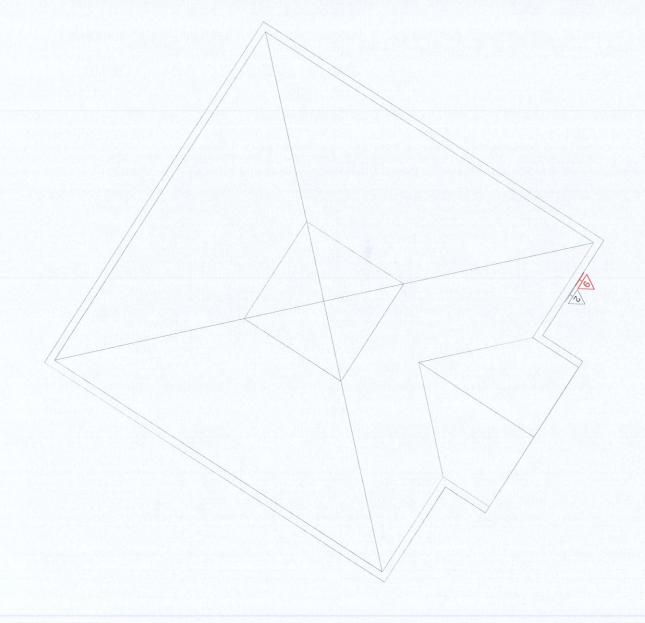
t:+9603315049 f:+9603310776 e:info@rlyan.com.mv w:www.rlyan.com.mv 3rd floor, H. Azum, Ameeneemagu, Male'

Title: Mosque & fuel pump room FP layout Page: FP 13

MOSQUE AND PUMP ROOM FP LAYOUT

0 0.5 1 2 3 4 5

AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.





Fire hose reel c/w 25mmØ x 30 m hose

Foam Monitor



1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.

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3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

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AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

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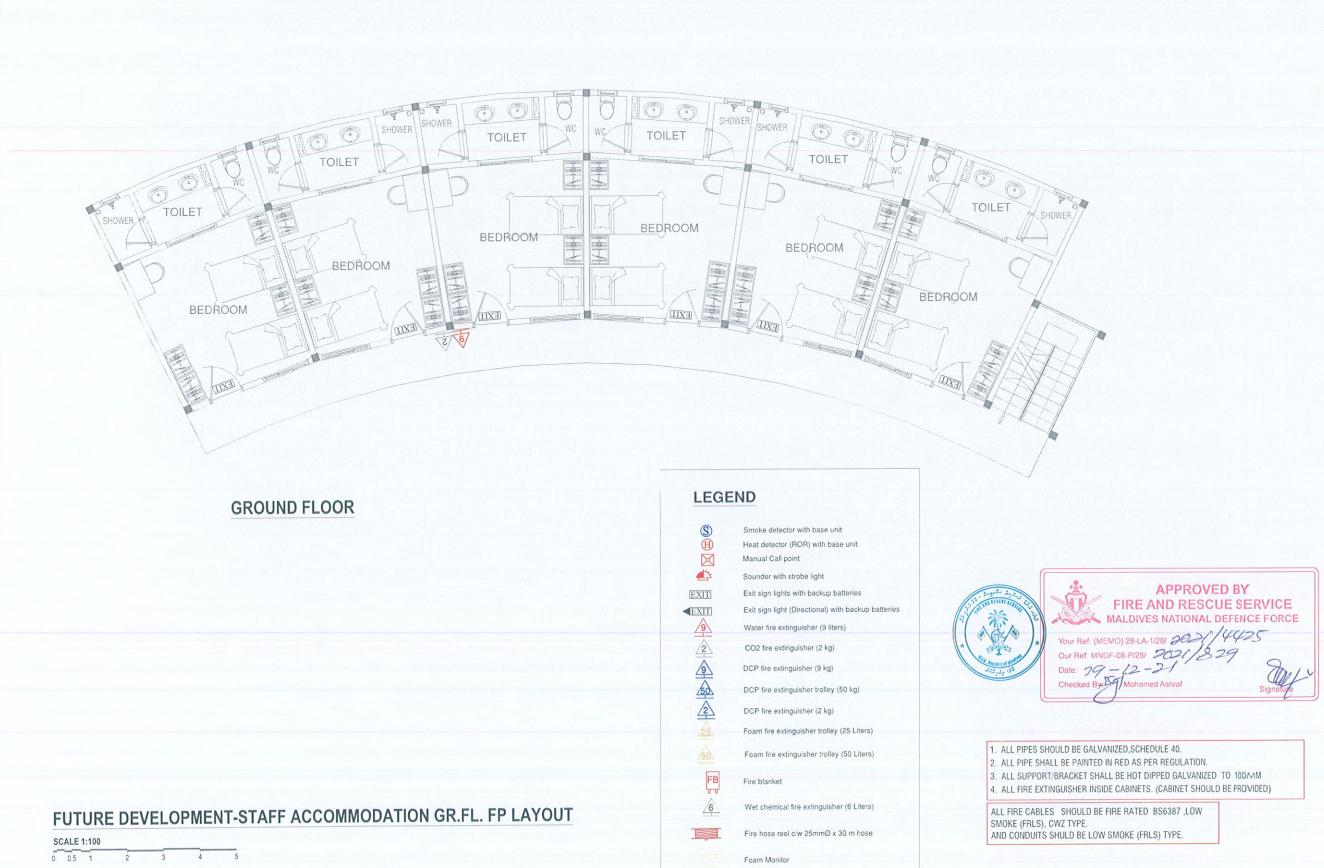
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t:+9603315049 f:+9603310776
e:info@riyan.com.mv
w:www.riyan.com.mv
3rd floor, H. Azum, Ameerieemagu, Male'

Title: Staff mosque FP layout

FUTURE DEVELOPMENT-STAFF MOSQUE FP LAYOUT

SCALE 1:100



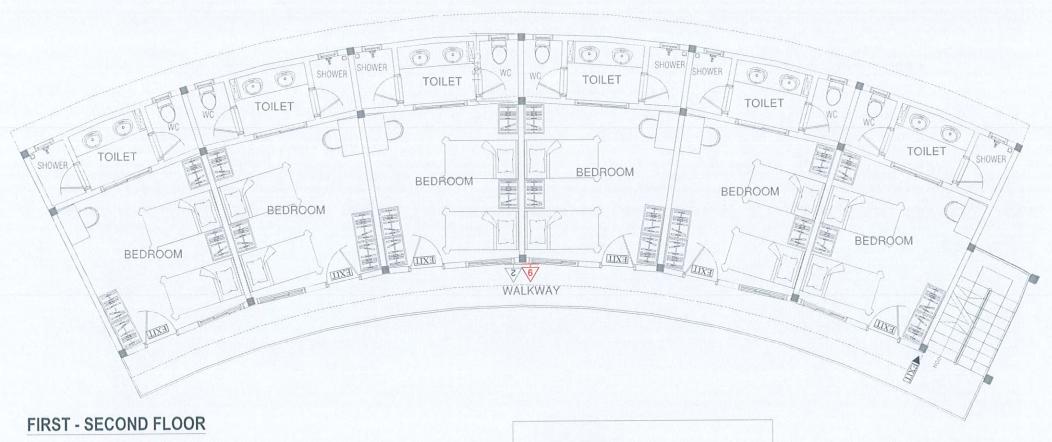
and Supervision

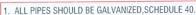
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Title: Staff accommodation gr. fl.FP layout Page: FP 15





- 2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.
- 3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM
- 4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387,LOW SMOKE (FRLS), CWZ TYPE. AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

# FUTURE DEVELOPMENT-STAFF ACCOMMODATION 1ST - 2ND FL. FP LAYOUT

SCALE 1:100

LEGEND

H

X

EXIT

**■**EXIT

\$\lambda{2}\delta \frac{1}{2}\delta \frac{1}{2}\

6

Smoke detector with base unit Heat detector (ROR) with base unit

Manual Call point Sounder with strobe light

Exit sign lights with backup batteries Exit sign light (Directional) with backup batteries

CO2 fire extinguisher (2 kg)

DCP fire extinguisher trolley (50 kg)

DCP fire extinguisher (2 kg)

Foam fire extinguisher trolley (25 Liters) Foam fire extinguisher trolley (50 Liters)

Wet chemical fire extinguisher (6 Liters)

Fire hose reel c/w 25mmØ x 30 m hose

Foam Monitor



**APPROVED BY** FIRE AND RESCUE SERVICE



RIYAN PRIVATE LIMITED

Project Name: Detailed design for fire protection system in R.Vandhoo and Supervision at regional waste management facility

Client: Ministry of Environment

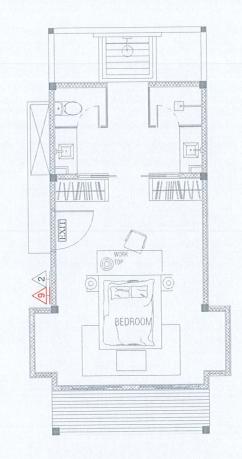
Project Number 2020

Date November 2020

Date November 2020

Date November 2020

Title: Staff accommodation 1st-2nd, fl.FP layout Page: FP 16



2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

ALL FIRE CABLES SHOULD BE FIRE RATED BS6387, LOW SMOKE (FRLS), CWZ TYPE.

AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

FUTURE DEVELOPMENT-GUEST ACCOMMODATION FP LAYOUT









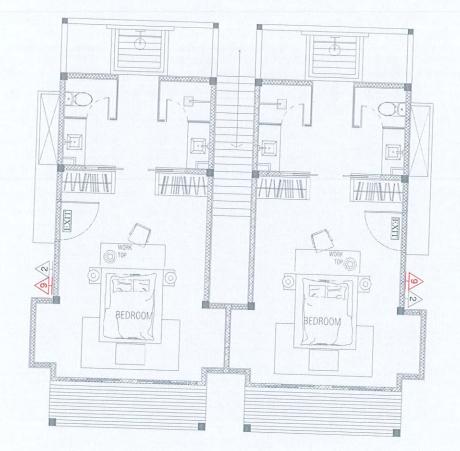
and Supervision

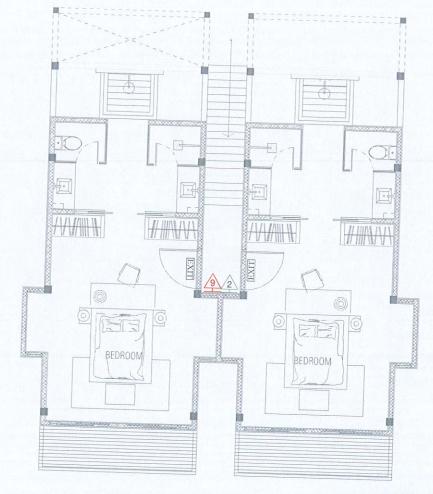


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t:+9603315049 f:+9603310776 e:info@riyan.com.mv w:www.riyan.com.mv 3rd floor, H. Azum, Ameeneemagu. Male

Title: Guest accommodation FP layout Page: FP 17





LEGEND Smoke detector with base unit H Heat detector (ROR) with base unit X Manual Call point 1 Sounder with strobe light EXIT Exit sign lights with backup batteries EXIT Exit sign light (Directional) with backup batteries 9 Water fire extinguisher (9 liters) 2 CO2 fire extinguisher (2 kg) \$ \$50 DCP fire extinguisher (9 kg) DCP fire extinguisher trolley (50 kg) 2 DCP fire extinguisher (2 kg) Foam fire extinguisher trolley (25 Liters) Foam fire extinguisher trolley (50 Liters) 6 Wet chemical fire extinguisher (6 Liters) Fire hose reel c/w 25mmØ x 30 m hose Foam Monitor

**GROUND FLOOR LAYOUT** 

FIRST FLOOR LAYOUT





Date: 29 - 12-21 Checked By: Common Ashraf

1. ALL PIPES SHOULD BE GALVANIZED, SCHEDULE 40.

2. ALL PIPE SHALL BE PAINTED IN RED AS PER REGULATION.

3. ALL SUPPORT/BRACKET SHALL BE HOT DIPPED GALVANIZED TO 100MM

4. ALL FIRE EXTINGUISHER INSIDE CABINETS. (CABINET SHOULD BE PROVIDED)

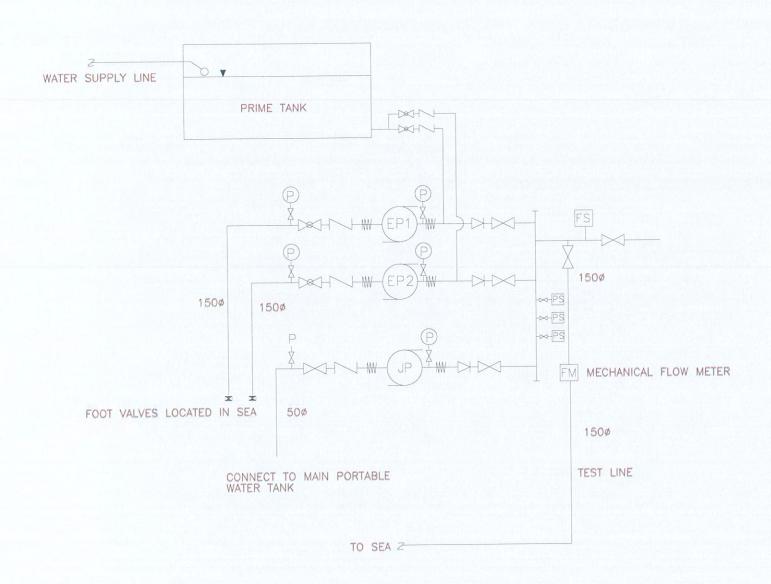
ALL FIRE CABLES SHOULD BE FIRE RATED BS6387,LOW SMOKE (FRLS), CWZ TYPE.

AND CONDUITS SHULD BE LOW SMOKE (FRLS) TYPE.

RIYAN PRIVATE LIMITED

Title: Con. accommodation FP layout Page: FP 18

FUTURE DEVELOPMENT-CONSULTANT ACCOMMODATION FP LAYOUT 0 0.5 1



EP1- ELECTRICAL PUMP 500Lpm @85m EP2- ENGINE PUMP 500 Lpm @85m

JP - JOKY PUMP 10 Lpm

# FIRE HYDRANT PUMP ROOM DETAIL

## LEGEND:

SYMBOL	DESCRIPTION
EP1)	ELECTRICAL FIRE PUMP-OPERATING
JP	JOCKEY PUMP
EP2	ELECTRICAL FIRE PUMP-STANDBY
(P)	PRESSURE GAUGE
M	GATE VALVE
И	STRAINER
W	FLEXIBLE CONNECTOR
Decl	BUTTERFLY VALVE
<u>PS</u>	PRESSURE SWITCH
N	NON RETURNED VALVE
×	FOOT VALVE
70	FLOAT VALVE
FM	FLOW METER(CURRENT METER)

Project Name: Detailed design for fire protection system in R.Vandhoo and Supervision at regional waste management facility
Client: Ministry of Environment

Project Number 8/2020/039

| Rev no | Bate | Bat





Your Ref: (MEMO) 28-LA-1/28/ 262/ 44/25
Our Ref: MNDF-08-P/28/ 262/ 829
Date: 29-/2-2/
Checked By Sg Mohamed Ashraf



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Title: Fire Hydrants Single line Page: FP 21

# ANNEX 8

MNDF audit report of Interim Fire Safety System of R. Vandhoo RWMF



# **Ministy of Defence**

Male', Republic of Maldives

# FIRE SAFETY INSPECTION REPORT

Name of Property	Wamco (R.Vandhoo)	
Date of Inspection	30th - 31st August 2023	
Type of Inspection	Fire safety inspection	

## 1. FIRE EXTINGUISHER

11	04	Farinment	Availa	ability	Findings and	Remarks
#	Qty	Equipment	Yes	No	Observations	Kemarks
1	-	DCP Fire Extinguisher	<b>✓</b>	-	-	
2	-	WC Fire Extinguisher	<b>✓</b>	+	<u> </u>	
3	-	Foam Fire Extinguisher	✓	-	-	Refer to Annex 1
4	-	CO <sub>2</sub> Fire Extinguihser	<b>✓</b>	1	-	The second second
5	-	H <sub>2</sub> O Fire Extinguisher	✓	-	-	
				FIRE BLAN	KET	
11	04	P 4	Availa	ability	Findings and	Remarks
# (	Qty	Equipment Equipment	Yes	No	Observations	Remarks
6	-	Fire Blanket	<b>/</b>	-	=	-



### 4. FIRE ALARM SYSTEM

ш	04.	Fauinment	Avail	ability	Findings and	Remarks
#	Qty	Equipment	Yes	No	Observations	Remarks
1	-	Automatic Fire Alarm System	<b>√</b>	-		12/
2	-	Repeater Panel	✓	-		100
3	-	Smoke Detectors	✓	-	Out of order	
4	-	Heat Detectors	✓	-	Out of order	Refer to Annex 1
5	-	MCP	✓	-	*	
6	-	Sounder / Strobe	✓	-		
7	-	Approved Drawing	-	✓	-	

# 5. EMERGENCY EXITS AND EXIT ROUTES (EVACUATION DIAGRAM)

#	Qty	Document	Availability		Findings and	Remarks
#	Qiy		Yes No Observations	Remarks		
1	-	Evacuation Diagram	-	<b>✓</b>	-	Defente Anney I
2	-	Evacuation Diagram		<b>✓</b>	<u>-</u>	Refer to Annex 1



## 7. INCINERATOR

#	Otv	Fauinment	Avail	ability	Findings and	
#	Qty	Equipment	Yes	No	Observations	Remarks
1	-	DCP Fire Extinguisher (6 kg)	✓	-	-	1/1
2	-	CO <sub>2</sub> Fire Extinguisher (2 kg)	✓	-	-	- \
			DA	Y-TO-DAY	TANK	
3	1	Day tank (200L)	✓	-	-	
4	1	DCP Extinguisher (6 kg)	-	✓	-	
5	-	Foam Extinguisher (9 L)		✓	-	Refer to Annex 1
6	-	Foam Trolley (50 L)		✓	-	
7	-	Bund Wall	✓	-	-	
8	-	"No Smoking" sign board (English & Dhivehi)	✓	-	-	-
9	-	"No Naked Lights" sign board (English & Dhivehi)	<b>✓</b>	-	-	-
10	-	"Flammable Liquids" sign board (English & Dhivehi)	✓	-	-	-
11		Approved Drawing	✓	-	-	-



### 9. FIRE AWARENESS

1 74	#	Total number of staff	Percentage trained	Findings and Observations	Remarks
	1	74	_		Refer to Annex 1

# 10. FUEL TANK (TEMPORARY)

#	Qty	Equipment	Avail	ability	Findings and	
	\\ \text{V}		Yes No		Observations	Remarks
1	1	Diesel Tank (22,000L)	✓	-	Main fuel tank	
2	1	Diesel Tank (8,000L)	✓	-	Fuel tank with dispenser	Refer to Annex 1
3	-	Hydrostatic Test	-	_	-	
4	-	Bund Wall	✓	_	-	
5	-	Pipe line over bund wall	✓	_	_	
6	-	Collection Sump	✓	-	-	
7	2	DCP Fire Extinguisher (9 kg)	1	-		Refer to Annex 1
8	ı	"No Smoking" sign board (English & Dhivehi)	✓	<u>-</u> -	-	-
9	4	"No Naked Lights" sign board (English & Dhivehi)	✓		-	-
10	- 1	"Flammable Liquids" sign board (English & Dhivehi)	1	-	-	
11	-	Approved Drawing	<b>√</b>	-	Approved drawing: MNDF-08-P/28/2021/ 829	-



## 13. CHEMICAL STORE

#	Qty	Requirement	Avail	ability	Findings and	
	- 2.3	Requirement	Yes	No	Observations	Remarks
1	-	Fire Resistant Construction (90min)	-	<b>✓</b>	-	
2	-	Ceiling (cement board, Gypsum board)	-	✓	-	Refer to Annex 1
3	_	Fire Rated Door (90min)	-	<b>√</b>	-	
4	-	Ventilation (Exhaust fan)	1	-		
5	-	Electric wiring (conduit)	-	<b>✓</b>	_	
6	-	Light,socket & Switches (flame proof or flash proof)	-	<b>√</b>	-	
7	-	Arrangement	-	✓	-	
8	-	Display Firstaid procedure, Fire extinguishers user instruction and Resort's fire action procedure.	-	<b>~</b>	-	Refer to Annex 1
9	-	Chemical Store Name	✓		_	
10	-	Fire Extinguishers (6 kg DCP + 2kg CO2)	✓	-	·-	
11	- 1	Fire Alarm System	-	<b>√</b>	-	
12	_	List of chemicals	-	✓		

31 August 2023



#### Portable Fire Extinguisher

- Install a fire point consisting of a water fire extinguisher (9L) and a carbon dioxide fire extinguisher (2kg) in the following areas;
  - o Staff accommodation inside, near MCP
  - o Kitchen entrance outside
  - o Staff accommodation and laundry
  - White house
  - o Mosque
  - o Security post (each floor should have 1 fire point)
- Install a fire point consisting of a wet chemical fire extinguisher (9L) and a carbon dioxide fire extinguisher (2kg) at kitchen inside.
- Install a fire point consisting of a dry chemical powder fire extinguisher (9kg) and a carbon dioxide fire extinguisher (2kg) at used oil storage area.
- Install a fire point consisting of a dry chemical powder fire extinguisher fire extinguisher (6kg) and a carbon dioxide fire extinguisher (2kg) at the following areas;
  - o Metal bailing area
  - o Plastic bailing area
  - o Styrofoam densifier area
- Relocate the fire point installed inside the warehouse two to midpoint of the warehouse.
- Remove dry chemical powder fire extinguisher at kitchen (broken)
- Replace dry chemical powder fire extinguisher (9kg) at office building with a water fire extinguisher (9L).
- Service the dry chemical power fire extinguisher kept at bunker 2.
- Service the dry chemical powder trolley (50kg) kept inside metal bailing hut and relocates it to outside of the metal bailing hut.

### Portable Fire Pump & Pressurized Fire Hydrant System

• Though the island has portable firefighting pumps, a fire hydrant system is more efficient for an island like R. Vandhoo.

### o Portable Fire Pump

- Provide the following equipment to be used with portable fire pumps: -
- 01 dividing breaching
- 02 basket strainer
- 01 additional metal strainer
- 01 additional suction wrench
- 02 suction rope
- 04 additional fire hoses (64MM)
- 02 additional fire hoses (38MM)

### Pressurized Fire Hydrant system

- Install fire hydrant system as per the approved drawing. When the pressurized fire hydrant system installation process is completed, the requirements of portable fire pumps will be discretionary.



#### Fire Alarm System

• Existing fire alarm system was out of order. Hence a new fire alarm system should be installed to cover all the buildings in the facility. Detail drawings of fire alarm system must be submitted to Ministry of Defence prior to installation.

### **Emergency exits and Exit routes (Evacuation Diagram)**

- Amend the evacuation diagram to add an alternate assembly point and mark nearest fire point.
- Place evacuation diagrams commonly at the following areas. The size of the diagram must be at least A3 paper size.
  - o Incinerator room
  - Staff accommodation
  - o Utility building
  - o Vehicle shed
  - o Storm water collection pond

#### Powerhouse

- Install a sounder and a strobe inside power house.
- Install heat detectors and manual call points at power house as per approved drawing.
- Replace dry chemical powder fire extinguisher kept at entrance of panel room with a carbon dioxide fire extinguisher (2kg).
- Service the dry chemical powder fire extinguisher kept at power house (mid part).
- Install a door (same material as existing door) at power house (mid part).
- Place flame proof covers on the lights.
- The glass sheet (view panel) in between power house and panel room must have a fire rating as the wall.
- Replace carbon dioxide fire extinguisher at day tank area with a foam fire extinguisher (9L).
- Place a foam trolley (50L) near day tank area.
- Display fuel type and capacity of the day tank.
- Service the dry chemical powder fire extinguisher kept near the day tank.
- Install adequate emergency lights and exit sign boards in power house.
- Provide the following standard sign boards near day tank area. Each sign boards must measure 3X1 feet and must be written in both English and Dhivehi.
  - o "No Smoking"
  - "No Naked Lights"
  - o "Flammable Liquids"



Note: Below attached templates are the standard signboards which are mentioned in Fuel Regulation.



Dhivehi Font: MV Waheed English Font: Arial Black

#### **Incinerator**

- Install a fire point consisting of a dry chemical powder fire extinguisher (6kg) and a foam fire extinguisher (9L) at day tank area.
- Display the fuel type and capacity at day tank.
- Provide a collection sump inside the bund wall of day tank, where liquids will be collected. Provide a mechanism to pump out liquid from the sump to outside of bund wall.
- Provide a foam trolley (50L) at day tank area.
- It was observed that the bund walls of day tank had openings. These openings must be patched with the same fire rated materials as the bund wall. Details of fire rated materials used must be submitted to Ministry of Defence for approval.

### Fire Squad

- Train a fire squad. Members of the fire squad must complete either "Industrial Fire Brigade Course" or an equivalent firefighting course accepted by Ministry of Defense. Each member of the fire squad should have either a certificate or a documentation which implies the completion of the course. The fire squad must be trained via licensed personnel by Ministry of Defence, to an approved curriculum. At least 7 trained firefighters must be available in the island at all times.
- Provide the following equipment to be used by the fire squad. The equipment must meet with an international standard accepted by Ministry of Defence. The specifications of the equipment must be submitted to Ministry of Defence for approval prior to purchase.
  - o 4 fire suits
  - o 4 helmets
  - o 4 head hoods
  - o 4 gloves
  - o 4 crash boots
  - 4 back plates



- o 4 breathing apparatus cylinders
- o 4 face masks
- o 4 breathing apparatus spare cylinders

#### Fire Awareness

• Fire awareness program must be conducted for 75% of the staff. The fire awareness program must be conducted via licensed personnel by Ministry of Defence, to an approved curriculum.

### Main Fuel Tank (temporary storage of 22,000 L)

- Replace foam fire extinguisher kept at main fuel tank area with a dry chemical powder fire extinguisher (9kg).
- Current fuel tank must be eliminated after introducing of new fuel farm in accordance to the approved drawings.

### Fuel Tank (temporary storage of 8,000 L with dispenser)

- Establish fuel tanks in accordance to the approved drawings. Until new fuel tanks are established, the following requirements must be met by the temporary fuel storage.
  - o Install a fire point consisting of dry chemical powder fire extinguisher (6kg) and a foam fire extinguisher (9L) near the temporary fuel tank.
  - o Place a label near the tank to indicate the type of fuel and capacity of the tank.
  - O Provide the following standard sign boards near temporary fuel tank area. Each sign boards must measure 3X1 feet and must be written in both English and Dhivehi.
    - "No Smoking"
    - "No Naked Lights"
    - "Flammable Liquids"

Note: Below attached templates are the standard signboards which are mentioned in fuel Regulation.



Dhivehi Font: MV Waheed English Font: Arial Black



#### **Cooking Gas**

- Replace the existing hose used to supply LPG to standard LPG hose.
- LPG cylinders must be kept off the ground on wooden or rubber pallet so that the chances of a spark when handling the gas cylinders are reduced.
- Provide the following standard sign boards near LPG cylinders at gas bank area. Each sign boards must measure 3X1 feet and must be written in both English and Dhivehi.
  - o "No Smoking"
  - o "No Naked Light"
  - o "Highly Flammable"

Note: Below attached templates are the standard signboards.



Dhivehi Font: MV Waheed English Font: Arial Black

### Fire Emergency Action Plan

• Amend the fire emergency action plan to add alternate assembly point and nearest fire point.

### **Chemical Store (Additional requirement)**

- The following requirements should be met at the chemical store.
  - o The exit of chemical store must connect directly to outside (to a safe area).
  - o The construction of chemical store should provide a fire resistance of 90 minutes including doors and windows.
  - The partition wall shared by chemical store and goods store should have a fire resistance of 90 minutes. Hence, the partition should be replaced by constructing a wall or the partition should be raised using a fire resistant material of 90 minutes. in addition, no window or door opening should be cut from the wall.



- o If ceiling is provided, cement board or gypsum board should be used and if ceiling is not provided, no combustible material should be used in the roof frame.
- o All sockets, switches and lights inside store must be flash/flame proof.
- o Replace foam fire extinguisher with carbon dioxide fire extinguisher (2kg) at existing fire point.
- O Display extinguisher operating instruction near the extinguishers on a permanent board.
- o Fire alarm system should cover the store.
- o Display the following on a permanent board.
  - First aid procedure (in relation to imported chemicals)
  - Fire action procedure
  - Store name outside the store as "Chemical Store"
- o When arranging chemicals, the following points should be followed
  - Different chemicals should be kept separately and high hazard chemicals should be kept inside a separate metal cupboard.
  - Leave a distance of 1 foot between ceiling and chemicals kept at top shelf.
- o Maintain a list of chemicals and respective MSDS of chemicals stored inside store and these documents should be readily available from the store.

#### Recommendation

- Keep the fire extinguishers in standard cabinets to protect extinguishers kept outside buildings from salty environment and rusting.
- Service the fire extinguishers weekly to eliminate rusting. (Servicing done by the staff to check for usage, rusting, etc.)
- Install a public announcing system (PAS) to cover whole of the island.
- Install emergency lights and emergency exits in the following areas;
  - o Staff accommodation
  - Staff canteen
  - o Incinerator area
  - o Office building



### Existing fire extinguishers in the island

#	Location	Types of fire	QNT	Capacity	Remarks
		extinguishers		(1	
1	Admin Blocks	DCP	1	6kg	
		CO <sub>2</sub>	1	2kg	
2	Work shop	DCP	1	6kg	
		CO <sub>2</sub>	1	2kg	
	Parking Lot( Vehicle	Water	1	9L	
•	Shed)	DCP .	1	6kg	
		CO <sub>2</sub>	1	2kg	
1	Technical Store	DCP	1	4.5 kg	
	500 to 50000 (00 00 00 00 00 00 00 00 00 00 00 0	Foam	1	9L	
5	Fila Store	Water	1	9L	
5	Chemical Store	DCP	1	9kg	
	Chemical Store	Foam		9L	
7	General Store	Water	1	9L	
		DCP	1	9kg	
	Utility Building ( power house and RO Plant)	DCP	4	6kg	
		CO <sub>2</sub>	5	2 kg	
		DCP	1	9kg	
		DCP Trolley	1	50kg	
	4	CO <sub>2</sub>	2	2kg	
9	Incinerator Bunker	DCP	2	9kg	
	memerator bunker	DCP Trolley	1	50kg	
	a	DCP	1	4.5 kg	
0	Sorting Bunker 1	CO <sub>2</sub>	1	2kg	
		Foam	1	9L	
1	Sorting Bunker 2	CO <sub>2</sub>	1	2kg	
	0 P	DCP	1	9kg	
2	Sorting Bunker 3	CO <sub>2</sub>	1	2kg	
3	Bale Bunker	DCP	1	6kg	
		DCP	1	9kg	
4	Fuel Firm	Foam	1	9L	
15	Day Tank	Foam	1	9L	
_	Kitchen	DCP	1	6kg	



### ANNEX 9 Industrial Fire Brigade Corse Certificates of Fire Squad Members of Vandhoo RWMF





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Abdulla Naseem (ID/PP No: A158483)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10th Feb to 21st February 2024

at Fire & Rescue Training School, Vilimalé.

Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School C SMC

Brigadier General Abdulla Zuhury





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Ahmed Haadhee (ID/PP No: A236316)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10<sup>th</sup> February to 21<sup>st</sup> February 2024

at Fire & Rescue Training School, Vilimalé.

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Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School C Omes

Brigadier General Abdulla Zuhury





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Ahmed Nasih (ID/PP No: A316769)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10<sup>th</sup> February to 21<sup>st</sup> February 2024

at Fire & Rescue Training School, Vilimalé.

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Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School Coma

Brigadier General Abdulla Zuhury





# FIRE AND RESCUE SERVICE

MALDIVES NATIONAL DEFENCE FORCE MALE'
REPUBLIC OF MALDIVES



Waste Management Corporation Limited Republic of Maldives,

In this course the following subjects were taught to the participants. held from 10th February 2024 to 21st February 2024. Fire Brigade Course 2024-02 to Waste Management Corporation Limited, which was This is to certify that MNDF Fire and Rescue Service has conducted the Industrial

- Fire Behavior.
- Incident Command System.
- Firefighter Personal Protective Equipment's
- 4. Fire Hose, Nozzles and Appliances
- 5. Fire Detection, Alarm and Suppression Systems.
- Ropes and Knots.
- Portable Fire Extinguishers.
- Portable Fire Pumps.
- Fire Stream.
- 10. Victim Carrying Methods.
- 11. Agility
- 12. Command Task
- 13. Searching Techniques
- 14. Fire Control (Live Fire Simulator)
- 15. Theory Test
- 16. Under Ground Tunnel
- 17. BA Simulator Training

the course. Corporation Limited, details of whom are attached herewith successfully completed We are delighted to inform that 09 (Nine) participants from Waste Management

9

Brigadier General Abdulla Zuhury

Commandant



# FIRE AND RESCUE SERVICE



### MALDIVES NATIONAL DEFENCE FORCE MALE' REPUBLIC OF MALDIVES

## Participant List

Waste Management Corporation Limited (IFBC 2024-02, 10th February 2024 to 21st February 2024)

00817	A388891	Naseeh Ahmed	9
00816	A157360	Hassan Naif	000
00815	A316769	Ahmed Nasih	7
00814	A081042	Hussain Habeeb	6
00813	A253274	Ibrahim Mohamed	S
00812	A252508	Nasrulla Ali	44
00811	A236316	Ahmed Haadhee	w
00810	A162669	Siraj Abdul Samad	2
00809	A158483	Abdulla Naseem	_
Serial No-	ID/PP Number	Name	#





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Hassan Naif (ID/PP No: A157360)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10<sup>th</sup> February to 21<sup>st</sup> February 2024

at Fire & Rescue Training School, Vilimalé.

A Link

Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School



Brigadier General Abdulla Zuhury





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Hussain Habeeb (ID/PP No: A081042)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10<sup>th</sup> February to 21<sup>st</sup> February 2024

at Fire & Rescue Training School, Vilimalé.

The state of the s

Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School <u>coims</u>

Brigadier General Abdulla Zuhury





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Ibrahim Mohamed (ID/PP No: A253274)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10th February to 21st February 2024

at Fire & Rescue Training School, Vilimalé.

The state of the s

Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School

Brigadier General Abdulla Zuhury





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Naseeh Ahmed (ID/PP No: A388891)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10th February to 21st February 2024

at Fire & Rescue Training School, Vilimalé.

C TWO NO

Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School



Brigadier General Abdulla Zuhury





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Nasrulla Ali (ID/PP No: A252508)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10th February to 21st February 2024

at Fire & Rescue Training School, Vilimalé.

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Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School ains.

Brigadier General Abdulla Zuhury





Fire and Rescue Service Maldives National Defence Force Republic of Maldives



#### INDUSTRIAL FIRE BRIGADE COURSE

This is to certify that

Siraj Abdul Samad (ID/PP No: A162669)

has completed

**Industrial Fire Brigade Course 24-02** 

conducted from 10<sup>th</sup> February to 21<sup>st</sup> February 2024

at Fire & Rescue Training School, Vilimalé.

Lieutenant Hussain Haleem

Officer Commanding Fire and Rescue Training School D: I'm County Alde

Brigadier General Abdulla Zuhury

#### ANNEX 10 Groundwater Quality Test Reports

#### Male' Water & Sewerage Company Pvt Ltd Water Quality Assurance Laboratory

Quality Assurance Building, 1st Floor, Male' Hingun, Vilimale', Male' City, Maldives

Tel: +9603323209, Fax: +9603324306, Email: wqa@mwsc.com.mv





#### LB-TEST-090

#### WATER QUALITY TEST REPORT Report No: 500205917

Customer Information:
Ministry of Environment
Green Building
Handhuvaree Hingun

Male' MALE'

Report date: 21/08/2025
Test Requisition Form No: 900203921
Sample(s) Recieved Date: 17/08/2025
Date of Analysis: 17/08/2025 - 18/08/2025

Sample Description ~	R.Vandhoo RWMF Fuel Farm	R.Vandhoo RWMF Control					
Sample Type ~	Ground Water	Ground Water					
Sample No	83260079	83260080					
Sampled Date ~	14/08/2025 02:00 AM	14/08/2025 02:00 AM	TEST METHOD	UNIT			
Physical Appearance	Grey and opaque with particles	Clear with particles					
Received Temperature	24.9 °C	24.9 °C					
PARAMETER	ANALYSIS	S RESULT					
Conductivity *	881	620	Method 2510 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)				
pH *	7.3	7.3	Method 4500-H+ B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	-			
Salinity	0.43	0.30	Method 2520 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	<b>%</b> °			
Temperature	23.8	23.7	Electrometry	°C			
Total Dissolved Solids	441	310	Electrometry	mg/L			
Total Petroleum Hydrocarbon (TPH)	0.13	0.23	UV Fluorescence	mg/L			

Keys: μS/cm : Micro Seimen per Centimeter, ‰ : Parts Per Thousand, °C : Degree Celcius, mg/L : Milligram Per Liter

Checked by

Nashath Ali Senior Laboratory Executive Approved by

Nihaz A. Zahir Assistant Quality Manager

#### 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. This information may affect the validity of the test results.

\*Parameters accredited by EIAC under ISO/IEC 17025:2017



Scan QR Code

Page 1 of 1 MWSC-A5-F-92 Rev 01

#### ANNEX 11

EPA letter permitting relocation of brine discharge to harbour basin







سَرُسُرُهُ مُدِ: 203-ECA/438/2020/52

چِهرُ وِسِرِ شَعْهِدُ سَرَسُونَ لَهُ 438-WMPC/203/2020/55 مِعِ مَرْدُ وَسِرِ شَعْهِدُ مَرْسُونَ لَهُ 32) 438-WMPC/203/2020/55 مِعِ مَرْدُ وَسِرِ سَعْهِدٍ وَسِرِ سَعْهِدٍ وَسِرِ سَعْهِدٍ وَسِرَ سَعْهُ وَوْدُ.

رُوَّرُوْدُوْدُ وَرِدُوْدُوْدُ وَمِرْدُوْدُورُوْ دُمَرُهُ کَوْدُورُوْ وَمِرْدُوْدُ کَمْرُهُ کِهِ مَارُوْدُ وَسَ مُرْدُدُ وَرُرِّوْدُ هُمُرِدُرُ وِسَمُرُمُوْدُ وِرَدِدُورُ وَرَدِدُورُ وَرَدُورُونُ سَمَرُرُودُ هُوَرُودُدٍ، صَرَوْدُ هُرُرُدُ دُرْدِ دُوْدُودُ وِدِدُخْرُسِوْدُ دِدْمِرِنَّ عُرْدُورُ وَدِدْدِدُورُ وَرَدِدُورُ وَرَدُورُورُ سَمَرُورُورُ وَرَدُورُ

> رِبْرِمِيُّوْ يَحْتَوْنَا يَدْرُوْسُ مَوْدُوْ. 20 وَبُرُمْيُوْ 2443 323 مُرَثُمُوْ 3232

323,5° 200,000 3,5° 200,000 3,5° 200,000 2



secretariat@epa.gov.mv

#### ANNEX 12 Seawater Quality Test Reports

#### Male' Water & Sewerage Company Pvt Ltd

Water Quality Assurance Laboratory

Quality Assurance Building, 1st Floor, Male' Hingun, Vilimale', Male' City, Maldives

Tel: +9603323209, Fax: +9603324306, Email: wqa@mwsc.com.mv





#### LB-TEST-090

#### WATER QUALITY TEST REPORT Report No: 500205918

**Customer Information:** Ministry of Environment

Green Building Handhuvaree Hingun

Male' MALE'

Report date: 21/08/2025 Test Requisition Form No: 900203921 Sample(s) Recieved Date: 17/08/2025 Date of Analysis: 17/08/2025 - 18/08/2025

Sample Description ~	R.Vandhoo RWNF RO Plant Reject Line				
Sample Type ~	Sea Water				
Sample No	83260081				
Sampled Date ~	14/08/2025 03:00 AM	TEST METHOD	UNIT		
Physical Appearance	Clear with particles				
Received Temperature	24.9 °C				
PARAMETER	ANALYSIS RESULT				
Conductivity *	52300	Method 2510 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	μS/cm		
pH *	8.0	Method 4500-H+ B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)			
Salinity	34.44	Method 2520 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)			
Temperature	23.6	Electrometry	°C		
Total Dissolved Solids	26200	Electrometry	mg/L		
Total Suspended Solids	<5 (LoQ 5 mg/L )	HACH Method 8006	mg/L		
Turbidity *	8.90	HACH Nephelometric Method (adapted from HACH 2100N Turbidimeter User Manual)	NTU		
Nitrogen Ammonia	0.06	HACH Method 8038	mg/L		
Sulphate *	3000	HACH Method 8051			

Keys: μS/cm: Micro Seimen per Centimeter, ‰: Parts Per Thousand, °C: Degree Celcius, mg/L: Milligram Per Liter, NTU: Nephelometric Turbidity Unit

Checked by

Nashath Ali Senior Laboratory Executive Approved by

Nihaz A. Zahir Assistant Quality Manager

#### Notes:

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#### Male' Water & Sewerage Company Pvt Ltd Water Quality Assurance Laboratory

Quality Assurance Building, 1st Floor, Male' Hingun, Vilimale', Male' City, Maldives

Tel: +9603323209, Fax: +9603324306, Email: wqa@mwsc.com.mv





#### WATER QUALITY TEST REPORT Report No: 500205918

Customer Information:
Ministry of Environment
Green Building
Handhuvaree Hingun

Male' MALE'

Report date: 21/08/2025
Test Requisition Form No: 900203921
Sample(s) Recieved Date: 17/08/2025
Date of Analysis: 17/08/2025 - 18/08/2025

Sample Description ~	R.Vandhoo RWNF RO Plant Reject Line
Sample Type ~	Sea Water
e No ————————————————————————————————————	83260081 14/08/2025 03:00 AM
ysical Appearance	Clear with particles
eceived Temperature	24.9 °C
PARAMETER	ANALYSIS RESULT
Phosphate *	0.16

Keys: μS/cm: Micro Seimen per Centimeter, ‰: Parts Per Thousand, °C: Degree Celcius, mg/L: Milligram Per Liter, NTU: Nephelometric Turbidity Unit

Checked by

Nashath Ali Senior Laboratory Executive Approved by

Nihaz A. Zahir Assistant Quality Manager

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#### ANNEX 13 Draft Post Project Closure Safeguards Action Plan (PCAP)

#### Post Project Closure Action Plan of Maldives Clean Environment Project

#	Activity & Current Status	Actions to Complete	Time Frame	Funding Source	Responsible Entity/Authority	Status
1	Fire detection and protection system for the new fuel farm established in Vandhoo RWMF  This activity was initially	Before 30 November 2025  Finalize the funding source. Abu Dhabi Fund for Development or	30 June 2026 (civil works estimated to	Abu Dhabi Fund for Development or	Small Scale Waste to Energy Project (ADFD)	Funding received from MoF for the required works - MVR 2.5 million.
	intended to be completed under MCEP. However, due to funding shortage issues identified during the last implementation support review mission, it is now not possible to complete it under MCEP.  It was tendered under MCEP with bids also received.  It is important to note that the newly established fuel storage tanks can only be used after the necessary fire detection and protection system is installed at the fuel farm and inspected and approved by the MNDF (regulatory requirement). This must be done in accordance with the MNDF approved design, which was developed as part of a consultancy under MCEP.	Government Budget.  Option 1: Explore options and grounds (in reference to public financing act) for using the current bids with a change in funding sources. This is perceived to expedite the activity.  Option 2: If option 1 is not feasible, readvertise, complete bid evaluation and award the contract.  Contractor mobilization and initiation of preliminary works  After 1 December 2025 (post-project closure)  Continuation and completion of work.  Commissioning and preparation of commissioning report.  Inspection by MNDF and obtaining subsequent	be completed within 120 – 150 days)	Government Budget	Waste Management and Pollution Control Department (WMPCD) of Ministry of Tourism and Environment (MoTE)	No objection received from MoF for utilizing existing bids with the funding source change.  Initial bid evaluation completed. Request for additional information to be issued by Procurement.
2	Continuation of operational compliance monitoring (O-ESMP monitoring) of Vandhoo RWMF  Operational safeguards requirements of Vandhoo	approval.  Before 30 November 2025  Request WMPCD to assign a staff to oversee safeguards aspects of the facility.	Continuous monthly	Government Budget	WMPCD/EPA/URA	Staff nominated by WMPCD (Aishath Rashfa – Director)

	RWMF are defined in the	<ul> <li>Train the assigned staff on</li> </ul>				Briefing session scheduled
	operational ESMP prepared	Kobo Toolbox and share				for the week commending
	by the PMU and approved	the data with WMPCD				on 19 <sup>th</sup> October 2025.
	by the World Bank.	kobo account.				011 19 0 0000 01 2020
	It is being monitored	Robo decodifi.				
		After 1 December 2025 (post-				
	mechanism established by	project closure)				
	the PMU based on the O-	■ Continue to acquire				
	ESMP requirements, which	monthly O-ESMP reports				
	was agreed with the facility	and stack emission reports				
	operator (WAMCO), EPA	from WAMCO.				
	and the URA. Kobo Toolbox	<ul> <li>Review these reports and</li> </ul>				
	has been used for this	provide the necessary				
	purpose since February	feedback.				
	2021.	<ul> <li>Undertake quarterly</li> </ul>				
	<ul> <li>Monthly stack emissions</li> </ul>	monitoring ideally in				
	monitoring reports	collaboration with EPA				
	generated through CEMS	and URA. URA will check				
	are annexed to the O-ESMP	compliance with the				
	reports.	operating license issued.				
	• Water quality testing is	With potential				
		•				
	carried out on a quarterly	engagement of a				
	basis.	competent international				
	<ul> <li>Training was provided by</li> </ul>	incinerator operator,				
	the PMU to relevant staff of	provide necessary training				
	the facility operator	on O-ESMP and the report				
	(WAMCO).	tool to their designated				
	■ The facility operator	E&S staff.				
	(WAMCO) submits monthly					
	reports through Kobo					
	Toolbox and in pdf format					
	via email to					
	MCEP/WMPCD, EPA and					
	URA.					
	• A total of 62 reports has been					
	<u> </u>					
2	generated to date.	- D - 1 'C' IZDI	T:11 1 C	C '	WACDD	
3	Operationalization of Vandhoo	Develop specific KPIs	Till end of	Government	WMCPD	
	RWMF	tailored to international	international	Budget		
	GoM is currently negotiating	operator's scope of	operator's			
	with qualified international	engagement and in	engagement			

	incinerator operators for potential engagement to undertake the remediation works required to bring the incinerator back into operations and to lead operations for a period of 2 – 5 years.  O-ESMP requirements shall be factored into these discussions and reflected as part of KPIs in the eventual contract.	•	reference to O-ESMP and environmental and social section of the current operations plan.  Brief the existing ESIA to the operator. If any activity is proposed to be carried out as part of the remediation works in an area not covered in the ESIA, it will be subject to EIA screening and preparation of the instrument as per the screening decision and obtaining clearance from the EPA.  Obtain signed code of conduct from the operator and their staff. Translation of the code of conducts to languages familiar with the operator's staff might be required.  Updating the HSE sign boards to languages familiar with the operator's staff might also be required.				
4	Institutionalization of Turtle Nest Monitoring Activities in R. Vandhoo  R. Vandhoo beach is a hotspot for nesting green and hawksbill sea turtles.  The PMU has facilitated a triparty MoU with MoTE, WAMCO and ORP to monitor Vandhoo beach.		Upon project closure the role of MCEP will be transferred to Biodiversity Section of MoTE, which has already been agreed in principle with all the MoU parties.  A yearly budget for quarterly training and/or conducting awareness programs, monthly	Continuous	Government Budget/MNF	Biodiversity Section of MoTE	Agreed verbally with all parties. Discussion with all parties on MoU extension scheduled for 19 <sup>th</sup> October 2025.

	<ul> <li>The MoU was signed on 20 March 2023 and will continue till the project closure date – 30 November 2025.</li> <li>As part of this MoU, selected staff from Vandhoo RWMF have been trained to act as rangers for beach monitoring with oversight from ORP marine biologist, while the MoTE via the project facilitated travel, equipment and installation of motion detecting beach monitoring cameras.</li> </ul>	supervision visits of ORP marine biologist, and recurrent cost of data packages for the 3 monition detection cameras shall be prepared and included in the GoM budget. For the long term, the option for tapping into Maldives Nature Fund (MNF) to be established under BCPCR can be explored.  Considering that the GPS and other equipment required for beach monitoring have already been provided, and beach cameras installed, the program is not perceived to incur significant costs and can be management with a yearly budget of				
		around MVR 150,000 (\$10,000) to 200,000				
		(\$13,000).				
5	Interim Hazardous Waste Storage Facility of Vandhoo RWMF (associated activity)  The project for establishing an IHWSF is financed under GEF6 "Eliminating POPs through the Sound Management of Chemicals" project and is implemented by MoTE and UNDP. The project has been awarded to a contractor on a design and build basis.	Before 30 November 2025  Submit ESIA to the World Bank for commenting and obtain clearance.  Share the GRM of MCEP and Contractor's Code of Conduct template with the POPs team for them to use as reference.	August 2026	GEF	POPs PMU and ISLANDS PMU of MoTE	TOR finalized after incorporating RSA office comments.  POPs-PMU shared draft ESIA with WB and MCEP for commenting on 21 Aug 2025.  MCEP comments shared on 28 Aug 2025, and WB comments on 1 Sep 2025.

•	Design and ESIA work are
	currently undergoing. The
	TOR of the ESIA was
	finalized after incorporating
	comments from the World
	Bank.
•	The ESIA is expected to be
	completed by end of August
	2025 and will be submitted
	to the World Bank for
	comments.
	CEE 7 ICLANDS '

 GEF 7 ISLANDS project will support the GEF 6 project by developing the required SOPs and procuring equipment, vehicles and HW transfer vessels. (already included in their scope of works).

#### After 1 December 2025 (post-project closure)

- Monitor contractor's compliance with the EISA and HSE performance in line with the monitoring schedule of the ESIA. Sharing monitoring reports with the World Bank, in parallel to EPA and UNDP.
- Share the draft SOPs with World Bank for their feedback and input.
- World Bank's ESF team to do routine checks together with POPs PMU and UNDP during construction and post construction.

POPs-PMU submitted final ESIA addressing comments to WB on 8 Sep 2025 in parallel to EPA submission.

The Decision Statement issued by EPA, along with the final approved ESIA and additional information documents, submitted to WB on 6 Oct 2025.

Initial meeting with POPs-PMU, MCEP and World Bank to discuss government structure for monitoring and reporting to WB post MCEP closure held on 6 Oct 2025. Follow-up meeting with UNDP and RSA office for further discussions scheduled for 15 Oct 2025.

MCEP-PMU will assist the POPs-PMU to develop a remote monitoring mechanism on Kobo Toolbox similar to MCEP.

MCEP-PMU has shared sample CoCs and GRM with POPs-PMU.